DANISH
TECHNOLOGICAL
INSTITUTE

IT'S ALL ABOUT INNOVATION

ANNUAL REPORT 2011

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The Danish Technological Institute is an independent and non-profit institution approved as a technological service institute by the Danish Ministry of Science, Innovation and Higher Education. Her Majesty the Queen of Denmark is Patroness of the Danish Technological Institute.

Innovation, productivity and research – one way out of the crisis

2011 was a good year for the Danish Technological Institute. We received a reasonable inflow of exciting new and interesting technical projects in spite of the continuing external pressure that a number of our business areas have sustained.

At the Danish Technological Institute (DTI), we feel a deep responsibility to help Denmark's small and medium-sized enterprises (SMEs) finding their way out of the current crisis. We constantly strive to tailor our consultancy services and technological input to our customers' needs and thus make the greatest possible contribution to value creation in the Danish business sector. We plough our profits back into new research and invest in new, advanced laboratories for developing and testing future technologies before businesses and society begin using them. Our objective is to intensify our efforts to contact, meet and cooperate with even more Danish businesses in the years to come. Hopefully, this will enable us to pool our resources and together ensure that research investments translate into even more value for businesses, their customers and Danish society as a whole.

Every day, DTI consultants are out testing new and open models to ensure innovation competences, productivity improvements and new forms of innovation in SMEs. By involving our partners, customers and other stakeholders, we help businesses generate and test new knowledge and new technologies. Entering into open cooperation projects and forming strategic partnerships give Danish manufacturing, services and high-technology businesses access to more ideas and greater market insight and, as such, a better chance of developing new products and services.

We have strengthened our food activities throughout the country and also seen strong growth in energy and climate. In addition, we developed solutions to a variety of projects for a large number of Danish manufacturers. The positive development bolsters us with a platform from which to help meet the significant challenges that the future holds. A large number of SMEs are still reeling from the crisis, and we are in the unfortunate situation that jobs are lost in Denmark every day. More than ever, businesses need to boost productivity, enhance competitiveness and get back on the growth track as soon as possible. Innovation and research are the means to this end. Inventive thinking and high technology are the trump cards against our foreign competitors.

We look forward to continuing our work, contributing to the solutions to the enormous challenges that face Danish businesses and the country at large.

We hope you will enjoy reading a small sampler of the manifold tasks we performed for our customers in 2011.

Clas Nylandsted Andersen
Chairman

Søren Stjernqvist
President

INSPIRATION

- for technology development
- for innovation projects
- for networks
- for cooperation

INSIGHT

- into new technologies
- into customer needs
- into customer industries

IMPACT

- solutions that work
- adapted technology
- visible effect

Inspiration
Technology is our raison d'être. Our own activities and co-operation with international knowledge centres enable us to inspire customers to develop their businesses through the latest technologies. Giving our customers a forum in which to use the latest technology – that is the foundation of the Danish Technological Institute.

Insight
The Danish Technological Institute has been working closely together with small and medium-sized enterprises since 1906, from owner-manager enterprises and industry associations to NGOs and large multinational companies. This cooperation has offered us unique insight into our customers' challenges – those arising in everyday life, but also in the necessary paradigm shifts. We make this insight available to our customers, thereby enabling them to meet the demands of tomorrow.

IT'S ALL ABOUT INNOVATION

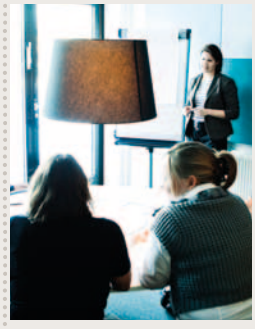
Impact
The Danish Technological Institute's fundamental task is to create measurably better results that strengthen our customers' place in the value chain. Our goal is to offer private businesses, organisations and public institutions specific, adapted solutions that work –the effects of which being both visible and appreciable.

It's all about innovation
We have high ambitions on our own and on our customers' behalf. To us, good is not good enough. The three core values of technology, insight and measurability make up the substance of the service we provide for our customers, enabling us to inspire, to address current and, more importantly, future needs as well as recommend measurable solutions that make a difference. This is true renewal, true innovation.

CASES

Since Gunnar Gregersen founded the Danish Technological Institute in 1906, we have bolstered our broad technological knowledge and enhanced our competences as reflected in the variety of tasks we undertake.

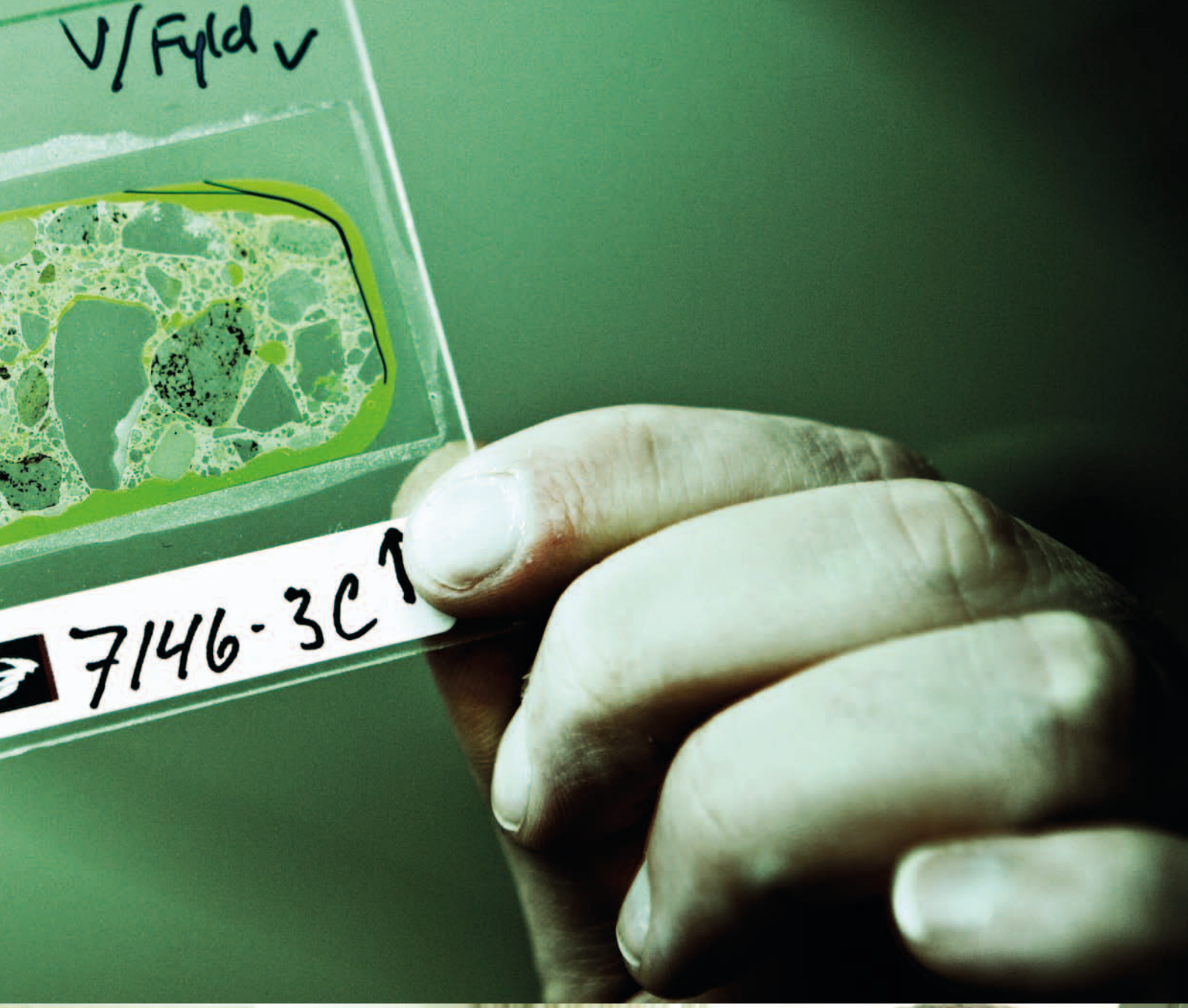
In line with tradition, we cover some of the highlights from 2011 with a range of cases. Every story illustrates how we come together to develop new solutions to the challenges facing the business sector today and tomorrow.



BUILDING TECHNOLOGY

Mette Glavind, Director:

Innovation entails feeling the commitment and taking on the responsibility to challenge and support the Danish construction industry to find high-technology solutions which will enable the industry to come through the crisis successfully.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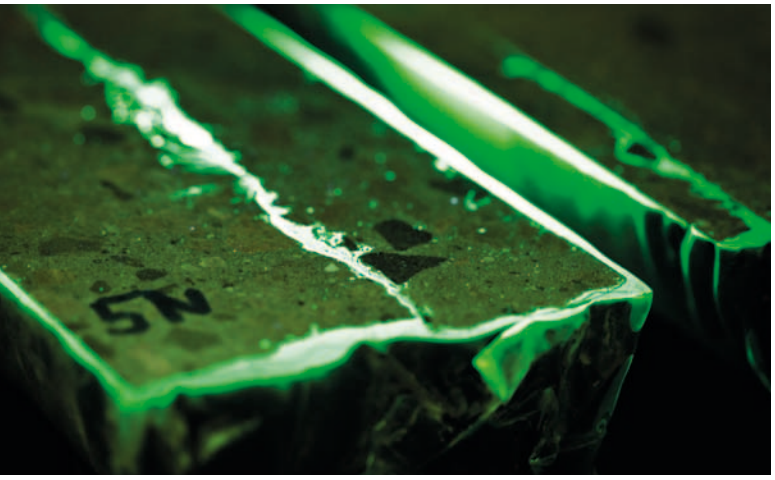
The Danish Technological Institute ensures high-quality concrete for new section of the Copenhagen Metro

Copenhagen will have a new Metro line which will be called Cityringen (city circle line). It will take 600,000 cubic metres of concrete to construct the tunnel segments, decks, pillars, walls and foundations that will go into the kilometre-long stretch and its 17 new underground stations. The Danish Technological Institute (DTI) has been tasked with ensuring the high quality of the concrete.

Until the end of 2014, DTI will be assisting the Italian consortium of contractors Copenhagen Metro Team to comply with Danish requirements, norms and standards covering all the technical aspects of concrete. DTI is also to liaise between the contractor and the suppliers of the concrete and concrete elements.

- The particularly interesting and special challenge of this important project is to help the contractor to meet the client's concrete quality requirements by using sound Danish concrete technology and first-rate Danish materials in such a large project, says DTI Centre Manager Dorthe Mathiesen.



Testing concrete strength

According to the plan, Cityringen will be completed in 2018 and have 17 underground stations. The Italian consortium of contractors consisting of the companies Salini Construttori S.p.A., Tecnimont CC and SELI S.p.A. signed the contract with the Client Metroselskabet in January 2011. The Italian companies subsequently established the Danish company Copenhagen Metro Team, which will be in charge of the project until its completion.

- We hired DTI to give us a hand with quality assurance and concrete testing on an ongoing basis. This greatly expedites the construction process and, thanks to DTI, we can keep to our very tight timetable, says Sergio Notarianni, Technical & Design Director from the Copenhagen Metro Team.

FACTS

The concrete used in the construction of bridges, tunnels and roads is subject to much stricter quality requirements than the concrete used to build a house. This is the case with large-scale infrastructure projects like the Øresund Link, the Great Belt Fixed Link and the upcoming Fehmarn Belt Fixed Link, and DTI provided consultancy services for the clients of these projects and undertook the testing of the concrete.

What kind of assistance does DTI offer?

- Advisory services on specification and choice of concrete composition for building structures and the use of new types of concrete
- Accredited testing in relation to building concrete, e.g. concerning concrete resistance to the impact of frost
- Determination of creep and shrinkage parameters for concrete and related temperature and stress calculations for structures
- Completion of tailor-made test programmes for documenting sub-materials and concrete types.

The Danish Defence battling against monster rain

On Saturday, 2 July 2011, the skies above eastern Denmark opened up, unleashing a torrential downpour. As rain water seeped into buildings like the Citadel, the Danish Defence became one of many property owners sustaining damage running into millions of Danish kroner.

Defence Facility Management responded quickly to the water damage. DTI received a call for assistance as early as the following Monday.

- We immediately removed visible water by using pumps. It's the water you cannot see, however, that can cause the greatest damage to a building, so we needed professional assistance to assess the extent of the damage. Because if the water that has forced its way under the floorboards isn't removed, mould fungus will appear within just a week or two, explains Leslie Brandt Egaa Kristensen, Defence Facility Management Project Manager.

Equipped to resist new flooding

DTI helped Defence Facility Management establish whether using the buildings would now pose a health hazard and what to do to prevent mould fungus from developing.

- We intend to follow the very useful advice provided by DTI, as cleaning up after the damage is going to be a gigantic job. We need to improve the interior of the buildings and optimise their drains and drainage so we can re-occupy them, concludes Leslie Brandt Egaa Kristensen.

FACTS

A comprehensive and independent mapping of the extent of a mould fungus attack in a building requires knowledge about both building technology and microbiology. We take the necessary samples and analyse them in our laboratory. This gives us the independent and technically correct basis for assessing the extent and nature of the damage and making recommendations about how the property owner can best remedy the damage.

What kind of assistance does DTI offer?

- Mapping and remedying moisture and mould fungus damage
- Laboratory analyses of submitted material samples
- Advisory services in connection with construction structure and choice of materials
- Prevention of moisture and mould fungus damage in new buildings and renovations.

The right indoor climate is important to health

Danes spend on average 80% of their time indoors. This makes a comfortable and healthy indoor climate a must – certainly in the opinion of the Local Authority of Vesthimmerland. Local politicians asked DTI to inspect a number of the local authority's public buildings for the unhealthy substance PCB.

PCB is one of the world's most hazardous environmental toxins used in building materials and still exists in old buildings dating from the 1950s up until 1977 when the substance was banned. PCB is often found in rubber seals around windows and facades or in other building materials such as glue and paint, which can emit substances into the air. Today, PCB is known to disrupt hormones, degrade slowly and accumulate in the food chain – and is considered carcinogenic.

DTI currently receives many inquiries from customers wanting to be on the safe side and have a building screened for PCB. One such customer is Michael Holm Pedersen, Building and Civil Emergency Inspector at the technical and environmental administration of the Local Authority of Vesthimmerland.

- Having followed the daily press coverage of PCB problems for about six months, we decided to have the local authority's buildings screened for PCB. It is very important to us that our buildings have a healthy indoor climate so that our staff and other users may feel comfortable and avoid illness, not to mention the fact that legislation must be complied with, explains Michael Holm Pedersen.

Ranum Public Library built on PCB

DTI screened Ranum Public Library for PCP as the building was erected in 1975 when the substance was still permitted for use in building materials. DTI experts determined that joint samples from the library contained 41% of PCB, which exceeded the permitted threshold limit value. To establish whether the indoor climate had been affected, DTI also took air samples in the buildings found to contain PCB in the joint materials.

- Fortunately, there was no sign of PCB in the air, and the indoor climate was also fine, says Michael Holm Pedersen, continuing: On the other hand, DTI established that building materials near the windows and facades contained elevated amounts of PCB. So when the building is to be demolished, the joints, window frame sections and bricks neighbouring the joints must be characterised as hazardous waste and taken to a special facility approved for handling this type of waste.

FACTS

PCB is a hazardous environmental toxin with health-damaging effects. The use of PCB in building materials has been illegal since 1977. Previously, the substance was used in keeping with the regulations of the time, the damaging effects having been unknown. The presence of PCB in buildings can make the costs of renovation and demolition much higher than expected.

What kind of assistance does DTI offer?

- Preliminary mapping of hazardous substances such as PCB and asbestos in buildings
- Determination of scope via sampling and building surveys
- Indoor climate technology measurements and advisory services
- Risk assessment of the effect of hazardous substances on users
- Preparation of action plans.

Hunting for thermal bridges at Novo Nordisk A/S in China

When Novo Nordisk A/S started using a new factory building in China, parts of the building proved difficult to heat – especially during the winter when temperatures easily fall to minus 20˚C. However, the problem was solved when DTI presented a number of recommendations based on a thermographic study of the building.

The Tianjin Economic Technological Development Area is situated about 150 km south-east of Beijing towards the Yellow Sea. The development of the area began in 1985 on an embanked seabed, and it has undergone tremendous transformation over the past 25 years. As the name implies, it is an area of growth where the Chinese government makes a great effort to attract foreign businesses. The climate in the region is extreme compared to Danish conditions. Winter temperatures down to minus 20˚C are normal, and summers are hot and humid with temperatures reaching 40˚C.

DTI wanted in China

Novo Nordisk A/S is among the Danish companies that have opted to locate their business in the area. Between 2008 and 2011, the company erected a building totalling 53,000 square metres. The building contains administration, storage, laboratory and production facilities. However, when Novo Nordisk A/S started using it, people found it hard to stay warm in some parts of the building. Some windows came under suspicion, and DTI was therefore brought to China to reveal any thermal bridges in the building.

– We've learnt that in China, there is a rather relaxed attitude to certificates and quality control. This means that, as a client, you can hardly be sure that products and materials meet the required specifications and actually have the properties printed on the certificates. As a result, we benefited considerably from having DTI check the climate envelope, including the roof, walls, foundations and windows, explains Claus Christensen, Senior Project Manager from Novo Nordisk A/S.

When conducting the thermographic survey of the factory building in China for Novo Nordisk A/S, DTI developed a method for measuring structures on-site, including the insulating properties of windows, the so-called U-value, based on heat flow and temperature measurements. This method will also be of benefit to all other clients.

FACTS

Thermal bridges or faulty or insufficient building insulation may result in uncomfortable draughts and problems achieving a comfortable room temperature. Thermography and insulation measurements can localise and thus potentially solve these problems.

What kind of assistance does DTI offer?

- Thermographic study and localisation of thermal bridges
- Performance of insulation tests and studies
- Condition assessment and damage identification
- On-site measurement of U-values
- Advisory services on insulation design
- Advisory services on building structures free from thermal bridges.

Simple technology shows test results on clothes

How much does a T-shirt shrink after several times in the washing machine? How well does a swimsuit protect a child against the dangerous UV rays of the sun? How waterrepellent is a snow suit?

In 2012, consumers can quickly and easily find the answers to these questions in shops carrying clothes tested by DTI and found to be of satisfactory quality. All consumers would have to do would be to use their smartphones to scan a special bar code, the so-called QR code, found on a garment label. Seconds later, a short video will pop up and explain the test to which the clothes have been submitted at DTI's textile laboratory.

Danish manufacturer of children's clothes MIKK-LINE A/S is one of the first to use this new advanced technology which DTI now offers its customers in the textile industry. Brian Sørensen, Purchasing Manager at MIKK-LINE A/S, has no doubts about why this initiative is such an excellent idea.

- We see the initiative as highly attractive to our business. In terms of marketing, the product gets a quality lift. Moreover, customers get a visual and easy-to-understand overview of what goes into the testing of the individual garments. Till now, it has been difficult to make this clear to consumers, says Brian Sørensen.

QR code increases trust in the clothing brand

MIKK-LINE A/S has yet to provide their clothes with QR codes. The code labels will appear in the course of 2012, and Brian Sørensen is excited to hear how consumers react, though he fully expects them to welcome the initiative.

- I'm sure that the initiative will boost the sense of security and safety that consumers associate with our brand. In the context of quality, we can effectively document that the product meets a certain standard essential to consumers buying functional children's clothes. The QR codes increase product reliability and heighten the marketing value – even if customers do not necessarily use them. The signalling value alone has an enhancing effect, explains Brian Sørensen.

