

STRATEGY  
2013 TO 2015

# IT'S ALL ABOUT INNOVATION



DANISH  
TECHNOLOGICAL  
INSTITUTE

# Danish Technological Institute

## It's all about innovation

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Denmark's small, open economy is dependent upon trade in an era when the nature and sources of competitiveness are changing dramatically. Today's economy provides unlimited opportunities to engage in high-value innovation, thanks to advances in a wide range of technologies in fields as diverse as nanotechnology, materials science, robotics and sensors.

Innovation has never been so important for future growth and society at large. In an intensely competitive world with shorter and shorter lifecycles, it is imperative that we speed up the process of value creation, and do so in ways that customers want.

Innovation is growing in complexity. While Danish firms are recognized around the world for quickly adopting and diffusing technological innovations, they can no longer take it for granted that local markets will have the most sophisticated customers or the most advanced technological capabilities.

Market needs can emerge anywhere in the world. And the technological solutions to meet those needs are increasingly being developed in centres of excellence all over the world.

As a result, sourcing technological know-how is more complex, too. To remain competitive, firms need to effectively access and deploy advancements from international sources. This can be especially challenging for small and medium sized enterprises; in part because of the disruptive nature of many technological advances, and in part due to the changing patterns of global technological innovation.

To support companies in their era of global transformation, the Danish Technological Institute is committed to strengthening our international collaboration within the European Framework Programme and with our sights on Horizon 2020. At the same time, we will continue to build strong global partnerships.

Our strategic goal is to invest in technological fields that will help companies as valued partners and sub-suppliers in the global marketplace.

As an engine of future growth and prosperity, the Danish Technological Institute is uniquely suited to take advantage of new strategic opportunities driven by globalisation. By harnessing our most valued resource—the innovative capabilities of Danish companies—we can create that future with them.

Our services are founded on more than a century of expertise and the interdisciplinary competencies of our 1100 employees. With one third of our turnover stemming from international activities, we understand what globalisation is all about.

Søren Stjernqvist, President



The mission of the Danish Technological Institute is to ensure that new knowledge and technologies are quickly translated into value for businesses in the form of new or improved products, materials, processes, methodologies and more efficient forms of organisation. To achieve this, the Institute offers a wealth of products and services—from research and development at a high technical level to specialist consultancy and technological services that include laboratory services and product certification.

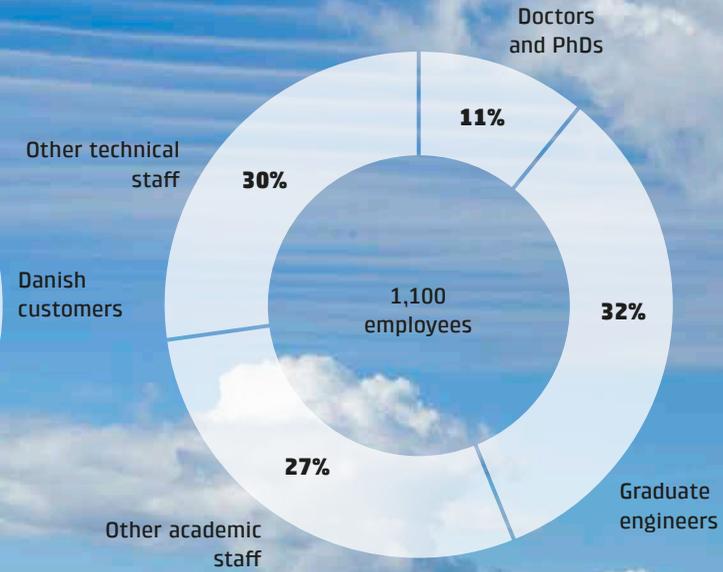
Her Majesty Queen Margrethe II of Denmark is the patroness of the Danish Technological Institute.

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## REVENUE BREAKDOWN



## ACADEMICALLY QUALIFIED STAFF



**Our overall financial goals for the 2013-2015 strategy period are to:**

- increase commercial revenue by 16%
- produce a revenue increase for international activities of 25%
- realise total R&D growth of just over 10%

# Energy and Climate

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# Energy and Climate

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“If we don’t change direction soon, we’ll end up where we’re heading” (World Energy Outlook 2011)

The Danish export of energy products is the highest in the EU, more than 10% of the total export.

By 2020, 50% of the Danish electricity consumption will be based on wind power and, long-term, by 2050, Denmark will be 100% covered by renewable energy, including the transport sector.