FACTS

It is important to document that clothes or other textiles meet a certain standard and comply with legislation. DTI's accredited textile laboratory can test products and provide help documenting their properties for consumers via the latest mobile technology with QR codes and videos played on smartphones.

What kind of assistance does DTI offer?

- Testing in accordance with specifications or expected properties for clothes and textiles
- Advisory services on product development or improvement of functional properties
- Oeko-Tex® certification
- The DTI textile laboratory offers testing according to practically all common international standards, e.g. EN, ISO, SIS and ASTM.

DMRI

Lars Hinrichsen, Director:

Innovation achieved through insight and inspiration will help the Danish food industry to see possibilities where others see limitations.


PYREX
ENGLAND
100ml

New steam suction tool can improve hygiene at abattoirs

DTI is currently testing a new practical steam suction tool that effectively keeps abattoir cutting belts clean.

DTI has very nearly completed the development of this new tool which will keep clean the belts that handle and transport meat at abattoirs. The tool quickly and effectively removes meat juice, fat and other visible coatings by means of vacuum and steam both during and after the abattoir is operating.

Keen interest in new steam suction tool

Although the new steam suction tool is not yet fully developed, it already attracts keen interest. For instance, Tican a.m.b.a has asked its supplier to incorporate the tool in the design of a new production line.

- A pilot model has been connected to one of our cutting belts during production, and although the equipment is still under development, we consider it very interesting. A belt identical to the pilot equipment has been installed, and visually the steam-suctioned belt gives a much better impression. This is a feature we believe our customers in the high-value markets will appreciate, says Torben Z. Kock from Tican a.m.b.a.

FACTS

To date, DTI has developed two models of steam suction tools for use on carcasses, both of which are available from the web shop at www.dmri-shop.dk.

Danish assistance to modernise abattoirs in Korea

In South Korea, the government wants to support a sweeping modernisation of the country's abattoirs to make the industry more competitive nationally and internationally. To this end, the Koreans have turned to DTI for help.

The Danish abattoir industry is known as an unrivalled leader globally, and, in Korea, Denmark and Danish know-how enjoy a special status in terms of abattoir technology. Therefore, it seemed only natural that the Koreans decided to import expertise from Denmark.

Assistance with various challenges

DTI has been providing advice to the South Korean abattoir industry since the summer of 2011. Initially, the PuKyung abattoir will undergo major modernisation, with an all-new abattoir facility due to be built. The cooperation with PuKyung is the first step towards making the Korean abattoir industry more competitive in its domestic market and in the global market.

DTI has helped the Korean abattoir prepare a general design plan which outlines the processes and technologies needed to increase competitiveness and reach the production targets set. DTI will also take part in preparing a more detailed master plan to be completed before the actual design and subsequent construction of the new abattoir facility.

In the year ahead, DTI will extend its advisory services to other South Korean abattoirs.

FACTS

DTI's cooperation with PuKyung will comprise the following:

- Design of a new abattoir facility with optimisation of flows and internal transport routes
- Implementation and commissioning of new abattoir technology
- Staff training in technology application
- Establishment of optimum manning and capacity balance in production
- Ensuring yield optimisation and maximum resource utilisation
- Ensuring lowest possible unit costs
- Assistance in introducing IT solutions and decision support systems for optimising processes and yields.

How to cut pigs to achieve the highest possible yield

Abattoirs can increase their yields on raw materials by using CT scanning to look inside carcasses. The scans can be used to determine what products can be made from a carcass and how it should be cut.

For the past 10 years, DTI has been working with CT scanning of carcasses and cuts. This has generated considerable competences in using and interpreting the 3D images of carcass sections. What is more, carcass scanning is now an accepted EU reference method for measuring meat content, lowering the costs of Danish classification control. Customers in Sweden and Norway have also been able to use this objective method in the process of approving new equipment that measures the meat content of carcasses.

- Our CT scanning of half carcasses allows us to see exactly what is meat, fat and bones. We can even see where the individual sub-cuts are located in the carcass, says Marchen Hviid, DTI Senior Consultant, adding that this information is very valuable: Abattoirs can use CT scanning to decide what products to make from a carcass and how it should be cut, all depending on the content and distribution of meat, fat and bones in the individual pig carcass.

New system makes life easier for Tican a.m.b.a.
In the summer of 2011, DTI completed a project aimed precisely at optimising the use of raw materials at bacon factories. In this connection, DTI established a database containing scans of a wide variety of half carcasses covering the Danish pig population.

As part of the project, DTI developed some programs capable of making virtual product cuts on all scanned carcasses, for instance from backs for the British bacon market. Danish Crown a.m.b.a and Tican a.m.b.a. participated as partners in the project and acquired new knowledge about the thickness of fat in the midsection and the placement of bones as a function of the slaughtering process.

- We see great potential in the system developed in the project and will use the results to prepare yield formulas that let us calculate and optimise cutting yields. The cutting program developed saves us time and allows us to assure the quality of our decisions, says Torben Z. Kock, Production Manager at Tican a.m.b.a.

FACTS

DTI's CT scans of carcasses can be used to calculate yields and compare various cuts, thus replacing cost-intensive experimentation with cuts in practice. This knowledge was used, for example, to develop an automatic 3D fat trimmer. The scan makes it possible to calculate the amount of fat to be removed before the knife makes its first incision.

In a new project supported by the Danish National Advanced Technology Foundation, DTI is developing and implementing the first online CT scanner capable of providing automatic abattoir machines with knowledge about the objects they handle – knowledge that offers a look inside the carcass beyond what human eyes can see. The project is initially aimed at abattoirs. However, a much broader application in automatic production lines is expected to boost the development and control of robot technology.

Fat tax – know the fat content in beef and veal

Producers of beef and veal in Denmark have to know a great deal about the fat in their raw materials since a fat tax was introduced on 1 October 2011. Against this background, DTI has prepared an illustrative product catalogue documenting the content of saturated fat in a number of pre-packed veal and beef cuts such as top round and porterhouse steak.

The catalogue also presents figures for the fat content of pre-packed minced meat and such by-products as hearts, liver and tongue for the retail trade. The product catalogue makes it easy for producers to document fat content for the Danish Tax and Customs Administration, authorities and customers.

The new Danish act on indirect tax on saturated fats in food means that animals with a saturated fat content exceeding 2.3% are subject to indirect tax – the so-called fat tax. To give producers an efficient tool for documenting fat content and managing fat tax accounts, DTI undertook a large-scale study on behalf of the Danish Cattle Levy Fund during the summer and autumn of 2011.

Solid platform for fat content documentation

The study was based on technical analyses of samples from eight average calves and eight average oxen – all slaughtered animals boned according to commercial standard cutting specifications under the supervision of DTI specialist technicians. Next, representative samples were taken from a total of 163 beef and veal products, spanning various cuts, by-products and minced meat. An illustrative product catalogue was also prepared, complete with pictures and descriptions of all products. This catalogue gives authorities, consumers and producers of beef and veal a solid platform from which to document the content of saturated fat in beef and veal.

FACTS

The new product catalogue Saturated Fat Content in Danish Beef and Veal is available from DTI. We also offer assistance with similar analysis and documentation tasks for foods such as meat products, lamb or poultry.

New EU rules on food labelling will enter into force in a couple of years. The rules include compulsory nutrition labelling, meaning that the content of saturated fat and other nutrients must be declared on pre-packed food. This being the case, DTI now aims to provide food producers with tools for documenting this nutrition information on a large number of foods.

ENERGY AND CLIMATE

David Tveit, Director:

Innovation means to form new, interdisciplinary working relationships – often across borders – to generate new knowledge and new ideas that will strengthen the competitiveness of the Danish energy industry.

Knowledge Centre for Energy Savings in Buildings – an undisputed success

Since March 2009, Denmark's first and only Knowledge Centre for Energy Savings in Buildings has been very busy helping and advising builders, businesses and other professionals from the construction industry on energy-efficient renovation – a job the centre has performed with flying colours.

In three short years, the Knowledge Centre for Energy Savings in Buildings has managed to gain the respect of everyone involved in the construction industry, says Michael H. Nielsen, Director, the Danish Construction Association. He points out that, thanks to the centre staff's great efforts, stakeholders in the construction industry have acquired strong qualifications and new tools for implementing energy-saving measures in buildings.

- The entire industry supports the work performed by the knowledge centre, including the development of energy counsellor training programmes, many other education and training initiatives, a vast number of energy solutions and tools and the work to activate the energy labelling scheme. Centre Manager Vagn Holk and his team have not sat glued to their computers, but rather approached the task from a more practical, action-oriented and proactive angle. They have risen to the challenge facing the construction industry and fully succeeded in supporting overall energy-efficiency efforts in Denmark, says Michael H. Nielsen, adding that it is crucial for the cooperation with the Knowledge Centre for Energy Savings in Buildings to continue.

In this way, the knowledge centre can become a key source of inspiration for the rest of Europe where everybody already regards Denmark as a pioneer and test pilot.

Energy savings catalogue furthers sales

The Knowledge Centre for Energy Savings in Buildings has prepared a catalogue containing a full list of energy solutions for the home. The catalogue is intended for builders to use in dialogue with customers who are having energy-saving renovations made to their homes. The catalogue illustrates and answers how a building can be made more energy-efficient, what the estimated savings amount to if, for example, windows are replaced and how renovation work can be performed correctly.

- With this catalogue in hand, builders are able to offer owners easier and quicker help in choosing an appropriate solution for saving energy through renovation, says Energy Counsellor Charlie Lemtorp Sloth from ProjectZero, adding that the catalogue has increased sales of both large and small-scale renovation jobs for builders in his network – jobs that span right from loft insulation to facade renovation.

Charlie Lemtorp Sloth also commends the hotline that builders can call for urgent technical advice on a specific renovation job.

- I needed to call the knowledge centre myself when, on a job, I was in doubt about whether you can use post-insulation to seal off a crawl space cast in concrete – and the advice was invaluable, says Charlie Lemptorp Sloth.

FACTS

DTI has been running the publicly funded Knowledge Centre for Energy Savings in Buildings for three years jointly with its three consortium partners: the Danish Building Research Institute, Kommunikations-Kompagniet A/S and Viegand & Maagøe Aps. During this period, the partners have accumulated and communicated knowledge on specific and practical solutions for reducing energy consumption in buildings. They have achieved this by preparing catalogues, guides, package solutions, calculators and articles, among other things. The knowledge centre has also been running a telephone service and the website www.byggeriogenergi.dk.

Furthermore, the knowledge centre has developed and implemented courses, theme days and presentations for inspiration – and more than 1,600 builders have received a diploma for passing the energy counsellor training programme.

Finally, the knowledge centre has been acting as a sounding board and source of inspiration on projects initiated by local authorities wanting to promote energy renovation.

FACTS

DTI has an array of measurement technology laboratories, including metrology laboratories, which provide a strong platform for completing new, demanding and complex measurement technology tasks such as:

- Selection and documentation of the sensors and measuring equipment capable of covering the specific measurements, including response time and measurement accuracy
- Determination of sensor installation, possibly supplemented with pilot studies and models
- Data communication from sensor to display via cable or wireless
- Analysis and assessment of results with regard to uncertainties in measurement
- Validation and documentation of simulation models, e.g. via demanding measurements.

Can service technicians breathe at wind turbine height?

DTI has performed a new, demanding and complex measurement technology task for Siemens Wind Power A/S, whose service technicians work inside the nacelle of a wind turbine to inspect and repair it. The company feared that service technicians risked lacking oxygen inside the nacelles if a nitrogen leak occurred.

The company needed to map and document the ventilation conditions inside the nacelle if a nitrogen leak occurs while the service technicians are filling the large number of cylinders with nitrogen that are always inside the nacelle. The cylinders contain nitrogen under high pressure, used to dampen blade vibrations. In addition to displacing the oxygen, a major nitrogen leak cools down the air. Against this background, DTI conducted a feasibility study under controlled conditions, determining the fall in temperature, while a bottle of nitrogen was rapidly emptied. The next step was to assess how the oxygen flows around the nacelle and to measure the oxygen content by means of robust sensors.

- We could not choose a standard solution to this task. So we applied the broad practical experience we've gained from various measurement technology tasks. We scrutinised various measuring principles and brands, and found the best suited sensor that also had fast delivery. When we received the sensor, we measured its accuracy, temperature dependence and dynamic response at our calibration laboratories, says DTI Consultant Claus Melvad.

Higher-than-anticipated oxygen level

The measurements taken by DTI revealed that the oxygen content in a nacelle from Siemens Wind Power A/S was higher than seen in other preliminary theoretical studies from abroad.

- We're relieved that, at present, a nitrogen leak poses no great safety threat to the work in our wind turbine hubs. We're impressed that DTI was able to respond so quickly and reliably to this unusual measurement technology challenge, says F. Peter Fowler, EHS Coordinator at Siemens Wind Power A/S.

DTI wins the ELFORSK Award 2011

DTI received the ELFORSK Award 2011 for developing a new energy-efficient impulse sales cooler that uses a natural refrigerant and consumes much less power than conventional coolers. The new cooler for use in supermarkets, newsstands and petrol stations has been developed in cooperation with the refrigerator manufacturer Vestfrost Household.

The new energy-efficient impulse sales cooler consumes 47% less power than the model currently found in shops across Denmark. The award-winning cooler is an open refrigerator model aimed at increasing impulse purchases of products like cold drinks, and is likely to have a large breakthrough in the international market for small coolers.

- This year's winning product is extremely simple and tangible. Moreover, the project has a staggering potential in a global market saturated with millions of inefficient impulse coolers.

In Denmark alone, impulse coolers consume 60 GWh a year in total, equivalent to the annual power consumption of 13,000 single-family houses, says Jørn Borup Jensen, Research Coordinator from the Danish Energy Association.

No more wide open, energy-gulping impulse coolers
Today, Danish shops have about 30,000 small coolers for keeping soft drinks and other products cold, enticing shoppers to make an impulse purchase as they walk by with their baskets. This costs retailers a lot of money in power.

- The problem with the existing open impulse coolers in the market is that large amounts of cold air escape from the coolers into the shop, only to be replaced by warm air, which needs to be cooled. This makes the cooler a power guzzler. The new cooling technology allows us to put an end to that, says Per Henrik Pedersen, DTI Senior Consultant, as the project has documented that the new energy-efficient cooler consumes a mere 2.2 kWh a day. By way of comparison, the "before model" consumes 4.15 kWh a day.

In addition to DTI and Vestfrost Household, Coop Denmark A/S and Pepsi Cola also participated in the award-winning project Energy-efficient Impulse Sales Coolers.

FACTS
The jury commented on the winning project as follows:
'The project participants have taken a holistic approach to developing the new impulse cooler, its energy consumption has been significantly reduced, the design is user-friendly, the cooler is easy to clean and a newly developed and more energy-efficient Danfoss compressor has been implemented.'

Water replaces environmentally hazardous substances in new refrigeration and air conditioning systems

DTI contributed to the development of a unique, competitive design for a new type of compressor that uses ordinary water as refrigerant instead of synthetic, less environmentally friendly refrigerants. In future, the competitive new technology will be used in refrigeration and air conditioning systems for office buildings, large shops, hospitals and other substantial buildings.

The Danish Energy Agency provided support to DTI, Japanese businesses and power companies as well as the Danish arm of the US company Johnson Controls Inc. for a joint project to develop an all-new type of axial compressor for water vapour. The compressor is capable of reducing the amounts of strong greenhouse gases currently emitted when synthetic refrigerants are used. Furthermore, the compressor will achieve significant energy savings for owners of buildings with refrigerating and air conditioning systems. Finally, the flammability and toxicity of a refrigerant will no longer be a source of concern.

DTI produced the fundamental compressor design and carried out testing, investing EUR 0.7 million in advanced testing facilities.

- This is a major initiative on our part as the new technology can be applied in other areas and industries, such as the process industry. For example, the technology may be used for drying processes and evaporation and in high-temperature heat pumps as well as to produce and store ice in connection with future energy storage, says Claus Schøn Poulsen, DTI Centre Manager

Breakthrough with environment-friendly technology
Systems using the newly developed compressor are projected to save 10-30% energy, while greenhouse gas emissions can be reduced by 15-40% compared to HFC-based systems. The new technology should be fully developed within a few years, a day to which Technology Manager at Johnson Controls Inc. Alex C. Pachai looks forward.

- In a long-term international research and development project of this nature, having a technically competent partner like DTI is a must, as DTI has both a sound business understanding of the circumstances under which foreign businesses operate and also masters the discipline of managing a complex development project like this one. DTI's contribution to the process means that, in a few years' time, we will have a very useful product with an enormous export potential worldwide, says Alex C. Pachai.

FACTS

The market potential of large-scale refrigeration and air conditioning systems is EUR 1.3-2.0 billion a year on a global scale. Kobe Steel, Ltd. and the Japanese power companies have manufactured a prototype for a future commercial system to be used in the Japanese market based on the development work performed by DTI. The long-term testing of the prototype will continue over the next couple of years, during which time the product will also have matured.

Johnson Controls Inc. plans to set up a demonstration system in Denmark in cooperation with Kobe Steel, Ltd., DTI and a major Danish customer. The system is to be used for long-term testing, product maturing and as a showcase.

New plant develops fuel pellets for the international energy market

Europe's biggest plant for biomass torrefaction will be erected south of Kolding. The new plant will enhance Denmark's position when it comes to developing and using sustainable energy in the form of biomass-based fuel pellets.

A great deal of attention will be focused on Andritz Feed & Biofuel A/S (AFB), the world's leading supplier of machinery and equipment for wood-based pelleting factories, as it builds the 700-square-metre structure. No similar plant exists for torrefaction – a type of heat treatment that increases the energy content and durability of biofuel pellets. Once the demonstration plant in Sdr. Stenderup has stood the test, ABF will establish similar plants all over the world.

The technology allows combined heat and power plants (CHP) to raise the share of biomass such as straw, willow and other residual products from processed agricultural products without converting the existing power stations. One advantage of torrefacted pellets is that they can be handled and fired like coal while containing more energy than conventional wood pellets. The new type of fuel pellets enables power stations to reduce carbon emissions by switching from fossil fuels to carbon-neutral energy.

Great expectations for the plant

Once the plant is completed in the summer of 2012, DTI and AFB will conduct a series of experiments. DTI will be helping to manage the process and handle the biomass and subsequently analyse and document results.

- We're equipped to head these activities because we already manage and participate in a range of national and international research and development projects in the field. Ultimately, we expect to generate growth and boost the Danish economy at the same time as maintaining Denmark as a leading developer of green technology and producer of sustainable energy, says David Tveit, Director of Energy and Climate, DTI.

- We expect a lot from our cooperation with DTI, with which we have long-standing and productive cooperation. The results we've achieved will unquestionably open up new vistas for the energy industry in and outside Europe as we expect everyone in the chain – from biomass producers to power stations – to be able to lower costs. In the long run, the plant may increasingly allow CHP plants to switch from fossil fuels to a sustainable alternative, says Kim Pandrup Christensen, Executive Vice President at AFB.

FACTS

Worldwide, the consumption of wood pellets amounts to about 13 million tonnes. This figure is set to rise to about 30 million tonnes by 2015 and even higher as we approach 2020 as CHP plants switch from coal firing to biomass firing, for which wood pellets are suitable.

For several years, DTI has been researching the use of biomass for large-scale energy production. In addition to processing and converting biomass into high-value fuels, DTI is also using the test plant in Sdr. Stenderup to develop fodder for national and international fodder production and processing customers.

Minister discusses the energy system of tomorrow

Denmark is in the process of finding out how best to make tomorrow's energy system intelligent and thus reduce greenhouse gas emissions and achieve fossil fuel independence. This objective was articulated at a conference on smart grid solutions.

In the autumn of 2011, the Danish Minister for Climate, Energy and Building Martin Lidegaard attended an international conference on the future energy system to be based on so-called smart grid technology. This technical term covers energy and IT technology solutions that are able to "communicate" and adjust energy consumption to the production of fluctuating wind energy at its cheapest. Representatives from more than 60 different businesses in Denmark, the USA, Germany, England, Switzerland and Sweden visited DTI to discuss the energy system of tomorrow with the minister.

From the rostrum, Martin Lidegaard pointed out that Denmark has a good basis for making a complete switch to renewable energy and creating an intelligent electricity system by using smart grid technologies. This is mainly because Denmark has already gained a great deal of practical experience from generating wind-based energy. The fact that we can already manage renewable energy technologies is another reason. A third reason is that we know how to make the systems interact. Finally, Denmark is a pioneer in the context of partnerships aimed at putting new technologies into use. Martin Lidegaard rounded off his speech by encouraging more businesses to contribute to developing useful smart grid solutions adapted to different regions in Denmark, the EU and the rest of the world.

Conference participants eager to discuss

The minister also answered questions and exchanged views with the conference participants. For instance, Frank Elefsen, DTI Technology Manager, asked what synergy benefits the minister anticipates between the smart grid activities in the USA and Denmark. Martin Lidegaard answered that he sees a wealth of favourable synergy benefits; for instance, the Americans' IT experience may be combined with our many years of experience in energy savings and renewable energy.

The conference at the Eigtveds Pakhus in Copenhagen also focused on electric cars combined with smart grids. An exhibition had been arranged outside for the occasion.

- We wanted to let the participants gain hands-on experience with the rather complex roaming systems and other future solutions that will come into play when the electric car becomes part of a smart electricity system. The objective was to demonstrate that Denmark has electric cars, an infrastructure and charging systems that are already communicating, said Programme Manager Lars Overgaard, who had been instrumental in bringing the conference to Denmark.

FACTS

The conference Smart Grid Applied Denmark 2011 took place over three days. The conference was organised by the Danish Ministry of Foreign Affairs, the Renewable Energy Innovation Network (VE-Net) and the Transport Innovation Network – both networks are run by DTI. The conference was held in continuation of a previous conference between Danish and American smart grid players in Silicon Valley.

BUSINESS DEVELOPMENT

Jane Wickmann, Director:

Innovation means helping Danish businesses pave the way for progress and growth by giving them partnerships, global vision and the courage to take new paths.


GENERERING

Danish high-technology business receives help with international breakthrough

DTI gave Littelfuse SELCO A/S a helping hand developing a system for detecting faults in switchboards. Today, the new system is marketed globally.

Three years ago, Littelfuse SELCO A/S (formerly Danish-owned SELCO) saw that a major demand existed for switchboard components capable of quickly and precisely detecting switchboard faults and thus preventing electric arcs (sparks) and, at worst, fire. To meet this demand, Littelfuse SELCO A/S approached DTI, looking to acquire the knowledge and expertise needed to develop a new system for detecting such dangerous arcs in switchboards.

- We wanted to get in contact with businesses and experts that could help us develop our products, explains Jakob Seedorff, Technical Director at Littelfuse SELCO A/S, continuing: In no time at all and very professionally, DTI was able to introduce us to experts possessing just the knowledge we needed.

DTI put the company in touch with a Danish company that specialised in arresting lightning for wind turbines. This gave Littelfuse SELCO A/S crucial new knowledge about the properties of arcs. DTI subsequently mapped out the technical standards and referred the company to partners who could develop prototypes for sensors and fibre optical cables.

New product leads to international breakthrough

In 2010, the company launched its new SELCO D1000 Arc Protection Relay. Next, the company initiated a close working relationship with US market leader Littelfuse, which has now launched a brand label version of the relay under the name Littelfuse PGR-8800 for marketing across the world.

- We're proud of our new product. As sub-supplier on the project, DTI deserves a great deal of the honour for this success, says Jakob Seedorff and adds: Partly due to the cooperation, we were sold to Littelfuse in the summer of 2011, the result being that both development and production activities remain in Denmark, while sales have now become even more global.

FACTS

DTI's global network Technology Partnership offers access to knowledge that strengthens businesses and boosts competitiveness. DTI saves members of the network time and resources in their development projects by efficiently and anonymously locating and qualifying experts potentially able to contribute the precise knowledge members need to innovate new possibilities.

Speech technology relieves care home staff from having to write themselves

A third of the staff at nursing homes have difficulties reading and writing. Through the project Work Life Quality with Speech Recognition, DTI tested a new IT program that automatically converts speech into text, with excellent results. This has freed social and health care assistants from having to enter information in residents' journals by hand.

For more than a year, DTI has assisted care homes in the areas of Valby and Esbjerg in using new speech technology that enables staff to enter information into a computer through speech instead of by hand. Some 30% of the staff have difficulties with reading and spelling, but as a result of the program supplied by the Danish company Prolog Development Center, they were able to complete the documentation without problems.

- We're pleased to have tested speech recognition in elder care where the technology hasn't been tested before – neither in Denmark nor abroad. On the basis of this project, we've now started developing a mobile unit on which social and health care assistants can record information when they're out visiting elderly citizens, says Jens Kjærum, Head of Department at Prolog Development Center.

Many positive effects of the new technology

Writing documentation was previously a difficult and uncomfortable task for the group of staff with reading and writing difficulties. Today, however, they know that their documentation is satisfactory, which has increased staff well-being. The quality of documentation has also improved as everyone can now provide precise and detailed documentation. Finally, the project has increased workplace efficiency as those with reading and spelling difficulties can now provide the documentation without having to ask a colleague or manager for help.

FACTS

In concert with Prolog Development Center and project users, DTI has developed a web-based e-learning tool with more information on what speech recognition can offer in relation to the task of documentation in elder care. The project Work Life Quality with Speech Recognition is financed by the Prevention Fund under the Danish Ministry of Employment.

How can skilled and unskilled workers lift innovation in Danish businesses?

A large number of small and medium-sized enterprises could make much more use of their skilled and unskilled workers' knowledge and competences to improve or create new products, services and work processes. How does someone who manages a business and who teaches both in individual vocational programmes as well as the entire vocational training and education systems ensure that this employee group becomes more involved in the workplace innovation process in future? DTI has studied this issue and described its findings in a report to the Danish Ministry of Education.

The comprehensive material for the report was collected in countries such as the USA and Canada. In the report, DTI analyses how research in employee and user-driven innovation can be applied to adult supplementary training at adult vocational training centres and be of value to the individual workplace and Danish society in general. For instance, the study answers how learning at companies can be enhanced through planned supplementary training initiatives that underpin business innovation processes. Moreover, the study outlines the competences that teachers need to have to achieve innovation.

- This global fact-finding mission documents that production staff or service function staff are able to contribute to innovation – also in simple matters like "getting things to work". One striking result is that the soft competences are related to productivity. Thus, if a business manager fails to understand his or her employees' way of communicating with colleagues and customers, the business will have difficulty increasing productivity, says Hanne Shapiro, DTI Centre Manager, adding that the report and its sequel will provide business managers with better tools for generating innovation.

New ways of increasing innovation

On the basis of DTI's report, the Danish Ministry of Education launched a host of large-scale development projects in 2011 to equip adult vocational training providers and supplementary training committees to develop training programmes and teaching that show new avenues for developing the competences of bottom-rung employees.

- DTI has contributed invaluable inspiration and knowledge that have motivated and supported us in our work to strengthen development initiatives for vocational training programmes. This can help foster the innovative competences of skilled and unskilled workers and underpin development and reorganisation in businesses, says Jan Reitz Jørgensen, Consultant, the Danish Ministry of Education.

FACTS

Serving as a catalyst for innovation is one of DTI's core competence. Through mapping and analysis and our broadly founded and practically embedded knowledge and experience within innovation, we offer advisory services to ministries, organisations, managers and others on how businesses can establish a more innovative culture through their employees.

Do not electrify the table

DTI has helped an inventor realise a good idea he conceived for a new, patent-protected, "green" adjustable height table. The Funen firm of Midform A/S manufactures, markets and sells the table in both the Danish and US markets.

The majority of adjustable height tables are operated electrically, but former desk manufacturer Kim Fjelløe-Jensen has developed an adjustable height principle based on a linear spring and ball bearings similar to those used in skateboards. This mechanism eliminates gravity and brings the table top in perfect balance under different loads without motors, transformers, cords and gearboxes. Not to mention electricity consumption and the resulting pollution.

- I bought a box of springs by accident at some point and had almost forgotten all about them. The good thing about this type of spring is its completely linear shape. The problem was how to adjust the force of the spring, says Kim Fjelløe-Jensen, adding that linear springs are used in cord rewinds for vacuum cleaners.

The invention is based on existing materials applied in a new context – in this case an adjustable height table that wastes no energy.

From idea to market penetration

When Kim Fjelløe-Jensen had completed much of the design, he contacted the Consultancy Services for Inventors at DTI for help finding a business that would buy the idea and manufacture the table. The Danish inventor also received advice on arranging a licence agreement and assistance with designing, drawing and writing a patent description of the table.

Thus, an adjustable height table using no electricity was developed, and the story of a challenge that had been haunting the table industry for more than 30 years came to a satisfying end.

FACTS

The Consultancy Services for Inventors offers free advisory services to private inventors. We are funded by the Danish Agency for Science, Technology and Innovation and give our assistance in maturing inventions and arranging licence agreements with businesses. We maintain full confidentiality in the matters for which we provide advisory services.

We train the business sector's strategic communicators

Since the spring of 2007, 100 professional communicators from public and private businesses have become certified strategic communications consultants at DTI.

LEO Pharma A/S is one of the companies enrolling employees in a training programme that strengthens their ability to shift their emphasis from producing texts to providing communication advice – an adjustment that puts new demands on staff competences. Corporate Communications Consultant Ann Kathrine Kruuse Thomsen from LEO Pharma A/S completed the programme to become a strategic communicator in the spring of 2011.

- I often found myself in situations where I had to provide managers with advice on communication at a strategic level. I have a solid communications background, but I sometimes felt a lack of authority when it came to advising managers. As the training programme offers specific and useful tools for asserting yourself as a strategic consultant, my supervisor and I realised that the programme would create value for both me and the business, says Ann Kathrine Kruuse Thomsen and continues: I have become better at making informed decisions more quickly, which has increased my confidence as a consultant. For instance, I now have tools which allow me to distinguish between criticism aimed at me as a person and at my role as a consultant – a distinction that makes it easier to handle opposition to my professional consultancy. This makes me feel more secure as a consultant today.

Strengthened in taking action and creating value
Many of the lessons take place as intensive discussions in small classes attended by several experts and decision-makers from the business sector. Participants' practical skills are regularly tested to make the new theory tangible.

- We were faced with "here-and-now" challenges and dilemmas on several occasions. We also had to solve real-world cases and manage within a few hours' time to present strategies and realistic solutions to seasoned corporate managers. We were pushed way out of our comfort zones, which was incredibly useful and educational, says Ann Kathrine Kruuse Thomsen and adds: Moreover, it was inspiring to learn from such professional and gifted teachers who were able to tailor-make a learning process for each participant on the basis of his or her situation. And I have even gained a solid professional network for future use, ends Ann Kathrine Kruuse Thomsen.

FACTS

DTI offers a wealth of courses and supplementary training programmes to communications specialists, managers and employees without an actual degree in communications or journalism.

The supplementary training programme as strategic communications consultant is the only certified programme in the field of communications. Teaching is in the hands of Anne Katrine Lund, who has a PhD in rhetoric and is a communications researcher and adviser, and by Sascha Amarasinha, General Manager, who works as an independent communications consultant and management developer.

LIFE SCIENCE

Bo Frølund, Director:

Innovation means taking on the challenges of tomorrow with the will to achieve ambitious goals on behalf of businesses through risk-taking research and development projects that give the business sector value for money.


ProCepT

Microbiological technology increases oil production

Oil is running out in many oil fields across the world. Wintershall Holding GmbH, Germany's largest oil producer, is now trying to apply new technology to squeeze more oil out of fields. The technology is based on a naturally occurring fungus that can increase field production by up to 10%. Oil microbiology experts from DTI are participating in this development project.

Many oil fields pump water down into the subsurface to maintain pressure and force oil out of the reservoir. A new technology adds a substance, a biopolymer from the Schizophyllum Commune fungus, to the water. The substance from the fungus thickens the water, thus allowing the water to find new ways through the reservoir. This makes it possible to force oil out from new areas in the reservoir and thus prolong the life of the field.

Microbiological competences in play

During the testing of the new technology, DTI became a natural source of competence in oil microbiology, as old oil fields often contain many microorganisms that impede the extraction of oil. This being the case, DTI and Wintershall Holding GmbH teamed up to study the problem and devise a strategy for optimising microbiological conditions, thereby facilitating higher oil production.

Wintershall Holding GmbH is currently planning a field test in northern Germany, during which DTI will take charge of some of the monitoring.

FACTS

The production of oil and gas from offshore and onshore facilities poses considerable technical challenges, for example a decreasing share of oil and increasing water production. Improving recovery means that the extraction strategy and efficient operations go hand in hand. The optimum choice of water treatment technology and chemical additives augments recovery and productivity. It also keeps potential problems, operating costs and the environmental impact under control.

By providing first-class services, our specialists and modern laboratories help the oil industry overcome these challenges.

Monitoring system for the oil and gas industry prevents losses running into millions

In the course of the past five years, DTI and Mærsk Oil have developed a system for monitoring micro-biological conditions in the subsurface under oil platforms. The latest addition to the family is a model that uses data collected from the system to estimate how quickly the microorganisms cause the metal to corrode in designated places along the pipes. This allows measures to be targeted in particularly risky spots.

The global oil and gas industry is having trouble with micro-organisms that cause pipes in the subsurface to corrode. The industry expends immense resources on preventing such damage.

Monitoring systems prevent corrosion damage
In spite of intensive research and many attempts, it has so far been virtually impossible to predict when and where microorganisms will enter the production system and start causing the metal to corrode, which has also made it difficult to target measures.

The monitoring system holds the potential to save the off-shore industry billions in losses.

DTI uses new, non-cultivation-based methods to monitor microorganisms in produced water, scale and wax from wells, valves and pipelines. This makes it possible to monitor production systems with much greater precision than previously, thereby preventing corrosion damage, etc.

FACTS
Monitoring microorganisms in oil production can, for example, involve quantifying the following:

- Total amount of microorganisms
- Number of sulphate-reducing microorganisms
- Number of nitrate-consuming bacteria
- Number of methane-producing Archaea.

New sweeteners in Danish products – a new network for Danish food producers

DTI has established a new professional network for Danish food producers under the name New Sweeteners in Danish Products – Product Development Network with Market Focus. The ambition is to give businesses a head start in developing and producing healthier foods sweetened with new, natural additives rather than with sugar or synthetic sweeteners.

The 10 members of the new network are all interested in being among the first in the Danish and European markets to develop foods with new sweeteners. The challenge is to replace sugar and synthetic sweeteners with natural sweeteners that have lower energy contents, such as steviol glycosides from the Stevia Rebaudiana plant.

New insight and inspiration

By joining the professional network, businesses gain new insight and inspiration to be able to compete with food products imported from non-EU member states. DTI coordinates activities so that businesses get the opportunity to use experts in, for example, legislation, product development, ingredients, food technology and consumer studies as qualified "sounding boards". DTI contributes to the network in its capacity as a knowledge provider within many of these fields.

Soft drink and food producer O. Kavli A/S is one of the businesses in the network that sees non-EU member states showing a growing interest in and increasingly using the natural energy-neutral sweetener from Stevia Rebaudiana.

- We decided to participate in DTI's new interesting network initiative because it gives us an opportunity to gain more in-depth knowledge about legislation and experience from other Danish food producers also developing foods with steviol glycosides. Professionally and commercially, we've had many stimulating discussions. Moreover, thanks to excellent guidance, we've updated our knowledge about approvals and food requirements, etc. Consequently, we now feel better equipped to complete our development projects, says Murat Aksoy, Innovation Project Manager at O. Kavli A/S.

FACTS

DTI is known for launching and running professional business networks focusing on development, production and food quality.

All businesses with a good idea for a new professional business network centred on a topic with development potential are welcome to contact DTI.

Development of new green wood preservative

Dyrup A/S and DTI have developed a new environment-friendly wood preservative based on natural minerals and other green raw materials from nature. The new water-based product GORI Nature carries the Nordic swan and the EU flower ecolabels. Furthermore, all tests show that this product offers at least the same protection and lasts at least as long as the best products based on turpentine or solvents.

GORI Nature was launched in the autumn of 2011 as a result of the scientific project Development of the Wood Preservative of the Future.

- We aimed at ensuring that the new product has a quality identical to the existing wood preservatives in the market. To this end, we optimised the new technologies, says Gitte Sørensen, DTI Project Manager , who goes on to say that adding natural minerals ensures that the wood preservative has the properties needed to produce a high-quality result as regards gloss, hardness, covering capacity and weather resistance to UV light.

Excellent and lasting results

GORI Nature has been subjected to several physical and chemical studies and advanced analyses in DTI's laboratory.

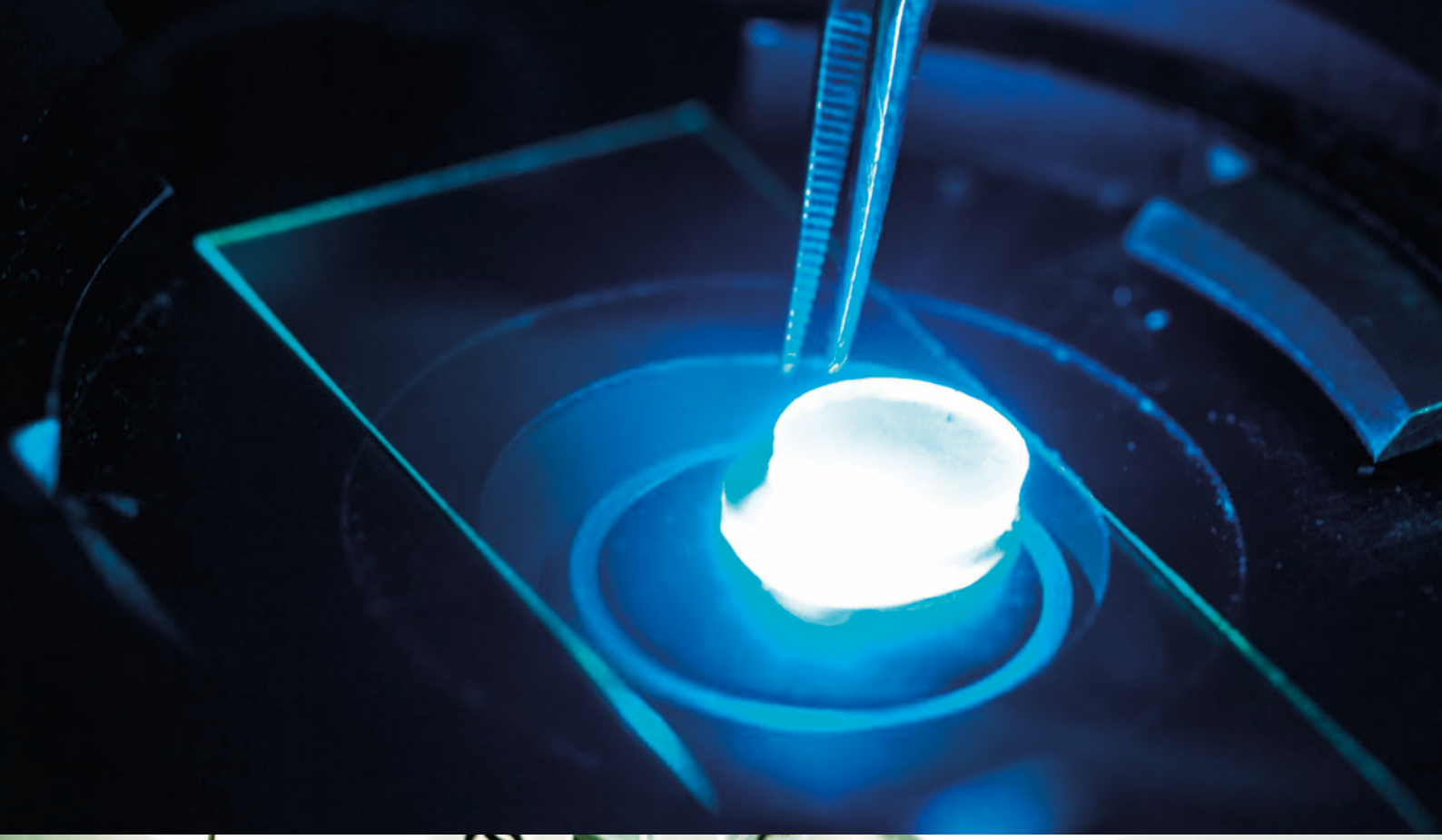
DTI made use of scanning electron microscopy to assess the film surface of GORI Nature. The microscopic images show that the product has a homogeneous surface resembling that of other high-quality commercial wood preservatives. The images also show that the surface of the environment-friendly wood preservative generally looks smoother, which is an advantage because an extremely even surface resists dirt better. Senior Scientist David Löf from Dyrup A/S is convinced that GORI Nature marks the beginning of a new generation of wood preservatives.