The energy systems around the world are facing a gigantic transition

from a consumption driven production to a production driven consumption, we need to use the energy when it is available. In that respect Energy and Climate will help ensuring that society is able to implement the required new energy technologies and improve energy efficiency in buildings, industry and transport. New and improved products need to be developed and tested, and they must be used in an intelligent and energy-efficient energy system.

The Danish Technological Institute is engaged in energy and climate at its own facilities at:

- The largest energy laboratory in Denmark accredited by DANAK
- EnergyFlexHouse and EnergyFlex-Office – test of home automation and user behaviour
- Full-scale biomass plant – pre-treatment, storage and torrefaction
- Laboratories – stationary as well as mobile – for calibrating and testing energy and climate components
- Algae Centre – harvest and pre-treatment of macro algae’s.

Energy and Climate has 185 specialists in the fields of improvement of energy efficiency in buildings, industry and transport, solar energy, biomass, district heating and cooling, Smart Grid, measuring technology, storm water and rainwater management.



“Smart energy and energy efficiency will be the cornerstones of green growth.”  
*David Tveit, Vice President, Energy and Climate.*

## Energy and Climate

### Increase in sales of products and services

Already today, energy and climate represent a growth area, thus ensuring us beneficial platforms in both Denmark and abroad where our own stronghold and Denmark’s green reputation are an advantage.

We will:

- Expand our range of consultancy services for existing customers in, e.g., EcoDesign, Smart Grid, energy efficiency improvement, biomass and rainwater management
- Boost our sales of laboratory services, product tests, tests of overall energy systems and

calibration through expanded offers to existing customers and by attracting new customers

- Expand our range of training services while also offering local authorities and large businesses to ensure their supplementary training in the areas of energy and climate

- Offer to manage and develop public schemes in the area of energy and climate.

### EUR 60 billion to be invested in energy renovation of buildings

The existing building stock represents 40% of the total Danish energy consumption, a figure that must be significantly reduced.

We will:

- Create solutions that combine energy retrofitting, renewable energy integration, Smart Grid and storm water and rainwater management
- Contribute to developing energy components and systems as well as full package solutions offering businesses tools and solutions

All solutions have great export potentials.

### Future transport will be more complex

The transport sector must adapt to biofuels as its source of energy.

We will:

- Develop and disseminate new electric and hybrid vehicle knowledge
- Help producers of biofuels and the motor industry to work closer together to obtain a faster marked penetration
- Provide test and consultation services on vehicles and battery degradation to obtain more reliable products.

### Industry million Euros investments are just around the corner

Denmark’s ambitious objectives lay down an entirely new framework for future investments in energy savings and renewable energy roll-out. The

energy companies’ intensified energy savings will kick-start the activities.

We will:

- Develop new technological solutions in renewable energy for industry and equipment aimed at paving the way for a strong increase in initiatives in industry energy savings
- Launch targeted energy saving projects in industry in concert with the players in the sector and with special focus on energy-intensive processes
- Develop new services that ensure the competitiveness of Danish businesses through targeted development, testing and documentation in industry
- Develop and demonstrate solutions that ensure a pronounced increase in Smart Grid equipment roll-out in industry.

# Materials

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# Materials

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Material science and the development of new materials represent global challenges for all industries. The ability to combine material engineering with enabling technologies, and then applying these into next generation sustainable products requires a fundamental knowledge and strong innovative approach to production processes.

With a strong tradition from supporting Danish businesses – both in terms of innovative capability and of implementing the latest materials and production methods in tomorrow's high-technology products we have developed skills to support different industrial segments anywhere in the world.

We span the entire production value chain, from the development of novel and advanced materials to processing nano, micro and macro-size components for entirely new process technologies. We pave the way to the acquisition of new knowledge and technology. And we generate awareness about these advancements and help companies implement them in many different industrial segments.

We have advanced materials laboratories with state-of-the-art equipment in key enabling core technologies. These include:

- Additive Manufacturing – 3D print
- Development and production of advanced functionalized surface coatings: thin-films and sol/gels
- Development of ceramic coatings and materials analyses
- Testing and development of next generation of active food packaging
- Testing and development of highly specialised transport packaging
- Development of nano-composites for lighter and stronger structures.

The Danish Technological Institute has more than 110 highly experienced employees with leading edge knowledge in areas of expertise such as materials testing, surface analysis and state-of-the-art testing capabilities.