- We have great expectations for the sale of GORI Nature – a product we would have been unable to develop from scratch so successfully without an excellent partner like DTI. With this project, we have broken new ground in our way of working. We have to validate our ideas and theories as we go, a requirement that our DTI partners can help us with thanks to their vast knowledge in the area and their portfolio of advanced tools, says David Löf from Dyrup A/S.

The project is financed by the Danish Environmental Protection Agency.

FACTS

The experience that DTI gained in the Dyrup project extends far beyond the paints industry. The work with, for example, emulsion stability and ingredient substitution also has applications in fields as varied as cosmetics and foods or wastewater management and slurry separation.

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MATERIALS AND PRODUCTION

Mikkel Agerbæk, Director:

Innovation is being willing to risk a gamble in order to win – that is how we help Danish industry think innovatively and prepare for the challenges of tomorrow.

New innovative first-aid product – just what the doctor ordered

When misfortune strikes in emergencies, having high-quality first-aid equipment at hand is vital. For eye injuries caused by hazardous chemicals, it is particularly critical to have an eye-rinsing solution that is fast, efficient and simple to use – and the new first-aid product "EYEAID" meets these demands.

DTI contributed to the development and design the actual atomiser of the new product EYEAID. To find the optimum solution, the DTI developed and tested atomiser prototypes.

- We're highly satisfied with our partnership with DTI, because it resulted in a unique and user-friendly solution that enables users to rinse an eye efficiently and precisely within a few, short seconds, explains Chief Development Executive, Steen Pedersen from the Innovaider development company.

Each can contains 250 ml rinsing fluid, which is sufficient for 15 minutes of rinsing and therefore adequate for treating even the most serious of accidents involving hazardous chemicals. DTI is behind the spray technology, which ensures that the correct amount of rinsing liquid is sprayed into the eye in a mist of minute saline water drops flowing constantly and continuously without unnecessary interruption.

Fast self-help

The innovative and patented mechanical eye opener is small, light and handy, and opens the injured eye without involving physical contact with unclean fingers. Thus, hazardous fluids and substances will not be transferred from hands and fingers to the injured eye. EYEAID is also the only eye-rinsing product that may be operated with one gloved hand.

The product was developed for laboratory staff, forest workers, workmen, swimming pool staff and staff in restaurants, canteens, the agricultural and food industries, etc.

FACTS

When developing new products in plastics or composites, a company should thoroughly consider the planning, design and choice of materials early on in the development process in order to achieve the optimum product.

What kind of assistance does DTI offer?

- Consultancy on design of blanks and tools
- Consultancy on choice and qualification of materials
- Theoretical flow analyses and strength calculations
- Functional testing and life-time assessments of prototypes and finished products.

Fighting infections with new "sponge" technology

The Danish entrepreneurial company, BioModics, is developing a brand-new type of anti-microbial impregnation for urological catheters that will prevent patients from catching infections, needing antibiotics treatment or from contracting severe blood poisoning.

Since 2009, BioModics has teamed up with DTI to develop an innovative and groundbreaking medical equipment technology – beginning with urological catheters, consisting of silicone tubing.

The idea underlying the technology is to groove the silicone tube with a grid structure, which ensures that antibiotics are continuously delivered in controlled amounts from various depot depths in the rubber surface up to the catheter surface – similar to the way soap keeps emerging from a sponge.

Danish entrepreneur anticipates global success

Together with DTI, BioModics has shown that the principle behind the technology works, and with so pervasive a need to combat infections, news of the innovative technology has already spread outside Denmark's borders.

- In Europe, about one million patients annually catch infections from urological catheters while hospitalised. Today's catheter impregnation isn't sufficiently good at delivering the active bactericides slowly and safely, so our technology is sparking a great deal of interest all over Europe, explains CEO Peter Thomsen, who was voted Europe's best entrepreneur two years ago.

- I wouldn't have come this far without the support of DTI. I've always been met with healthy professional curiosity and openness to share knowledge and have also received help with, for example, optimising the business side through networking, funding applications and not least testing and approval of materials, explains Peter Thomsen, who sees a bright future for his company.

The next step is to have the technology approved as medical equipment, a process requiring a range of conclusive testing. Peter Thomsen expects the first product to be on the market within two-three years. The ultimate idea is to find other uses for the technology, for instance in wound healing.

FACTS

The entrepreneurial company BioModics is developing the new technology for urological catheters in a laboratory set up jointly with DTI at its Taastrup premises.

Interest in the technology is high both in Denmark and abroad. With DTI's assistance, BioModics has collected about EUR 0.9 million in research funding under the EU framework programmes for research and innovation of the technologies and related products.

New ingenious coating for plastic tools

DTI has developed a new effective coating for tools used to mould plastic blanks. The new coating, "CrN-SS", enables companies to increase productivity.

The new CrN-SS coating has both a harder and smoother surface than the conventional coatings on the market. The advantage of using CrN-SS is that plastic blanks can be removed from the moulds more rapidly and easily without breaking. The plastic blanks can also be worked to the same high quality under different temperatures. The method provides a more flexible, robust production platform, thus allowing more plastic blanks to be moulded per minute.

The CrN-SS coating is already routinely used in injection-moulding of various plastic products like catheters, insulin pens and toys.

CrN-SS increases productivity
A/S Kenneth Winther Værktøjsfabrik is a case in point, having benefited from applying the new coating on injection moulding screws having wide-ranging applications.

- We cooperated closely with DTI, whose strong, professional consultancy and new, ingenious coatings have enabled us to increase our productivity and achieve major savings, explains CEO Kenneth Winther, and continues: What is more, our end-users have achieved more flexible production and been able to accelerate the process of moulding plastic blanks. We warmly recommend the new coating, as in our experience, it's easier to work with than conventional coatings for injection-moulding tools – not to mention that it also provides better protection from wear and rust.

FACTS

DTI has access to advanced technologies and processes that can produce hard, durable, corrosion-resistant and self-lubricating coatings on production tools and components for the industry.

The coatings can be used:

- to protect tools from wear during, for example, chip removing, cutting, die-cutting, bending and forming
- to minimise bonding and tearing when, for example, stainless steel or light metals are processed
- to solve tapering and tearing problems with plastic moulding tools
- to minimise corrosion problems at places like air outlets in injection moulds
- to minimise the incidence of tearing between stainless steel machine parts, etc.
- to minimise wear and tear of machinery components
- to reduce friction between moving parts
- to eliminate use of lubricants, thus allowing lubrication-free interfaces.

Plastic membrane upgrades biogas to natural gas

Until now, large and relatively expensive facilities have been needed to upgrade biogas to the quality of natural gas. However, DTI has now developed a unique plastic membrane that separates CO_2 from biogas by a simple method. Neither chemicals nor large complicated facilities are required.

The underlying principle is that some plastic materials are able to retain specific gasses while allowing others to pass through. The idea is therefore to find a plastic type that blocks off either methane or CO_2, thus separating the CO_2 content of biogas.

- It's actually quite simple, and the beauty of it is that the process consumes no energy. All it takes is lower gas pressure, which is needed anyway when the gas is released into the natural gas grid, explains DTI Head of Section Jens Christiansen, who heads off the project.

Promising plastic membrane prototype

The original project concluded in 2011. However, an additional allocation of EUR 0.2 million has been earmarked for DTI to develop the technology until the summer of 2013. Totax Plastic A/S is involved as a project partner during this phase.

- For Totax, this is an interesting project which allows us to expand our field of options via a combination of known production techniques, and introduces us to new materials. It's also interesting to participate in developing products that will cover future energy needs, explains CSO and CMO Peter Michael Haugvik of Totax Plastic A/S.

- We'll be looking into how to separate a greater volume of CO_2. Our aim is that the gas will only contain a very low percentage of CO_2. We can probably achieve this goal by combining plastic membranes with tiny ceramic particles, called zeolites, which resemble porous sand. The particles allow CO_2 to penetrate while methane is retained, explains Jens Christiansen. He hopes that the combination of plastic and zeolites can upgrade the gas to a sufficiently high quality.

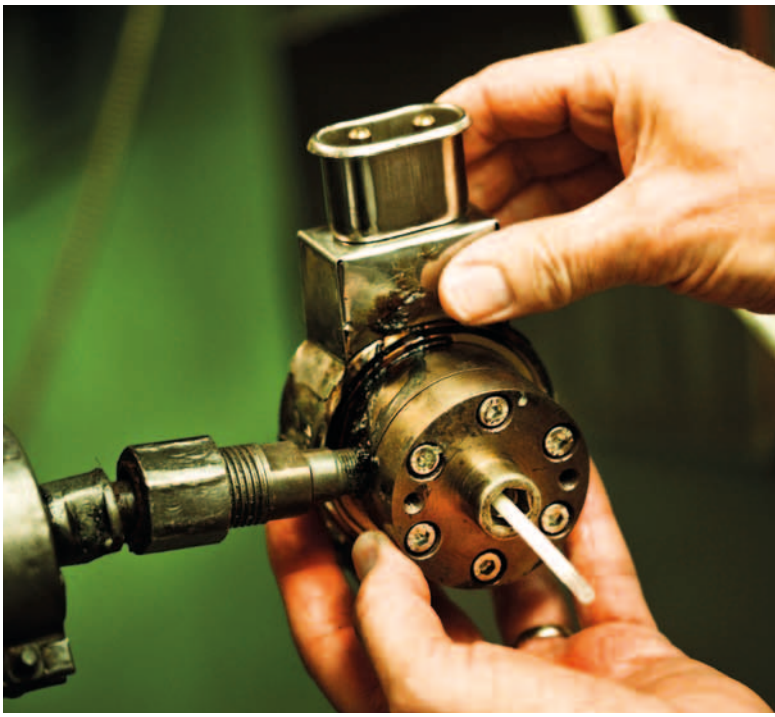
Today, Dong Energy A/S uses conventional scrubber technology to clean biogas, but has responded positively to the new simple method which DTI is working to refine.

- If a membrane solution will reduce operational and investment costs, we'd definitely be interested, says Asger Myken, Project Manager of Dong Energy's new biogas upgrading facility at Fredericia.

As a project partner, the Danish Gas Technology Centre is documenting the suitability of the gas for distribution through the natural gas grid.

FACTS

In work with energy gases like natural gas, biogas, gasification gas or electrolytic gas, it is often relevant to determine the precise composition of the final gas or a gas at an intermediary step in the purification process. DTI offers to analyse gas samples and determine the precise composition of various energy gases.



PRODUCTIVITY AND LOGISTICS

Lars Germann, Director:

Innovation is to be on the look-out for original ways of applying familiar technologies and implementing new technologies in existing or new products.


GETINGE
Olórin
STERIKING

Major benefits to be gained from improving production efficiency

Analysing and restructuring production raise the bottom line – as Danish company K.R. Hospitalsudstyr A/S knows first hand. In cooperation with DTI, the company has doubled its productivity, enabling it to continue developing and producing nursing and hospital beds in Denmark.

In 2008, K.R. Hospitalsudstyr A/S was impelled to find new methods of increasing competitiveness, simplifying and streamlining its production so that jobs would remain in Denmark.

- We had no choice but to have external consultants from DTI review our entire production process. We were convinced that we were doing things right. We were all working at full speed, and everybody chipped in. We were unaware that we wasted so much time, as the review revealed, explains Managing Director Jens Bay of K.R. Hospitalsudstyr A/S.

Now we are competitive

In an initial experiment, the DTI consultants changed several work routines at one assembly line, after which the same number of staff could suddenly assemble sixteen hospital beds in one day against nine before – without having to speed up. Subsequently, the consultants went through all the production facilities at K.R. Hospitalsudstyr A/S inch by inch. Wasted time and bottlenecks were identified in the individual processes. As a result, all the company's production principles were thoroughly restructured.

- We can overcome the competition, because we've achieved a better and more natural flow in our production. It's enabled us to handle more and larger orders more efficiently, explains Jens Bay, continuing: We have, for instance, received a new order worth EUR 13.5 million for the Norwegian market, and we wouldn't have been able to handle that in the past.

Jens Bay does not hesitate to recommend that other production companies ask DTI for assistance to streamline their production: The cooperation worked very smoothly, and you really can't see where to make the changes yourself – it takes a fresh pair of eyes.

K.R. Hospitalsudstyr A/S continues its partnership with DTI – now in relation to a project aimed at developing the "hospital bed of the future".

FACTS

Production companies will be able to clarify their potentials and obtain support in implementing tools and methods aimed at operating their companies more efficiently. Examples of such solutions include:

- optimising and trimming the production and supply chain
- increasing productivity and minimising waste
- preparing flow analyses and layout
- reducing throughput time and improving supply security
- training and educating the company's staff.

New site to create better packaging

Many types of packaging for foods, cleaning products and over-the-counter drugs are difficult or hazardous to open, having been poorly designed from the outset. The new site "www.userfriendlypackaging.com" aims to inspire companies to develop better packaging.

The Tulip Food Company A/S has developed new packaging for ham and other cold cuts. Tulip received help from DTI, which has drawn on four years' research in packaging to publish a "blueprint" for user-friendly packaging for industry on: www.userfriendlypackaging.com.

- If packaging is to become a success, thorough preparatory work is a must. Our guidelines give companies step-by-step instructions to achieve this, explains DTI Senior Consultant Helle Antvorskov, adding that consumers have to be involved in the entire development process – advice that Tulip listened to.

- Competition in the cold-cut market is growing, and we believe that we can use easy-to-use packaging to boost our market position, says Senior Category Developer Bent Dahlgård from Tulip, adding that Tulip will in future incorporate consumer experience of packaging design in the products right from the start, because it's important that consumers do not end up deselecting our products in the shops out of irritation that they are so hard to open.

The time has come for user-friendly packaging

Helle Antvorskov estimates that consumers will have to bear with poor packaging for another few years, even though the industry recognises that the time has come to develop more user-friendly packaging.

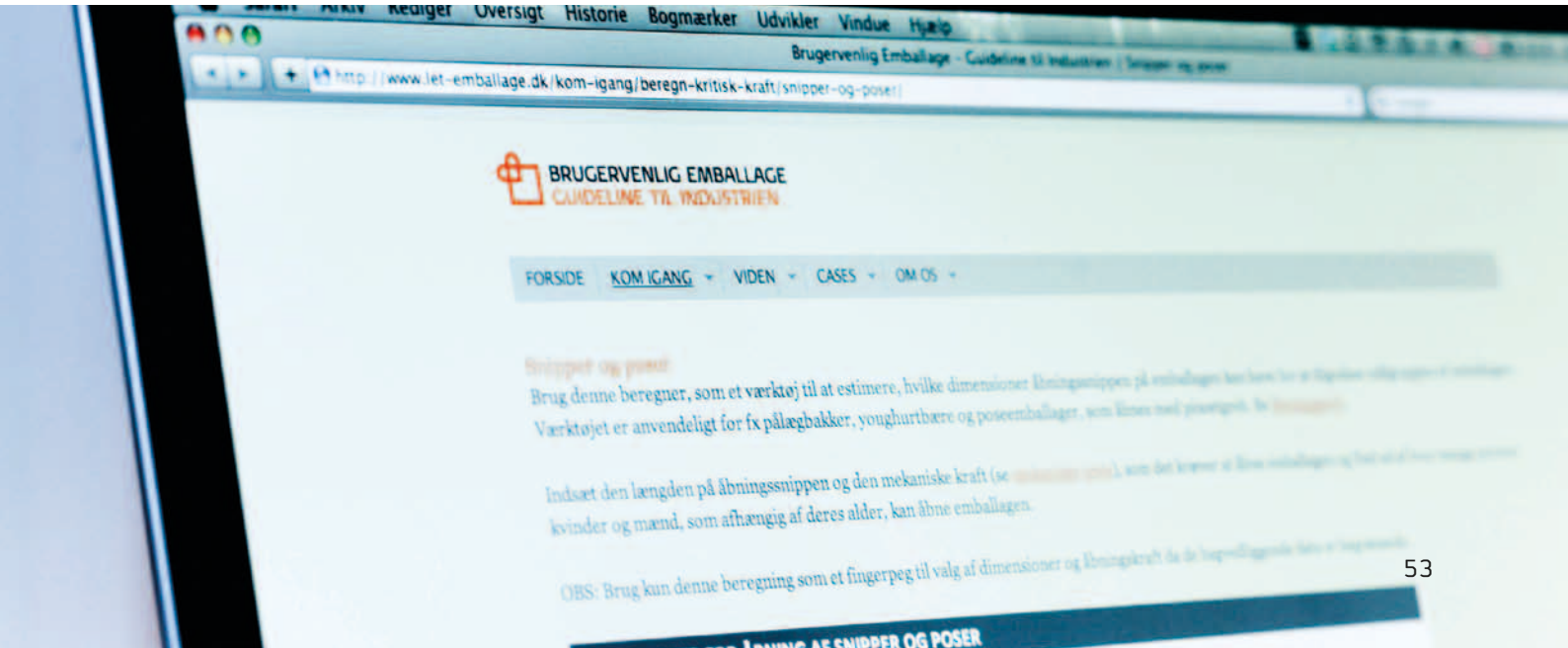
- It's understandable that many companies balk at the idea of making packaging easier to open. They have a great deal of production equipment that needs to be repaid before new investments can be made, explains Helle Antvorskov. In her opinion changes do not necessarily have to be expensive – sometimes it is simply a question of improving graphics or slightly modifying the moulding tool.

The new packaging for cold cuts from Tulip was developed as part of the research project User-driven Guidelines for the Industry: Accessible Packaging for Elderly and Disabled People. DTI joined forces with the Aarhus School of Architecture to realise the project, which was funded by the Danish Business Authority.

FACTS

More than half the population have problems opening packaging at least once a month, and 16% of all consumers deselect products that are difficult to open.

The project User-driven Guidelines for the Industry: Accessible Packaging for Elderly and Disabled People led to the launch of public guidelines intended to inspire the industry to develop better packaging. It is available on: www.userfriendlypackaging.com.



The world's first automatic storage facility for surgical instruments

In the new sterile centre at Gentofte Hospital, staff no longer need to spend a lot of resources on locating the correct instruments in the storage facility and retrieving them for surgery. Since May 2011, robots have taken over the job. DTI had decisive influence on the design, layout and approval of the sterile centre.

Since 2009, DTI has advised and supported Gentofte Hospital in developing and constructing the new automated sterilisation facility. In its daily operation, the hospital surgery planning system supplies data to the sterile centre. A robot then receives all instruments from the storage facility and loads them onto procedure carts. Next, a prepacked cart for each procedure is transferred from the storage facility. The staff check the packing list against the ordered instruments and send the cart to the surgical ward.

- We're completely satisfied with our new automated storage system, which enables us to save resources for more patient-related tasks. At the same time, the robot has taken over much of the hard physical labour connected with shifting the surgery equipment, explains Project Manager Torben Lage Frandsen from Gentofte Hospital, adding that the staff at the sterile centre welcomed the storage system and participated actively in the complex tasks of fine-tuning the system to operate without hitches.

Automated storage facility wins award

The DTI consultants were involved throughout the project course from its ideation, through visualisation of solutions to preparation of facility requirements specifications.

The project has attracted a great deal of attention nationally and internationally, and it won the 2011 DIRA Automation Award – an award bestowed by Danish Robot Network (DIRA).

DTI is currently participating in several projects focused on developing and automating the hospital sector in Denmark.

FACTS

The sterile centre at Gentofte Hospital was supplied by Gibotech A/S. The project was funded by the Danish Public Welfare Technology Foundation.

You can watch the facility in action at: http://www.youtube.com/watch?v=Q4FqIGY20Og (in Danish only).

New innovative technical aid for people with dementia wins the "2011 HITmesse product" award

How do I make coffee? How do I bake my favourite buns to be as light and delicious as always? People with dementia or other cognitive disabilities often find everyday tasks difficult. Now, however, they get help from "BarRefresh", an aid consisting of a smartphone application, a PC program coupled with personal lists and 2D codes.

With the new IT technical aid, BarRefresh, the user or his or her partner enters morning routines into a PC program, which translates the text into easy recipes with related 2D codes. When the user wants to do a specific task, he scans the related 2D code with his smartphone, and the BarRefresh app helps him perform the task step by step. For each task, a 2D code is generated and printed to be posted at relevant places in the home. A code containing instructions for coffee brewing can be posted on the coffee machine, while the code for morning routines like washing and dressing is posted on the bathroom mirror.

Kickstart for company behind aid

The company behind the "2011 HITmesse product" is the small, newly established entrepreneurial company Curaga ApS, which cooperated with the Danish Alzheimer Association during the development of the BarRefresh app. To demonstrate, test and develop the technology, the company subsequently used the special laboratory at DTI which is a so-called "living lab" fitted out as a home for people with dementia.

- The acclaim following the "2011 HITmesse product" serves as a springboard and an opportunity for a newly established company to be profiled, says CEO Jakob Klein Petersen from Curaga ApS and adds: We wouldn't have come this far at this level without DTI's professional input and excellent test facilities.

The jury motivated the award by stating that BarRefresh is useful and user-friendly for people with dementia, ADHD, acquired brain injury or other cognitive challenges – and can also be used by various staff groups. In addition, the technology helps the user to continue living a more normal and private life.

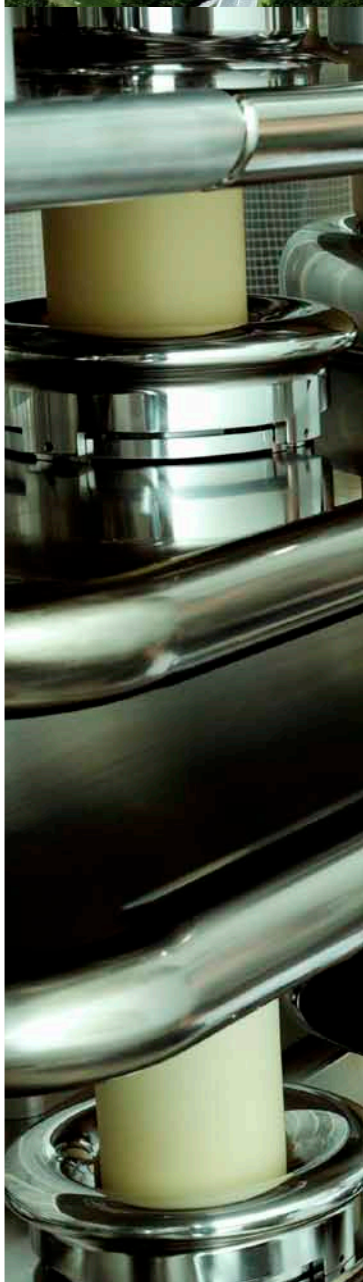
DTI is currently assisting Curaga ApS in applying for funding to expand the technical aid to fields other than dementia.

FACTS

For several years, DTI has made targeted efforts at obtaining, testing and developing welfare technologies. For that purpose, DTI has set up CareLab, which includes a "living lab" to demonstrate, use, test and develop welfare technologies in the correct context and environment.

DANFYSIK A/S

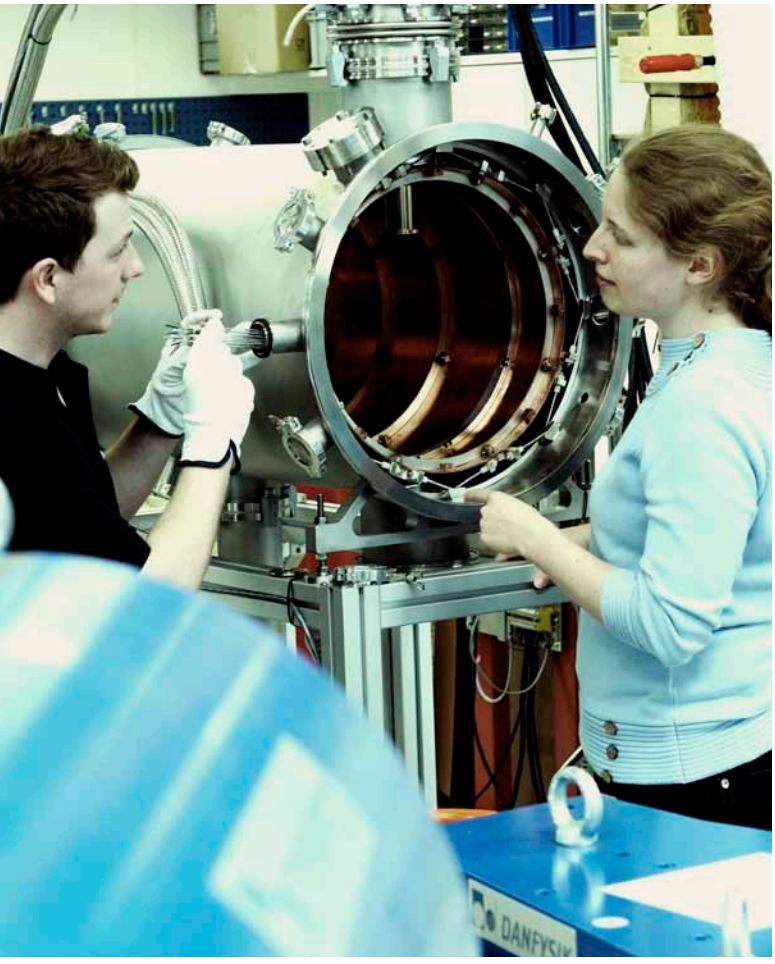
Bjarne Roger Nielsen, Managing Director:
Innovation means being open to the ideas around you and never being satisfied with yesterday's solutions to developing tomorrow's products.



Danfysik A/S is back in top form

In just three years, Danfysik A/S has managed to regain its former stronghold in the global market for accelerator, magnet and power supply technologies. The order book is bulging, and revenue has doubled since 2009.

The market renewed its faith in Danfysik's ability to "deliver" when DTI took over Danfysik in January 2009. Once again, customers in the USA, Germany, Taiwan, India and other places around the world have the confidence to place million-euro orders with Danfysik. The company currently employs 60 employees, about half of which are engineers or physicists.



Prior to the take-over, the company endured a severe round of job cutting followed by the complete divestment of some healthcare activities. The bottom lines in 2007 and 2008 were red with million-euro losses, and only 27 employees remained in 2009 from the total of 180 the year before.

- We're incredibly happy to be able to receive orders again and return as a strong market player. I believe our progress is fuelled by our many years' experience in the industry, the strength of our brand internationally and ultimately our team of talented and enthusiastic employees, explains Managing Director Bjarne Roger Nielsen.

Intensive sales work and a well-established owner generate growth

Bjarne Roger Nielsen believes that the large number of orders are attributable to several factors:

- We've been attending conferences and participating in exhibitions all over the world and met many new and "old" customers. However, it also means a lot that we now have DTI as a reliable and technologically well-founded owner with strong, healthy finances. This creates stability, says Bjarne Roger Nielsen.

In 2011 alone, Danfysik A/S won projects totalling EUR 17.5 million. One of the new orders entails supplying 480 compact magnet systems to a new synchrotron radiation laboratory, MAX IV, for Max-lab at Lund University. Researchers in fields like microbiology, material research and medical science will be using the laboratory to analyse X-rays of complicated nano and micro-structures.

As a result of Danfysik's growth, the company expects to take on 15 new employees before the end of 2012.

FACTS

Danfysik A/S was founded in 1964 in collaboration with physicists at Aarhus University. The company was global from the outset. Over the years, Danfysik A/S has gained a unique position as a global leader in the manufacture of large accelerator systems used in synchrotron radiation sources.

Danfysik A/S supplies technology to fight cancer

Austria is establishing one of the most advanced facilities in Europe for treating cancer with particle therapy – a cutting-edge technology in the field. Danfysik A/S is supplying advanced magnet systems for the particle accelerator, which ensures that cancer tumours are treated with precise, effective radiation that spares healthy tissue and allows patients to live normal lives.

Austria's new facility MedAustron in Wiener Neustadt builds on Danfysik's know-how in the field of 3D modelling of magnetic fields and the time structure of high-intensity pulsating magnetic fields.

- We're proud to be a key technology supplier to this prestigious project in Austria. However, the order came as no surprise as we are world renowned for our unique competencies in developing and designing pulsating high-voltage power supplies and for our broad, in-depth knowledge about magnet technology and high-voltage power electronics. This places us among the few players worldwide that are capable of handling and carrying out these types of demanding projects, says Bjarne Roger Nielsen, Managing Director of Danfysik A/S.

Particle therapy is a gentler treatment

Accelerating particles to sufficiently high energy levels as well as controlling them take a synchrotron accelerator facility the size of a football field. This accelerator technology makes it possible – at an extreme level of energy – to bombard the cells in cancer tumours with light nuclear hydrogen and carbon ions even though the tumours are located deep within the body. The particles are controlled with millimetre precision in all three dimensions – height, width and depth. This works to kill cancer cells effectively while sparing healthy tissue – unlike conventional X-ray-based radiation therapy, which also exposes healthy cells to considerable harmful radiation.

FACTS

In recent years, Danfysik A/S has helped establish several particle therapy facilities in, for example, Germany and Italy. Danfysik A/S is currently working at full capacity to develop and manufacture the demanding pulsating magnet systems to be used in the accelerator at the new Austrian particle therapy facility MedAustron, which will be built and put into commission over the next two years.

REVIEW

In the future, DTI will spend more resources on helping an even larger number of Danish businesses create growth and new jobs through innovation and research. We will therefore step up our investment in new advanced laboratories and testing and development facilities. This is where future technologies are going to be developed and tested before they are put into use by businesses and society.

Søren Stjernqvist, President

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COMMERCIAL REVENUE AND ACADEMICALLY QUALIFIED STAFF PAGE 70

EU PROJECTS PAGE 69

Consolidated Annual Report
This Consolidated Annual Report is an extract of the complete Annual Report of the Danish Technological Institute in pursuance of section 149 of the Danish Financial Statements Act. In the interests of clarity and user-friendliness, the Danish Technological Institute has chosen to publish a Consolidated Annual Report which does not include the financial statements of the Parent Company.

Financial information according to Guidelines for Approved Technological Service in Denmark 2005 has been provided to the Danish Ministry of Science, Innovation and Higher Education.

The complete Annual Report has been reported on by management and the independent auditors as follows:

"**Statement by the Board of Trustees and Executive Board**

The Board of Trustees and the Executive Board have today considered and approved the Annual Report of the Danish Technological Institute (DTI) for 2011.

The Annual Report is presented in conformity with the Danish Financial Statements Act and the adjustments resulting from DTI being an independent institution and an approved technological service institute.

In our opinion, the consolidated financial statements and DTI's financial statements give a true and fair view of the Group's and DTI's assets, liabilities and financial position at 31 December 2011 as well as the results of the Group's and DTI's operations and the Group's cash flows for the financial year ended 31 December 2011.

We also believe that the management's review provides a fair and accurate report on developments in the operations, finances and net profit for the year of the Group and DTI and on the financial position of the Group and DTI.

Taastrup, 20 February 2012

Executive Board

Søren Stjernqvist
President

Board of Trustees

Clas Nylandsted Andersen Chairman	Lars Aagaard Deputy Chairman	Carsten Christiansen
Eva Bak Jacobsen	Gunde Odgaard	Jens Nørgaard Oddershede
Niels Techen	Søren F. Eriksen	Thorkild E. Jensen"

"**To the Danish Technological Institute and users of financial statements**

Independent auditors' report on the consolidated financial statements and the parent company financial statements

We have audited the consolidated financial statements and the parent company financial statements of the Danish Technological Institute for the financial year 1 January – 31 December 2011. The consolidated financial statements and the parent company financial statements comprise accounting policies, income statement, balance sheet and notes for the Group and the Institute and cash flow statement for the Group. The financial statements are prepared in accordance with the Danish Financial Statements Act.

Management's responsibility for the consolidated financial statements and parent company financial statements

Management is responsible for the preparation of consolidated financial statements and parent company financial statements that give a true and fair view in accordance with the Danish Financial Statements Act and for such internal control that Management determines is necessary to enable the preparation of consolidated financial statements and parent company financial statements that are free from material misstatement, whether due to fraud or error.

Auditors' responsibility

Our responsibility is to express an opinion on the consolidated financial statements and the parent company financial statements based on our audit. We conducted our audit in accordance with International Standards on Auditing and additional requirements under Danish audit regulation and generally accepted public auditing standards, cf. the audit instructions of Guidelines for Approved Technological Service in Denmark. This requires that we comply with ethical requirements and plan and perform the audit to obtain reasonable assurance as to whether the consolidated financial statements and the parent company financial statements are free from material misstatement. An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the consolidated financial statements and the parent company financial statements. The procedures selected depend on the auditors' judgement, including the assessment of the risks of material misstatement of the consolidated financial statements and the parent company financial statements, whether due to fraud or error. In making those risk assessments, the auditors consider internal control relevant to the Institute's preparation of consolidated financial statements and the parent company financial statements that give a true and fair view in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the Institute's internal control. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of accounting estimates made by Management, as well as evaluating the overall presentation of the consolidated financial statements and the parent company financial statements.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our opinion.

Our audit has not resulted in any qualification.

Opinion

In our opinion, the consolidated financial statements and the parent company financial statements give a true and fair view of the Group's and Institute's financial position at 31 December 2011 and of the results of the Group's and Institute's operations and the Group's cash flows for the financial year 1 January – 31 December 2011 in accordance with the Danish Financial Statements Act.

Statement on the Management's review

Pursuant to the Danish Financial Statements Act, we have read the Management's review. We have not performed any other procedures in addition to the audit of the financial statements. On this basis, it is our opinion that the information provided in the Management's review is consistent with the financial statements.

Copenhagen, 20 February 2012

KPMG
Statsautoriseret Revisionspartnerselskab

Finn L. Meyer
State Authorised
Public Accountant

Carsten Strunk
State Authorised
Public Accountant "

Review 2011

The Danish Technological Institute (DTI) delivered a satisfactory financial performance for 2011, with net profit of EUR 4.8 million.

In May 2011, DTI sold its Swedish subsidiary, SWEDCERT AB, to a Dutch buyer. The company's business area comprised testing and certification services, and it employed seven people. DTI acquired the company in 2002 with a view to being an active player in the consolidation of the European testing and certification industry. Expectations for the industry's future profitability were unfortunately so high that the business acquisitions were made at prices that turned out unprofitable for DTI. Given the size of the company, it is therefore an advantage that SWEDCERT AB has now become part of a major testing and certification group. DTI realised a profit of EUR 0.4 million on the divestment.

May was also the month when Danfysik A/S relocated to newly refurbished premises in Taastrup with a total floor space in excess of 3,000 square metres. Compared to the former rented premises in Jyllinge, this is a doubling of the floor space, which is necessary to enable the company to execute and deliver its substantial order book.

DTI's focus on EU research programmes yielded massive results in 2011. Under the EU's Seventh Framework Programme, DTI has been approved for participation in 16 new projects at a total budget for DTI of EUR 9.1 million. One of the projects is within robotics and is called "SMErobotics" where DTI is going to present the newest cognitive robotics technologies to 1,000 European companies. The project aims at developing symbiotic interaction mechanisms between people and robots, primarily for industrial assembly processes. Other participants in the project include the German Fraunhofer research organisation and a range of large-scale European robot businesses.

Moreover, funding from other EU development funds, representing an aggregate amount of EUR 1.3 million, has been committed to 10 of DTI's projects.

DTI is engaged in close cooperation with other Danish businesses and institutions on EU research and development projects. In 2011, DTI realised revenue of EUR 2.5 million, whereas its Danish partners announced revenue of EUR 11.5 million.

To strengthen international activities, DTI has set up a subsidiary in Atlanta in the USA, which will initially focus on cooperation with the Georgia Institute of Technology in the field of robotics. The purpose is partly to take home international knowledge, research results and technology on robots for the manufacturing and food industries, health and welfare, partly to build a portfolio of research and development activities in the company, financed by local, regional or national R&D programmes in the USA.

As part of its services targeted at the international oil sector, DTI has set up business in Stavanger, Norway. This step was taken specifically to sell DTI's coating and microbiological services to the Norwegian oil sector.

In September, DTI and Andritz Feed & Biofuel A/S held a topping-out ceremony for a 700-square-metre torrefaction and pelleting plant at DTI's test facility in Sdr. Stenderup south of Kolding in Denmark. The plant is based on patented technologies and is scheduled to go into operation in the summer of 2012.

In 2004, DTI took over the part of the former Biotechnological Institute that operated from Kolding and whose core business was food technology. In response to ever more urgent requirements of investments in new laboratories, coupled with an ambition of closer integration with similar activities in Aarhus, it was decided to close down the Kolding unit and transfer these activities to Aarhus. About EUR 1.1 million was invested in new, state-of-the-art laboratory and office facilities in Aarhus, and the relocation of employees and equipment was completed in December 2011.