“We can help businesses benefit from these times of great scientific opportunities and develop second-to-none products and solutions on the front line of high-technology.”  
*Mikkel Agerbæk,  
Vice President, Materials.*

## Materials

### Increase in sales of products and services

New ideas often originate from our laboratories, which are among Denmark's largest material development and testing laboratories.

People, processes and technology: that's the secret to our ability to meet global challenges in a world

with a rapidly growing demand for new and better performing products at shorter and shorter product development intervals.

We will:

- Serve customers and industries such as the medical devices industry, offshore oil production businesses, the energy sector and

emerging areas of manufacturing

- Continuously improve our unique laboratory equipment and employee skills to serve industry with a special focus on new materials such as metal composites, plastic hybrids, sandwich structures, coatings, etc
- Transform our world-class thin-film and nano-based coatings that are

developed for the pharmaceutical industry and energy and offshore sectors—to the benefit of a broader range of international customers

- Develop new materials for tomorrow's packaging solutions.

### New materials designed and produced for in-line production of the final product

Manufacturing Materials is a technology platform for developing manufacturing technologies for next-generation materials, processes and new prototypes and components that are made from these materials.

We will:

- Develop new printable materials, for example, through Additive Manufacturing – 3D printing, to create lighter and stronger structures and materials with new functional and structural properties
- Develop nano clay and graphene

hybrid polymer materials with superior properties

- Develop new and unique simulation tools and devise new methodologies for online quality monitoring.
- Deploying technology transfer to develop new micro metal structures will that provide lighter and stronger structures meeting industrial demands.

### We are able to renew and improve production processes and products through high-tech surface technology

Surface functionalities offer new possibilities for high-technology coatings and coating technologies that give materials entirely new properties.

We will:

- Develop tailor-made solutions and new coatings capable of increasing functional properties, replacing environmentally harmful or precious raw materials and reducing energy

and resource consumption in production

- Develop bio- or enzyme-active surfaces capable of improving implants or creating new self-sterilising surfaces.

### New technologies brings packaging to a new level

The increasingly closer-knit connection between manufacturer, sales, service and consumer calls for new innovative approaches.

We will:

- Develop new packaging solutions for more efficient sales channels and greater convenience
- Develop new packaging technologies to reduce food waste and increase sustainability
- Create innovative technologies enabling various links in the value chain to gain access to more information about or innovative services in relation to products via mobile units.



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### **Local trade and logistics becomes global**

Trade and logistics are becoming more international. As a result, businesses are focusing less on neighbouring markets and more on global markets. This makes it increasingly imperative that traders must be able to support and participate in complex technological trade relations across conventional industry areas.

We will:

- Apply more technologies to the development of a platform for customer behaviour, marketing as well as awareness and presentation technologies
- Develop documentation tools that can help Danish enterprises combat international counterfeiting
- Prepare and develop technology foresight-scenarios to ensure that future integrated technologies underpin trade and develop end-to-end solutions that ensure speed and convenience.

# Life Science

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# Life Science

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New advanced technologies in the life sciences are making it possible for us to lead longer, healthier lives. An increasing part of the world population is demanding food of high quality and wants the right to enjoy the healthy lifestyle of the Western World. These forces are increasing the focus on sustainable technologies, global demand for healthier food and increasingly faster medical developments.

At the Danish Technological Institute, our strategic Life Sciences organisation concentrates its work on the environment, health and food. Danish companies in the life sciences have an average annual turnover of about EUR 33 billion.

The Danish Technological Institute is committed to making great efforts to ensure that Denmark maintains its leading position in the sector.

The Danish Technological Institute wants to be at the leading edge of high-technology product development, also when it comes to sharing substantial know-how with trade and industry.

During the past three years, Life Science has invested in new laboratory facilities, including:

- 2000 m<sup>2</sup> of new laboratories in Aarhus
- New equipment for analytical chemistry, advanced process

technology, particle analysis and molecular biology.

In addition, we will develop new facilities for the production of food with natural ingredients extracted from high-value products from biomass production.



95 experts within chemistry, biotechnology and related disciplines are employed by Life Science. Many have a PhD along with their first-class technical competencies. The employees are highly experienced in attending to the needs of the Life Science sector.



## Life Science

### Improve sales of products and services

With a strong scientific foundation in Life Science, we will pursue targeted efforts to develop new technologies and services within the environment, health and food sectors. Our strategic goal is to increase commercial revenues to

ensure that a larger audience has access to our services.