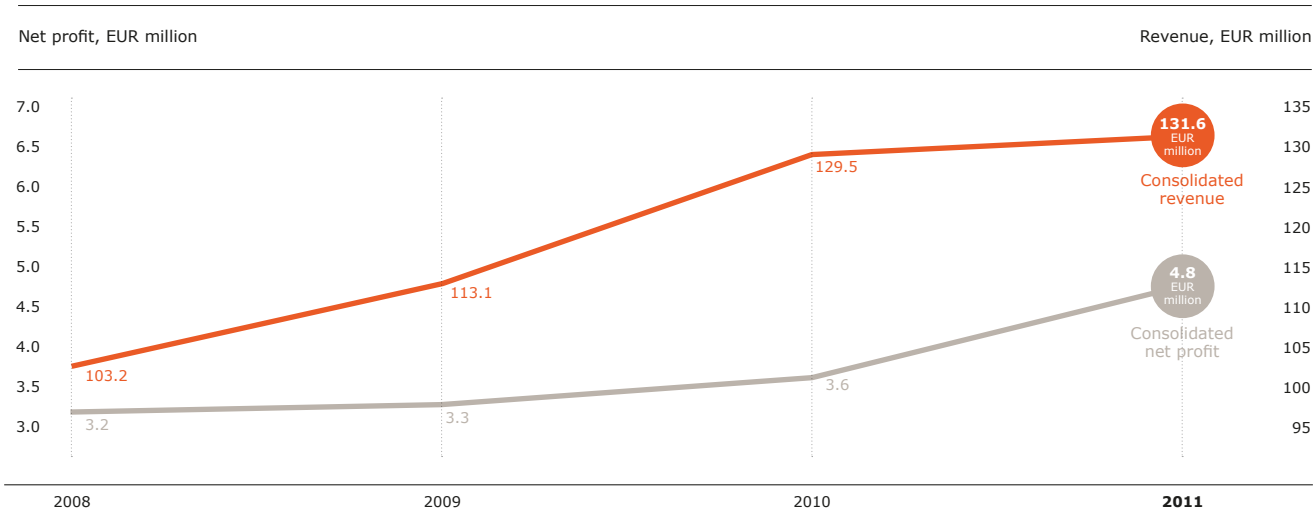
The Danish Agency for Science, Technology and Innovation conducted an evaluation of the nine approved technological service institutes. The evaluation panel had a positive view of DTI's activities, writing in the evaluation report that DTI must be "best in class" and actively be part of the driving force behind the paradigm shift that is vital to the Danish business community. An ambition shared by DTI.

Financial review

In 2011, DTI realised net profit of EUR 4.8 million, up EUR 1.3 million on the budget and EUR 1.2 million on the year before. Total consolidated revenue was EUR 131.6 million, a rise of 1.8% compared to 2010. Commercial revenue fell short of the expectations expressed in the Annual Report


CLOSED

Consolidated revenue and net profit for the period 2008-2011



for 2010. As a result, various initiatives have been launched to strengthen commercial revenue in the years ahead.

DTI's revenue is generated through commercial activities and research and development activities, including performance contract activities.

DTI's commercial revenue was EUR 82.6 million. This was EUR 2.1 million up on 2010, equivalent to a rise of 2.6%.

Research and development revenue as well as performance contract revenue accounted for EUR 49 million, or 37.2% of total revenue, which was in line with 2010.

In 2011, DTI's development activities financed by operations ran into EUR 10 million, up EUR 2.4 million compared to the year before. The knowledge development resulting from these activities is essential to the Danish business sector. This enables DTI, also in the future, to provide top-quality technological services and, in this way, ensure that Danish businesses are capable of maintaining production and creating new jobs in Denmark.

Equity rose by EUR 4.7 million, corresponding to net profit for the year, value adjustments of forward contracts and subsidiaries, to EUR 59.4 million at 31 December 2011.

The balance sheet total was up by EUR 10.5 million to EUR 100.3 million. Cash flow from operating activities amounted to EUR 12.1 million, compared to a negative cash flow of EUR 0.7 million in 2010. The increase can be ascribed to operating profit, combined with a reduction in work in progress from the level of 2010. Cash flow from investing activities totalled EUR 1.9 million (2010: EUR 3 million).

Financial resources remained strong and worked out at EUR 36.3 million at end-2011.

Subsidiaries

Danfysik A/S performed positively in 2011. The company recorded revenue of EUR 10.6 million in 2011, a rise of 29.8% compared to 2010. Profit came to EUR 0.2 million, in line with 2010. Financial performance was negatively affected by the relocation of the company from Jyllinge to Taastrup. The company saw a satisfactory order intake in 2011. Large orders included 60 magnet systems for the MAX-IV project in Lund, Sweden, at a total value of EUR 7.5 million, magnet systems for the particle therapy project MedAustron in Austria at EUR 1.9 million as well as a complete rotating coil multipole magnet measuring system for RRCAT in Indore, India, at EUR 0.8 million. At year-end 2011, Danfysik A/S had an order book of EUR 18 million (2010: EUR 9.7 million).

Contrary to expectations, Technological Institute AB Sweden experienced a decline in revenue from EUR 6.4 million in 2010 to EUR 6.2 million in 2011. The subsidiary did not manage to compensate for the inadequate revenue through cost reductions. On the other hand, incoming orders for delivery in 2012 amounted to EUR 1 million, or EUR 0.2 million up on 2011. This growth, combined with other management measures, has raised expectations for an improved profit for 2012.

The Polish subsidiary, Firma 2000 Sp. z o.o., realised profit of EUR 40 thousand, against EUR 0.2 million in 2010.

Dancert A/S, charged with DTI certification activities, had a less satisfactory year, recording profit of EUR 13 thousand (2010: EUR 40 thousand). Its performance was negatively affected by exceptionally high expenses for certification maintenance.

Associates
Syddansk Teknologisk Innovation A/S, in which DTI holds an interest of 50%, performed according to plan in 2011. In 2011, the Danish Agency for Science, Technology and Innovation conducted an evaluation of the approved innovation environments, in which the company was recognised with an impressive number two ranking out of six in total. The grant for 2012 has been raised in response to the excellent performance, bringing the company's investment volume to EUR 5.4 million in 2012 (2011: EUR 5.3 million).

PhotoSolar A/S, in which DTI holds an interest of 24.5%, was unable to meet the sales targets estimated in the 2011 budget in spite of its energetic sales efforts. The company is therefore facing an additional round of funding, which is due for completion in the first half of 2012.

Special risks
DTI's prime operating risk is linked to the management of ongoing research and development projects and longer-term commercial projects. The risk has been paid due consideration in the financial statements. DTI's solvency and financial resources render DTI sensitive only to a limited extent to changes in the level of interest rates. No material currency risk or material risks relating to individual customers or partners exist.

Outlook for 2012
DTI budgets for revenue in the amount of EUR 141.2 million and net profit of EUR 3.4 million for 2012.

Financial highlights

EUR million	**2011**	2010	2009	2008	2007
KEY FINANCIAL FIGURES					
Revenue	132	129	113	103	101
Operating profit	5	4	3	3	4
Financial income and expenses	0	0	0	1	1
Net profit for the year	**5**	**4**	**3**	**3**	**4**
Balance sheet total	100	90	90	75	71
Equity	**59**	**55**	**51**	**48**	**45**
Cash flow from operating activities	12	-1	8	5	8
Cash flow from investing activities	2	3	10	5	4
Of which for investment in property, plant and equipment	2	3	5	5	4
Total cash flows	**10.2**	**-3.8**	**-1.3**	**0**	**4**
FINANCIAL RATIOS					
Operating profit margin	3.6	2.8	2.9	3.1	3.9
Equity interest (solvency)	59.3	61.0	57.0	63.6	63.9
Development financed by operations	7.6	5.9	5.9	5.3	4.5
Average number of full-time employees	**953**	**974**	**904**	**854**	**795**

At year-end 2011, DTI's R&D order book totalled about EUR 56.4 million (2010: EUR 52.5 million).

Subsidiary performance in 2011 was according to plan, except for Technological Institute AB Sweden, which reported a continued decline in revenue. Incoming orders for 2012 are up on last year, however, and the company is therefore expected to come out of 2012 with a moderate profit.

At Danfysik A/S, the order book provides a basis for forecasting a 50% increase in revenue and improved profit performance in 2012.

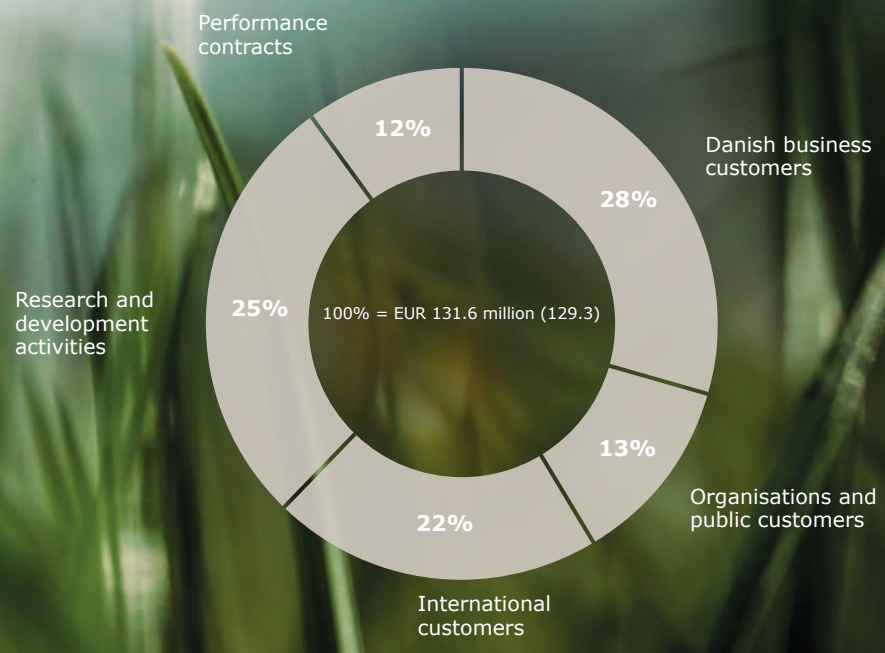
Customers
Customers buying DTI's commercial services are Danish business customers, organisations, public customers and international customers. In 2011, DTI provided solutions to a total of 11,662 customers, 10,664 of whom were Danish customers. Eighty two per cent of the Danish business customers come from the service sector, while 18% come from manufacturing industry. In this context, too, DTI works closely with small and medium-sized enterprises, in particular. Enterprises with fewer than 50 employees accounted for 82% of the customers.

DTI had 999 public customers in 2011. Public customers and organisations procure services such as consultancy and training in the same way as private customers. In addition, DTI serves public customers via various operator projects.

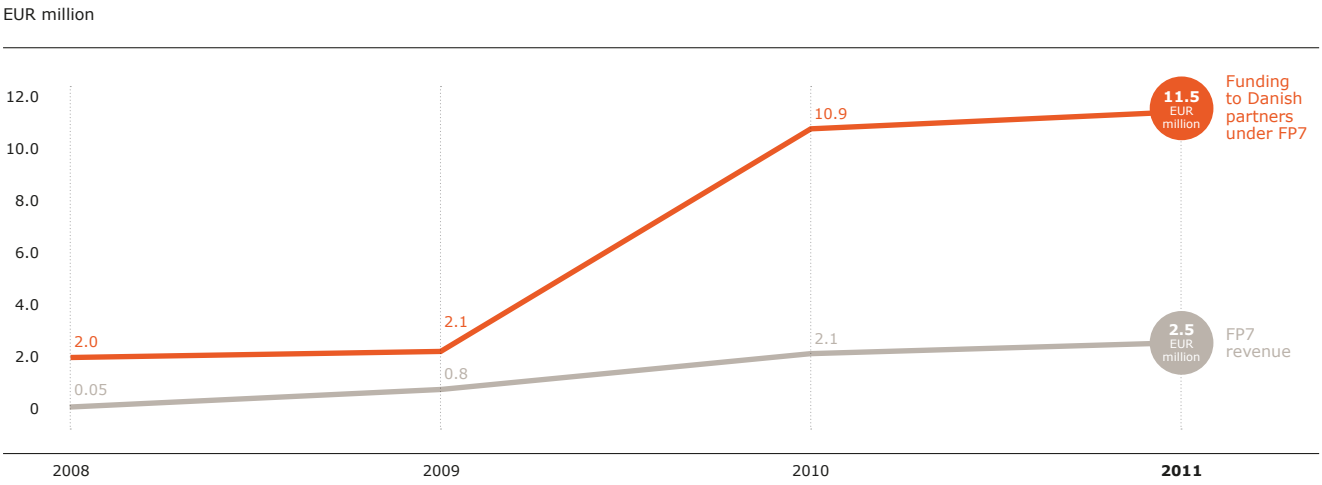
International activities
DTI had 998 international customers, including subsidiary customers in Sweden and Poland. Overall, DTI's international revenue stands at EUR 30.9 million.

Project evaluation
To DTI, the work of transforming new knowledge into daily practice in companies constitutes a central element in its non-profit activities, and it is important to learn how satisfied the customers are with the projects undertaken by DTI. So in recent years, customers have been asked to evaluate DTI's work in the light of a number of parameters such as quality and time of delivery. In 2011, 92.1% of customers said they were satisfied or very satisfied with the work.

Breakdown of revenue 2011



EU projects



New innovation consortia
DTI strengthened its position within research and development again in 2011. During the period under review, DTI assumed the role of project manager of four new innovation consortia granted by the Danish Ministry of Science, Innovation and Higher Education, the total budget for DTI running into EUR 4.2 million.

Performance contract activities
In the year ahead, DTI will conclude its research and development activities under the performance contract entered into for the period 2010-2012 with the Danish Ministry of Science, Innovation and Higher Education. The work at defining the framework of the new performance contract for the period 2013–2015 is already well underway, and strong focus is maintained on innovation and knowledge dispersion to the benefit of the Danish business sector.

New facilities
DTI invested about EUR 1.1 million in new laboratory facilities in Aarhus in connection with the relocation of activities from Kolding to Aarhus. The investment will considerably sharpen DTI's focus on the food technology area where the new laboratories, in concert with our highly qualified employees, provide the platform for an exciting development, for instance in healthy food products.

In the years ahead, the newly established "Green Lab for Energy Efficient Buildings" (GLEEB) will contribute significantly to the improvement, demonstration and market preparation of energy-efficient technologies for the building industry. DTI will achieve this through ongoing development of its testing and documentation facilities to ensure that they match the stricter international requirements, combined with development of technological services in close cooperation with development environments.

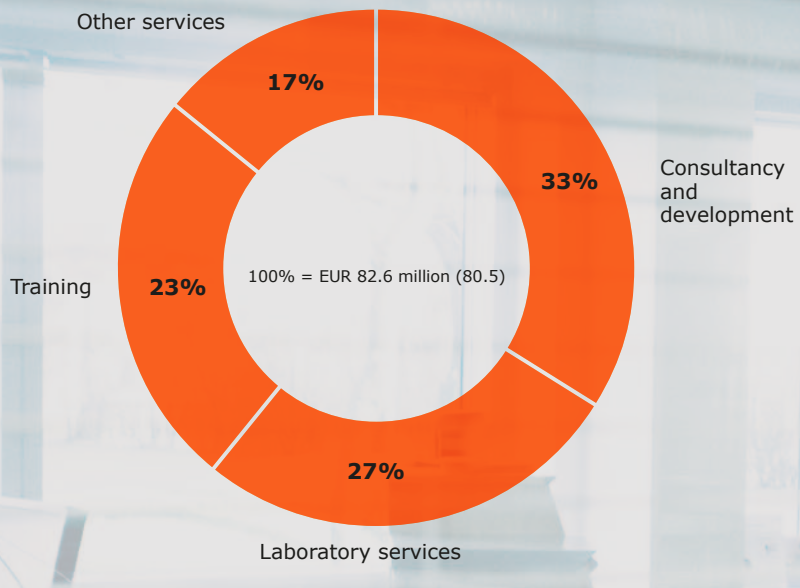
In September, DTI and Andritz Feed & Biofuel A/S held a topping-out ceremony for an integrated torrefaction and pelleting plant at DTI's test facility in Sdr. Stenderup. The plant, making up an essential part of the EUDP project entitled "Torrefaction Development and Demo Plant", is based on patented technologies and is scheduled to go into operation in the summer of 2012. There are expectations in the industry that torrefaction is going to be an integral part of biomass pellet production in the future. The new plant in Sdr. Stenderup offers DTI a frontrunner position on the international scene for torrefaction and pelleting of biomass and waste products.

In Aarhus, DTI established a new 135 square metre spray-coating plant for handling of big-sized components, primarily from the oil sector.

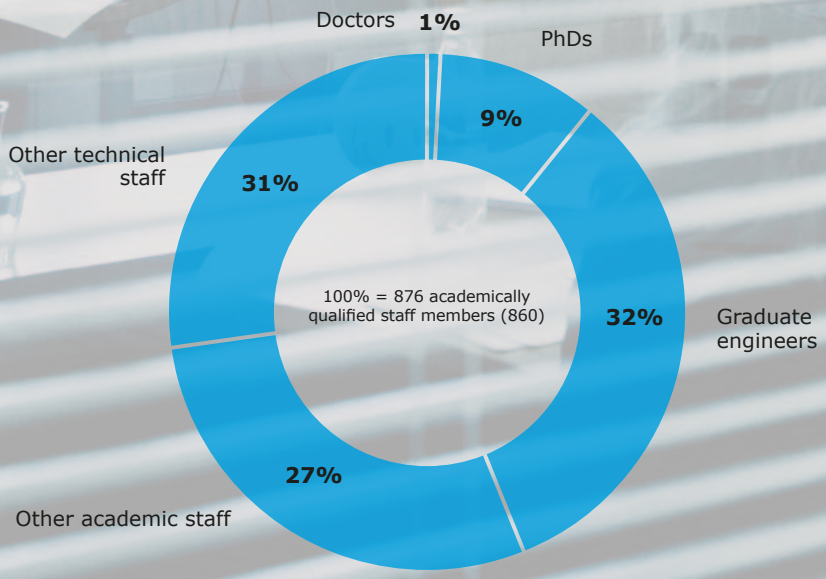
Consultancy services
Consultancy services for private and public companies account for 20.7% of total DTI revenue. Consultancy services are rendered on the basis of the knowledge developed from research and development activities and through long-term cooperation with a large number of businesses. These tasks are essential in terms of giving DTI insight into customer challenges.

Training accounts for 14.6% of total consolidated revenue. In 2011, a total of 16,550 people attended DTI courses, seminars and conferences.

Breakdown of DTI commercial revenue



Academically qualified staff



Operator projects
In February 2011, DTI was awarded the contract for operation of the Secretariat to the Building Damage Insurance Scheme, which used to be run by the Danish Building Defects Fund. Now DTI operates the secretariat, tasked with ensuring that insurance companies observe their duty to carry out one and five-year inspections of buildings that are covered by the building damage insurance scheme. DTI also contributes to quality assurance of insurance companies' assessments of the extent of coverage in connection with building failure.

Just before the start of 2011, DTI won the contract for operation of the Danish Secretariat of House Inspections. The contract runs for a period of four years and is renewable for another two-year period.

Organisation and employees
DTI is continuously improving its human resource capital, partly through new recruitments, partly through an effort to upgrade the skills and competences of its employees. In 2011, DTI invested EUR 0.9 million in supplementary training of employees within a range of disciplines.

In 2011, DTI invested in a new HR system, which will in future provide data entry to DTI's other systems for employee master data.

This investment was made to support structured human resource development and ensure alignment between the overall objectives and the enhancement of the individual employee's skills. The launch of the system has also simplified work routines and optimised data flows, which means, more specifically, that processes that used to be carried out manually have now been automated.

In keeping with DTI's strategy of internationalisation, 103 employees have completed an English language test and participated in an intensive English course at a high level. About 50 employees passed their First Certificate exams. Other activities included a management meeting with focus on commercialisation, where all managers in Denmark and Sweden discussed DTI's possibilities of developing this area still further. Work on commercialisation will be continued in 2012.

In 2011, DTI employed 953 people, 69% of whom were employees with master's degrees. Out of this group, 14% held PhDs or doctorates.

Corporate social responsibility
The majority of DTI workplaces are office workstations. The environmental impact of these comprises consumption of electricity and heat. In addition, DTI has a number of laboratories that make use of different forms of consumables, the use and disposal of which comply with the acts and executive orders in force from time to time in the area, including the rules on health and safety at work.

DTI has described what it understands by corporate social responsibility and the policies and guidelines this entails. Management has decided to publish its statutory report on corporate social responsibility on its website at http://www.dti.dk/csr.

Post-balance sheet events
No material events have occurred after the balance sheet date that will affect the financial statements.

FINANCIAL STATEMENTS

Income statement

EUR million	Note	**2011**	2010	2009
Commercial activities		82.6	80.5	76.6
R&D activities		33.4	34.2	22.2
Performance contracts		15.6	14.6	14.2
Revenue		**131.6**	**129.3**	**113.0**
Project costs, excluding salaries		(27.4)	(25.5)	(21.4)
Other external expenses		(25.1)	(23.0)	(21.0)
Staff costs	1	(69.8)	(70.0)	(64.7)
Depreciation, amortisation and impairment	2	(5.8)	(8.2)	(3.5)
Other operating items		1.7	1.4	1.0
Operating profit		**5.2**	**4.0**	**3.4**
Share of profit after tax of associates		(0.4)	0.1	(0.2)
Financial income	3	0.7	0.3	0.7
Financial expenses		(0.5)	(0.6)	(0.6)
Income from ordinary activities before tax		**5.0**	**3.8**	**3.3**
Tax on income from ordinary activities	4	(0.2)	(0.1)	(0.1)
Net profit for the year before minority interests		**4.8**	**3.7**	**3.2**
Profit of subsidiaries attributtable to minority interests		0.0	(0.1)	0.0
Net profit for the year		**4.8**	**3.6**	**3.2**

It is proposed that net profit for the year be transferred to equity.

Group segment information

	Commercial activities			R&D activities			Performance contracts (R&D)			**Total revenue**		
EUR million	**2011**	2010	2009	**2011**	2010	2009	**2011**	2010	2009	**2011**	2010	2009
Building Technology	11.1	11.7	13.4	1.9	1.8	1.5	2.6	2.0	2.2	15.6	15.5	17.1
DMRI	5.0	3.8	0.9	11.1	11.6	2.7	1.1	1.1	0.0	17.2	16.5	3.6
Energy and Climate	12.2	10.6	10.9	6.0	6.4	5.9	3.1	3.1	3.1	21.3	20.1	19.9
Business Development	6.5	6.5	7.3	1.5	1.4	1.2	3.2	2.5	1.8	11.2	10.4	10.3
Life Science	5.3	5.2	4.7	3.3	3.6	3.5	1.5	1.8	2.4	10.1	10.6	10.6
Materials and Production	7.1	7.7	7.6	6.2	5.6	4.9	2.9	2.7	2.8	16.2	16.0	15.3
Productivity and Logistics	7.0	6.3	6.5	3.2	3.6	2.5	1.2	1.4	1.9	11.4	11.3	10.9
Training	7.2	8.5	9.2	0.0	0.0	0.0	0.0	0.0	0.0	7.2	8.5	9.2
International activities	1.1	1.1	1.2	0.0	0.0	0.0	0.0	0.0	0.0	1.1	1.1	1.2
Total, Institute	**62.5**	**61.4**	**61.7**	**33.2**	**34.0**	**22.2**	**15.6**	**14.6**	**14.2**	**111.3**	**110.0**	**98.1**
Subsidiaries *	20.1	19.1	14.9	0.2	0.2	0.0	0.0	0.0	0.0	20.3	19.3	14.9
Total, Group	**82.6**	**80.5**	**76.6**	**33.4**	**34.2**	**22.2**	**15.6**	**14.6**	**14.2**	**131.6**	**129.3**	**113.0**

* Primarily training activities at Technological Institute AB Sweden, production of particle accelerator equipment at Danfysik A/S, certification activities at Dancert A/S and consulting and training activities at Firma 2000 Sp. z o.o.

Group revenue – geographically

EUR million	**2011**	2010	2009
Denmark	100.8	100.1	90.7
International	30.8	29.2	22.3
Total	**131.6**	**129.3**	**113.0**

Balance sheet, assets

EUR million	Note	2011	2010	2009
Goodwill		0.1	0.2	0.3
Development projects		0.2	0.1	0.0
Patents		0.0	0.5	0.6
Total intangible assets	**5**	**0.3**	**0.8**	**0.9**
Land and buildings		33.8	35.1	37.6
Fixtures and operating equipment		5.4	6.9	9.8
Total property, plant and equipment	**6**	**39.2**	**42.0**	**47.4**
Equipty investments in associates	7	1.0	1.5	1.1
Receivables from associates		0.0	0.0	0.2
Other investments	7	0.3	0.3	0.5
Total investments		**1.3**	**1.8**	**1.8**
Total non-current assets		**40.8**	**44.6**	**50.1**
Inventories	8	2.6	1.3	1.0
Total inventories		**2.6**	**1.3**	**1.0**
Trade receivables		17.9	16.1	14.6
Contract work in progress	9	14.5	14.1	8.0
Deferred tax assets	4	0.1	0.2	0.2
Other receivables		1.5	0.9	0.2
Prepayments		0.7	0.6	0.2
Total receivables		**34.7**	**31.9**	**23.2**
Cash at bank and in hand	**10**	**22.2**	**12.0**	**15.8**
Total current assets		**59.5**	**45.2**	**40.0**
Total assets		**100.3**	**89.8**	**90.1**

Balance sheet, equity and liabilities

EUR million	Note	2011	2010	2009
Total equity	**11**	**59.5**	**54.7**	**51.4**
Minority interests		*0.2*	*0.2*	*0.1*
Deferred tax	4	0.3	0.3	0.2
Guarantees		0.1	0.1	0.1
Total provisions		**0.4**	**0.4**	**0.3**
Mortgage debt		6.3	6.3	6.3
Total long-term liabilities other than provisions	**12**	**6.3**	**6.3**	**6.3**
Contract work in progress	9	11.9	6.0	10.0
Trade payables		5.5	4.8	5.0
Corporation tax		0.0	0.0	0.2
Other payables	13	16.5	17.3	16.8
Accruals		0.0	0.1	0.0
Total current liabilities other than provisions		**33.9**	**28.2**	**32.0**
Total liabilities other than provisions		**40.2**	**34.5**	**38.3**
Total equity and liabilities		**100.3**	**89.8**	**90.1**

Auditors' remuneration, note 14
Charges, guarantee commitments and rental and lease commitments, note 15
Contingent liabilities etc., note 16
Derivative financial instruments, note 17
Related parties, note 18

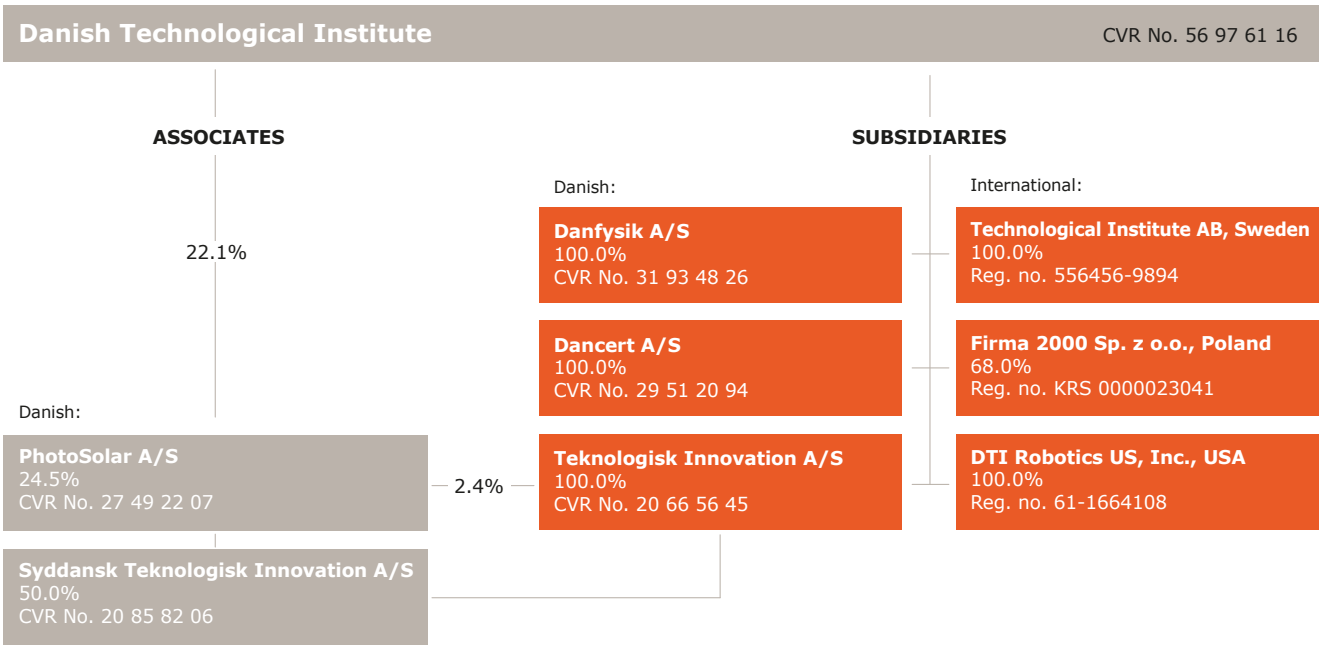
Cash flow statement

EUR million	Note	2011	2010	2009
Operating profit		5.2	4.0	3.4
Adjustment for non-cash items		2.0	4.6	3.3
Depreciation, amortisation and impairment losses	2	5.8	8.2	3.5
Cash flow from operating activities before change in working capital		**13.0**	**16.8**	**10.2**
Change in work in progress and prepayments		6.1	(9.4)	(0.6)
Change in inventories		(1.1)	(0.1)	0.6
Change in trade payables and other short-term debt		(3.0)	(4.7)	(0.8)
Change in receivables		(2.7)	(2.8)	(1.0)
Cash flow from operating activities before tax and financial items		**12.3**	**(0.2)**	**8.4**
Financial deposits and withdrawals, net		(0.2)	(0.2)	0.1
Corporation tax paid		0.0	(0.3)	(0.1)
Cash flow from operating activities		**12.1**	**(0.7)**	**8.4**
Investment in intangible activities	5	(0.1)	(0.1)	0.0
Investment in company acquisition and disposals		0.5	0.0	(4.3)
Investment inproperty, plant and equipment	6	(2.3)	(2.9)	(5.0)
Investment in fixed assets investments	7	0.0	(0.1)	(0.4)
Cash flow from investing activities		**(1.9)**	**(3.0)**	**(9.7)**
Cash flow for the year		**10.2**	**(3.8)**	**(1.3)**
Cash and cash equivalents, 1 January		12.0	15.8	17.1
Cash and cash equivalents, 31 December	**10**	**22.2**	**12.0**	**15.8**

The cash flow statement cannot be directly deducted from the information in the income statement and balance sheet.
Figures without parentheses = increase in liquidity.
Figures in parentheses = reduction in liquidity.

Group chart

AT 31 DECEMBER 2011



EUR million	**2011**	2010	2009
1 STAFF COSTS			
Wages and salaries, etc.	66.9	67.4	62.1
Pension contributions	1.5	1.3	1.3
Other social expenses	1.4	1.3	1.3
Total staff costs	**69.8**	**70.0**	**64.7**

Fees to the Executive Board and the Board of Trustees amounted to EUR 0.5 million (2010: EUR 0.4 million). The number of Group employees averaged 953, against 974 in 2010.

2 DEPRECIATION, AMORTISATION AND IMPAIRMENT LOSSES			
Depreciation and amortisation	3.0	4.3	3.5
Impairment losses - loans	2.8	3.9	0.0
Total depreciation, amortisation and impairment losses	**5.8**	**8.2**	**3.5**

Impairment losses relate to patents, land and buildings, fixtures and operating equipment and other equity investments.

3 FINANCIAL INCOME			
Proceeds from sale of subsidiary	0.4	0.0	0.0
Other financial income	0.3	0.3	0.7
Total financial income	**0.7**	**0.3**	**0.7**

4 TAX			
TAX ON PROFIT FOR THE YEAR			
Current tax for the year	0.0	0.1	0.2
Adjustment of deferred tax	0.2	0.0	(0.1)
Total tax on profits for the year	**0.2**	**0.1**	**0.1**
DEFERRED TAX ASSET			
Deferred tax, 1 January	0.2	0.2	0.1
Adjustment of deferred tax during the year	(0.1)	0.0	0.1
Deferred tax asset, 31 December	**0.1**	**0.2**	**0.2**
THE DEFERRED TAX ASSET CAN BE SPECIFIED AS FOLLOWS:			
Investments (internal profits)	0.1	0.1	0.1
Tax losses	0.0	0.1	0.1
Deferred tax asset, 31 December	**0.1**	**0.2**	**0.2**
DEFERRED TAX			
Deferred tax, 1 January	0.3	0.2	0.0
Acquisition of subsidiary	0.0	0.0	0.2
Adjustment of deferred tax during the year	0.0	0.1	0.0
Deferred tax, 31 December	**0.3**	**0.3**	**0.2**
DEFERRED TAX CAN BE SPECIFIED AS FOLLOWS:			
Intangible assets	0.1	0.1	0.1
Property, plant and equipment	0.1	0.0	0.0
Current assets	0.6	0.4	0.1
Tax loss	(0.5)	(0.2)	0.0
Deferred tax, 31 December	**0.3**	**0.3**	**0.2**

EUR million	**2011**	2010	2009
5 INTANGIBLE ASSETS			
GOODWILL			
Cost, 1 January	2.1	2.1	1.9
Additions	0.0	0.0	0.0
Additions relating to acquisitions	0.0	0.0	0.2
Disposals	0.0	0.0	0.0
Cost, 31 December	**2.1**	**2.1**	**2.1**
Amortisation, 1 January	1.9	1.8	1.8
Amortisation	0.1	0.1	0.0
Amortisation relating to disposals during the year	0.0	0.0	0.0
Amortisation, 31 December	**2.0**	**1.9**	**1.8**
Carrying amount, 31 December	**0.1**	**0.2**	**0.3**
DEVELOPMENT PROJECTS			
Cost, 1 January	0.1	0.0	0.0
Additions	0.1	0.1	0.0
Disposals	0.0	0.0	0.0
Cost, 31 December	**0.2**	**0.1**	**0.0**
Amortisation, 1 January	0.0	0.0	0.0
Amortisation	0.0	0.0	0.0
Amortisation relating to disposals during the year	0.0	0.0	0.0
Amortisation, 31 December	**0.0**	**0.0**	**0.0**
Carrying amount, 31 December	**0.2**	**0.1**	**0.0**
PATENTS			
Cost, 1 January	0.6	0.6	0.0
Additions relating to acquisitions	0.0	0.0	0.6
Disposals	0.0	0.0	0.0
Cost, 31 December	**0.6**	**0.6**	**0.6**
Amortisation and impairment losses, 1 January	0.1	0.0	0.0
Amortisation	0.1	0.1	0.0
Impairment losses	0.5	0.0	0.0
Amortisation and impairment losses, 31 December	**0.7**	**0.1**	**0.0**
Carrying amount, 31 December	**0.0**	**0.5**	**0.6**
Carrying amount of intangible assets, 31 December	**0.3**	**0.8**	**0.9**
6 PROPERTY, PROPERTY, PLANT AND EQUIPMENT			
LAND AND BUILDINGS			
Cost, 1 January	56.6	56.3	50.5
Additions	0.0	0.3	1.7
Additions relating to acquisitions	0.0	0.0	4.1
Disposals	0.0	0.0	0.0
Cost, 31 December	**56.6**	**56.6**	**56.3**
Depreciation and impairment losses, 1 January	21.5	18.7	18.0
Depreciation	0.5	1.0	0.7
Impairment losses	0.8	1.8	0.0
Depreciation relating to disposals during the year	0.0	0.0	0.0
Depreciation and impairment losses, 31 December	**22.8**	**21.5**	**18.7**
Carrying amount, 31 December	**33.8**	**35.1**	**37.6**
Public cash value, 1 January	**97.2**	**109.6**	**108.7**
FIXTURES AND OPERATING EQUIPMENT			
Cost, 1 January	33.9	31.6	29.3
Translation adjustment	0.0	0.2	0.0
Additions	2.3	2.9	3.4
Additions relating to acquisitions	0.0	0.0	0.7
Project-financed	(0.1)	(0.4)	(0.1)
Additions, own development projects	0.0	0.2	0.1
Disposals	0.0	(0.6)	(1.8)
Cost, 31 December	**36.1**	**33.9**	**31.6**
Depreciation and impairment losses, 1 January	27.0	21.8	21.0
Translation adjustment	0.0	0.2	0.0
Depreciation	2.2	3.1	2.5
Impairment losses	1.5	2.1	0.0
Depreciation and impairment losses relating to disposals during the year	0.0	(0.2)	(1.7)
Depreciation and impairment losses, 31 December	**30.7**	**27.0**	**21.8**
Carrying amount, 31 December	**5.4**	**6.9**	**9.8**
of which value of assets leased under finance leases	0.0	0.0	0.0

EUR million	**2011**	2010	2009
7 INVESTMENTS			
Investment in and value adjustment of securities and equity investments can be specified as follows:			
ASSOCIATES			
Balance, 1 January	2.1	1.6	0.5
Additions during the year	0.0	0.5	1.1
Disposals during the year	0.0	0.0	0.0
Balance, 31 December	**2.1**	**2.1**	**1.6**
Value adjustment, 1 January	(0.6)	(0.5)	0.0
Translation adjustment	0.0	0.2	0.1
Share of profit or loss after tax for the year	0.1	(0.4)	(0.3)
Value adjustment relating to disposals	0.0	0.0	0.0
Impairment losses	(0.5)	0.1	(0.3)
Value adjustment, 31 December	**(1.1)**	**(0.6)**	**(0.5)**
Carrying amount, 31 December	**1.0**	**1.5**	**1.1**
OTHER INVESTMENTS			
Balance, 1 January	0.7	0.9	1.1
Additions during the year	0.0	0.0	0.1
Disposals during the year	(0.1)	(0.2)	(0.3)
Balance, 31 December	**0.6**	**0.7**	**0.9**
Value adjustment, 1 January	(0.4)	(0.4)	(0.3)
Translation adjustment	0.0	0.0	0.0
Share of profit or loss after tax for the year	0.0	0.0	0.0
Impairment losses	0.1	(0.1)	(0.2)
Impairment losses relating to disposals	0.0	0.1	0.1
Value adjustment, 31 December	**(0.3)**	**(0.4)**	**(0.4)**
Carrying amount, 31 December	**0.3**	**0.3**	**0.5**
8 INVENTORIES			
Raw materials and consumables	2.2	2.0	1.5
Work in progress	1.0	0.1	0.2
Manufactured goods and goods for resale	0.0	0.0	0.0
Prepayments, inventories	(0.6)	(0.8)	(0.7)
Inventories, 31 December	**2.6**	**1.3**	**1.0**
Of which the carrying amount of inventories recognised at net realisation value is	0.0	0.1	0.2
9 CONTRACT WORK IN PROGRESS			
Contract work in progress	63.8	40.5	48.8
Invoicing on account and prepayments	(61.2)	(32.4)	(50.8)
Work in progress, net	**2.6**	**8.1**	**(2.0)**
Recognised as follows:			
Contract work in progress	14.5	14.1	8.0
Contract work in progress (liabilities)	(11.9)	(6.0)	(10.0)
Work in progress, net	**2.6**	**8.1**	**(2.0)**
Work in progress is determined at selling price			
10 CASH			
Free funds	21.0	9.5	11.6
Tied-up funds	1.2	2.5	4.2
Total cash	**22.2**	**12.0**	**15.8**
11 EQUITY			
Equity, 1 January	54.7	45.7	43.5
Change in accounting policies	0.0	5.7	4.4
Adjusted equity, 1 January	**54.7**	**51.4**	**47.9**
Translation adjustment of financial instruments	(0.1)	(0.3)	0.1
Translation adjustment of subsidiary	0.1	0.0	0.2
Net profit for the year	4.8	3.6	3.2
Equity, 31 December	**59.5**	**54.7**	**51.4**

EUR million	**2011**	2010	2009

12 LONG-TERM LIABILITIES OTHER THAN PROVISIONS (due in five years or later)

Mortgage debt	6.3	6.3	6.3
Total long-term liabilities other than provisions	**6.3**	**6.3**	**6.3**

13 OTHER PAYABLES

Holiday pay obligation	10.0	9.8	9.9
Other liabilities	2.0	1.5	0.4
Tax payable	0.1	0.0	2.1
VAT payable	0.0	0.9	0.8
Other items payable	4.3	4.8	3.4
Miscellaneous deposits	0.1	0.3	0.2
Total other payables	**16.5**	**17.3**	**16.8**

14 REMUNERATION OF AUDITORS ELECTED BY THE ANNUAL GENERAL MEETING

Statutory audit	0.1	0.1	0.1
Assurance statements	0.1	0.1	0.1
Tax consultancy	0.0	0.1	0.0
Total remuneration of KPMG	**0.2**	**0.3**	**0.2**

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CHARGES			
As security for bank debt (owner's mortgages and indemnification letter on DTI properties), nom.	0.0	0.0	0.0
As security for mortgage debt (owner's mortgages and indemnification letter on DTI properties), nom.	6.3	6.3	6.3
GUARANTEE COMMITMENTS			
As security for payments received on account	4.5	4.7	5.4
RENTAL AND LEASE COMMITMENTS			
RENTAL COMMITMENTS			
Commitment, next five years	3.0	3.3	0.7
Commitment, coming year	1.2	1.2	0.7
OPERATING LEASES			
Commitment, next five years	0.1	0.1	0.1
Commitment, coming year	0.1	0.1	0.1
FINANCE LEASES			
Commitment, next five years (incl. interest)	0.0	0.0	0.0
Commitment, coming year	0.0	0.0	0.0

16 CONTINGENT LIABILITIES ETC.

The Group and DTI are parties to a few disputes, the outcome of which is not expected to influence the financial position.
The Group and DTI participate in projects that under certain circumstances may lead to a commitment to repay the grants received.
The Group and DTI have issued statements on financial support to subsidiaries for the purpose of ensuring ongoing business for the next 12 months.

17 DERIVATIVE FINANCIAL INSTRUMENTS

As part of its hedging of individual foreign currency contracts, the Group uses forward exchange contracts.
The signed contracts can be specified as follows:

EUR million	Period	Contract value			Profit and/or loss recognised in equity		
		2011	2010	2009	2011	2010	2009
Group Total	**0-12 months**	**6.4**	**4.1**	**5.3**	**(0.6)**	**(0.4)**	**(0.1)**

Forward exchange contracts have been signed for CAD, GBP, SEK and USD.

18 RELATED PARTIES

The Group's related parties, with significant influence, comprise members of the Board of Trustees and Executive Board as well as subsidiaries and associates.
The Group has no transactions with related parties apart from usual trade with subsidiaries and associates.
Transactions are on an arm's length basis.

GENERAL

The Annual Report of the Danish Technological Institute (DTI) for 2011 is presented in conformity with the provisions of the Danish Financial Statements Act governing class C companies (large) and the adjustments resulting from DTI being an independent institution and an approved technological service institute.

The consolidated financial statements and the Parent Company's financial statements have been drawn up on the basis of accounting policies consistent with those applied last year.

Recognition and measurement in general
Assets are recognised in the balance sheet when it is probable that future economic benefits will flow to the company and the value of the asset can be reliably measured.

Liabilities are recognised in the balance sheet when it is probable that future economic benefits will flow from the company and the value of the liability can be reliably measured.

At the time of initial recognition, assets and liabilities are measured at cost. Subsequent to initial recognition, assets and liabilities are measured as described for each individual accounting item below.

For recognition and measurement purposes, due consideration is given to gains, losses and risks arising before the Annual Report is prepared and proving and disproving matters arising on or before the balance sheet date.

Income is recognised in the income statement as earned, including value adjustments of financial assets and liabilities measured at fair value or amortised cost. Moreover, expenses incurred to generate earnings for the year are recognised, including depreciation, amortisation, impairment losses and provisions as well as reversals resulting from changed accounting estimates of amounts that used to be recognised in the income statement.

CONSOLIDATED FINANCIAL STATEMENTS

The consolidated financial statements comprise the Parent Company, DTI and subsidiaries in which DTI directly or indirectly holds more than 50% of the voting rights or, in any other way, exercises control. Undertakings in which the Group holds between 20% and 50% of the voting rights and exercises a significant, yet no controlling interest, are considered associates, see group chart.

Intercompany income and expenses, shareholdings, balances and dividends as well as realised and unrealised gains and losses on transactions between consolidated companies are eliminated on consolidation.

Equity investments in subsidiaries are eliminated at the proportionate share of the subsidiaries' fair value of net assets and liabilities at the date of acquisition.

Newly acquired or newly established companies are recognised in the consolidated financial statements from the date of acquisition or establishment. Divested or liquidated companies are recognised in the consolidated income statement up to the date of divestment or liquidation. Comparative figures are not restated for newly acquired, divested or liquidated companies.

In the event of company acquisitions, the acquisition accounting method is used, according to which the identifiable assets and liabilities of the newly acquired companies are measured at fair value at the date of acquisition. Provisions are recognised to cover the cost of decided and published plans to restructure the acquired company in connection with the acquisition. Deferred tax is recognised of the reassessments made.

Positive differences (goodwill) between the cost and fair value of acquired identifiable assets and liabilities are recognised as intangible assets and amortised systematically in the income statement on the basis of the estimated useful life of the asset not exceeding five years.

Negative differences (negative goodwill), reflecting an expected unfavourable development of the companies in question, are recognised in the balance sheet on an accruals basis and recognised in the income statement in parallel with the realisation of the unfavourable development. An amount of negative goodwill not related to an expected unfavourable development is recognised in the balance sheet, equalling the fair value of non-monetary assets, which is subsequently recognised in the income statement over the average life of such non-monetary assets.

Goodwill and negative goodwill from acquired companies are adjustable until the end of the year following the acquisition. Any profit or loss on the divestment of subsidiaries and associates is determined as the difference between the selling or liquidation price and the net asset value at the date of divestment, including unamortised goodwill, as well as the expected cost of divestment or liquidation.

Minority interests
The items of subsidiaries are fully recognised in the consolidated financial statements. Minority interests' proportionate share of the profits or losses and equity of subsidiaries are determined on an annual basis and recognised as separate items in the income statement and balance sheet.

Foreign currency translation
On initial recognition, transactions in foreign currencies are translated at the rates of exchange prevailing at the date of transaction. Exchange differences arising between the exchange rates prevailing at the date of transaction and date of payment are recognised in the income statement as items under financial income and expenses, net.

Receivables, payables and other monetary items in foreign currencies are translated using the exchange rates prevailing at the balance sheet date. The difference between the exchange rate prevailing at the balance sheet date and the exchange rate prevailing at the date when the amount receivable or payable originated or was recognised in the latest annual report is recognised in the income statement under financial income and expenses.

Translation adjustments of intercompany balances with independent foreign subsidiaries that are considered a part of the total investment in the subsidiary are recognised directly in equity. Exchange gains and losses on loans and derivative financial instruments used for hedging foreign subsidiaries are also recognised directly in equity.

The income statement of foreign subsidiaries is translated using an average exchange rate, and balance sheet items are translated using the exchange rates prevailing at the balance sheet date. Exchange differences arising from the translation of the equity of foreign subsidiaries at the beginning of the year at the exchange rates prevailing at the balance sheet date and from the translation of the income statements based on average exchange rates at the exchange rates prevailing at the balance sheet date are recognised directly in equity.

Derivative financial instruments
Derivative financial instruments are initially recognised in the balance sheet at cost and subsequently measured at fair value. Positive and negative fair values of derivative financial instruments are included in other receivables and other payables, respectively.

Changes in the fair value of derivative financial instruments classified as and qualifying for recognition as an instrument used for hedging the fair value of a recognised asset or liability are recognised in the income statement together with changes in the fair value of the hedged asset or liability.

Changes in the fair value of derivative financial instruments classified as and qualifying for recognition as an instrument used for hedging future assets and liabilities are recognised in other receivables or other payables and in equity. If the future transaction results in the recognition of assets or liabilities, amounts previously recognised in equity are transferred to the cost of the asset or liability. If the future transaction results in income or costs, amounts recognised in equity are transferred to the

income statement for the period during which the hedged item affects the income statement.

In regard to derivative financial instruments not qualifying for hedge accounting treatment, changes in fair value are recognised in the income statement when they occur.

INCOME STATEMENT

Revenue
The method of revenue recognition is the completed contract method according to which income is recognised in the income statement as invoiced.

The revenue of DTI falls into three categories: Commercial activities, research and development activities and performance contract activities. Commercial activities include projects undertaken on behalf of private and public customers with the customer being the owner of the rights to the results of the project. Research and development activities are undertaken on behalf of Danish and foreign licensors. The results of these projects will become publicly available through the licensors. Performance contract activities comprise a number of projects undertaken on behalf of the Danish Council for Technology and Innovation, the general objective being to allow small and medium-sized enterprises to benefit from new knowledge and new technologies in a smooth and efficient manner.

Major and longer-term contract work in progress is recognised under the percentage of completion method, meaning that the profit on any services sold is recognised in the income statement as the work is performed.

Project costs
Project costs comprise costs incurred during the year, excluding salaries, which are directly attributable to the individual projects.

Research and development
Research and development costs and agreed development costs of completing project agreements entered into, completed without remuneration, are recognised in the income statement under project costs and staff costs, depending on their nature.

Other external expenses
Other external expenses comprise expenses of distribution, sale, advertising, administration, premises, bad debts, operating leases, etc.

Other operating items
Other operating items comprise items secondary to the principal activities of the company, including gains and losses on the sale of non-current assets.

Income from equity investments in subsidiaries and associates
The proportionate share of profit/loss after tax of the individual subsidiaries is recognised in the income statement of the Parent Company after full elimination of intercompany gains/losses. The proportionate share of the profit/loss after tax of associates is recognised in the income statement of both the Parent Company and the Group after elimination of the proportionate share of intercompany gains/losses.

Financial income and expenses
Financial income and expenses comprise interest, exchange gains and losses on securities, liabilities and transactions in foreign currencies as well as reimbursements under the on-account tax scheme, etc.

Tax on profit for the year
Being an Approved Technological Service Institute, DTI is exempt from liability to pay tax.

Danish subsidiaries liable to pay tax are subject to the Danish rules on compulsory joint taxation. Subsidiaries are included in the joint taxation scheme as from the time when they are included in the consolidated financial statements until the time when they are no longer consolidated.

Current Danish corporation tax is allocated through payment of tax contributions between the jointly taxed companies in proportion to their taxable incomes. In this connection, companies suffering a tax loss receive tax contributions from companies having been able to use these losses to reduce their own tax profits.

Tax for the year, which comprises current tax and changes in deferred tax, is recognised in the income statement with the part attributable to profit for the year and directly in equity with the part attributable to equity items.

BALANCE SHEET

Intangible assets
Goodwill
Goodwill is amortised over the estimated useful life, which is determined on the basis of management's experience within the individual business areas. Goodwill is amortised on a straight-line basis over a period of five years. The carrying amount of goodwill is continuously assessed and written down to recoverable amount in the income statement provided that the carrying amount exceeds the expected future net income from the company or activity to which the goodwill relates.

Development costs
Development costs comprise costs, wages and salaries and amortisation that are directly and indirectly attributable to DTI's development projects.

Development projects that are clearly defined and identifiable, and where the capacity utilisation rate, sufficient resources and a potential future market or development prospects for the company can be established, and where the intention is to produce, market or use the project, are recognised as intangible fixed assets if the cost can be determined reliably, and there is adequate certainty that future earnings will cover selling costs and administrative expenses, etc. as well as development costs. Other development costs are recognised in the income statement as incurred.

Development costs recognised in the balance sheet are measured at cost less accumulated amortisation and impairment losses.

On completion of development work, development costs are amortised on a straight-line basis over the estimated useful life of the asset. The amortisation period is normally five years.

Patents and licences
Patents and licences are measured at cost less accumulated amortisation. Patents are amortised on a straight-line basis over the remaining patent period, and licences are amortised over the contract period, not exceeding five years. Any profit or loss on the disposal of patents and licences is determined as the difference between selling costs and the carrying amount at the date of disposal. Profit or loss is recognised in the income statement under depreciation, amortisation and impairment losses.

Property, plant and equipment
Land and buildings, plant and machinery as well as other fixtures and fittings, tools and equipment are measured at cost less accumulated depreciation and impairment losses. Land is not depreciated.

Cost comprises the acquisition cost and costs directly attributable to the acquisition up to the date when the asset is available for use. Interest is not included in cost.

Property, plant and equipment are depreciated on a straight-line basis over their estimated useful lives as follows: Buildings 50 years, machinery, equipment, etc. 5 years, and computer equipment 3 years.

Property, plant and equipment are written down to the lower of recoverable amount or carrying amount. Impairment tests are conducted annually in respect of each individual asset or group of assets. Depreciation is recognised in the income statement under depreciation, amortisation and impairment losses.

Any profit or loss on the disposal of property, plant and equipment is determined as the difference between the selling price less selling costs and the carrying amount at the date of disposal. Profit or loss is recognised in the income statement under depreciation, amortisation and impairment losses.

Leases
Leases for non-current assets in respect of which DTI has all significant risks and benefits related to ownership (finance leases) are measured at the time of initial recognition in the balance sheet at the lower of fair value and net present value of future lease payments. For the calculation of net present value, the internal rate of interest specified in a particular lease, or DTI's alternative lending rate, is used

as a discount rate. Assets under finance leases are subsequently treated like DTI's other non-current assets.

Any capitalised remaining lease commitment is recognised in the balance sheet as a liability, and the interest portion of the lease payment is recognised in the income statement over the term of the lease.

All other leases are operating leases. Payments under operating and other leases are recognised in the income statement over the term of the lease. DTI's total liability under operating leases is recorded under contingent liabilities, etc.

Equity investments in subsidiaries and associates
Equity investments in subsidiaries and associates are measured according to the equity method.

Equity investments in subsidiaries and associates are measured at the proportionate share of the equity value of the subsidiaries and associates, determined according to DTI's accounting policies plus or less any unrealised intercompany profits or losses and plus or less the remaining value of positive or negative goodwill.

Equity investments in subsidiaries and associates with a negative equity value are measured at EUR 0.00 and any receivable from these associates is written down to the extent the receivable is deemed irrevocable. To the extent that the Parent Company has a legal or constructive obligation to cover a negative balance, which exceeds the receivable, the remainder is recognised under provisions.

Net revaluation of equity investments in subsidiaries and associates is taken to the reserve for net revaluation according to the equity method under equity to the extent that the carrying amount exceeds cost.

Impairment of assets
The carrying amount of both intangible assets and property, plant and equipment is tested on an annual basis for indications of impairment in addition to what is expressed through amortisation and depreciation.

In case of indication of impairment, an impairment test is carried out for each individual asset and group of assets, respectively. Assets are written down to the lower of recoverable amount or carrying amount. The higher value of net selling price and value in use is used as recoverable amount. The value in use is determined as the net present value of expected net income from the use of the asset or group of assets.

Inventories
Inventories are measured at cost in accordance with the FIFO method. Where net realisable value is lower than cost, inventories are written down to this lower value.

Goods for resale and raw materials and consumables are measured at cost, comprising cost with the addition of delivery costs.

The net realisable value of inventories is calculated as selling price less completion costs and costs involved in executing the sale and is determined with due regard to marketability, obsolescence and movements in expected selling price.

Other securities, loans and equity investments
Other securities, loans and equity investments are measured at cost. In case of indication of impairment, the assets are written down.

Receivables
Receivables are measured at amortised cost. Following individual assessment, receivables are written down for uncollectibles.

Contract work in progress
Contract work in progress regarding major and longer-term projects is measured at the selling price of the work performed. The selling price is measured on the basis of the degree of completion at the balance sheet date and total expected income from the individual contract for work in progress.

If the selling price of a contract cannot be determined reliably, it is measured at the lower of costs incurred or net realisable value.

The individual contract for work in progress is recognised in the balance sheet under receivables or payables. Net assets are made up of the sum of construction contracts where the selling price of the work performed exceeds invoicing on account.

Prepayments
Prepayments comprise costs incurred relating to subsequent financial years and relating to the subsidiaries of the Group.

Corporation tax and deferred tax
Current tax payable and receivable which relates to the subsidiaries of the Group is recognised in the balance sheet as tax computed on taxable income for the year, adjusted for tax on taxable incomes for prior years and for taxes paid on account.

Deferred taxes are measured according to the balance sheet liability method on all temporary differences between the carrying amount and tax base of assets and liabilities.

Deferred tax assets, including the tax base of tax loss carryforwards, are recognised in the balance sheet at their estimated realisable value.

Provisions
Provisions comprise expected expenses for guarantee commitments. Guarantee commitments comprise commitments within the guarantee period of 1–5 years.

Provisions are measured at net realisable value.

Liabilities other than provisions
Mortgage debt is recognised at residual value. Other payables are measured at net realisable value.

Deferred income
Deferred income comprises received payments relating to income in subsequent years.

Cash flow statement
The cash flow statement shows DTI's cash flows for the year distributed on operating, investing and financing activities, changes in cash and cash equivalents for the year as well as the Group's cash and cash equivalents at the beginning and end of the financial year.

The cash flow effect of business acquisitions and divestments is shown separately under cash flows from investing activities. Cash flows from acquired companies are recognised in the cash flow statement from the date of acquisition, and cash flows from divested companies are recognised up to the date of divestment.

Cash flow from operating activities
Cash flows from operating activities are determined as DTI's share of profit adjusted for non-cash operating items, changes in working capital and corporation tax paid.

Cash flow from investing activities
Cash flows from investing activities comprise payments in connection with the acquisition and sale of companies and activities and the acquisition and sale of intangible assets, property, plant and equipment and investments.

Cash flow from financing activities
Cash flows from financing activities comprise changes in the size or composition of DTI's capital and related costs as well as borrowing transactions and repayment of interest-bearing debt.

Cash and cash equivalents
Cash and cash equivalents comprise cash as well as short-term securities with a term of less than three months that are readily convertible into cash and subject to insignificant risks of changes in value.

SEGMENT INFORMATION
Information about revenue is provided about primary Group segments. The segment information is based on the Group's accounting policies, risks and internal financial management. The primary segments comprise the Group's activities (divisions and companies).

Financial ratios
The financial ratios set out in the table of financial highlights are computed as follows:

Profit margin:
$$\frac{\text{Profit} \times 100}{\text{Revenue}}$$

Equity interest:
$$\frac{\text{Total equity} \times 100}{\text{Total equity and liability}}$$

Development financed by operations:
$$\frac{\text{Self-financed development by operations} \times 100}{\text{Revenue}}$$

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