We will:

- Develop total consultancy and laboratory services in the feed, food and ingredient industries and introduce sustainable processes or developing new products that

utilise raw materials optimally

- Offer the life science industries, including equipment manufacturers, better methods for the monitoring and establishment of process parameters
- Develop on-site measurements of environmental parameters such as those related to water and

environmental technology

- Offer accredited and GMP approved analyses for the food, pharmaceutical and environmental industries
- Boost international sales of services related to the environment to the oil industry, including biocorrosion prevention and control applications.

### Technology at the dinner table

The global share of consumers who demand healthy food of high quality is growing. This makes sustainability and naturalness key considerations for industry. In addition, industry is expected to raise standards for hygiene and quality.

We will:

- Establish laboratory facilities for testing and documenting properties and principles for new food ingredients so industry can apply state-of-the-art knowledge to their production
- Collect and disseminate knowledge across research institutions so the latest knowledge becomes even more applicable to the food industry.

### More and improved technology for doctors – and ultimately for us all

Society demands better diagnostics and increased individual treatment for diseases.

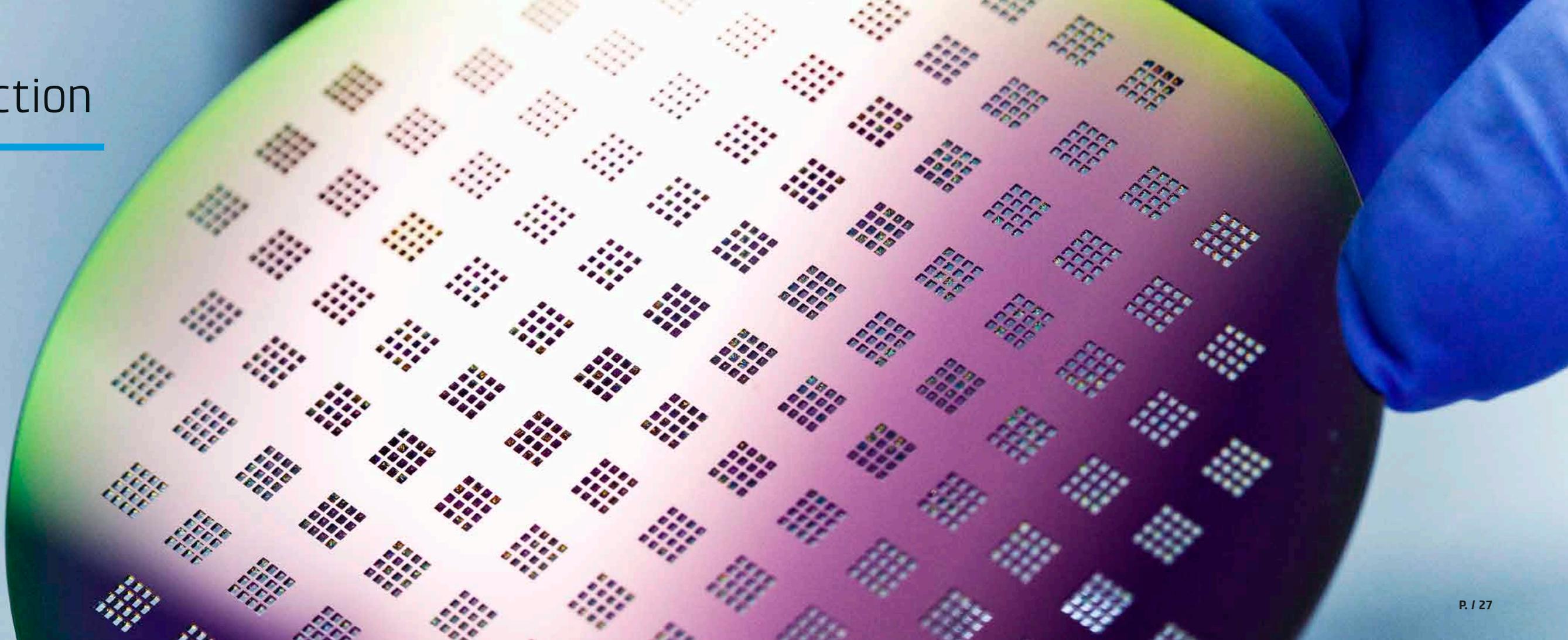
We will:

- Help develop improved products for making diagnoses, implementing treatment and establishing facilities that ensure inexpensive and focused development of medical biotechnology
- Allow trade and industry to test, develop and demonstrate new products and carry out pilot production.

*“The population is growing, we are getting older and older and limited resources are available. We are ready to meet that challenge.”  
Bo Frølund, Vice President, Life Science.*

# Production

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# Production

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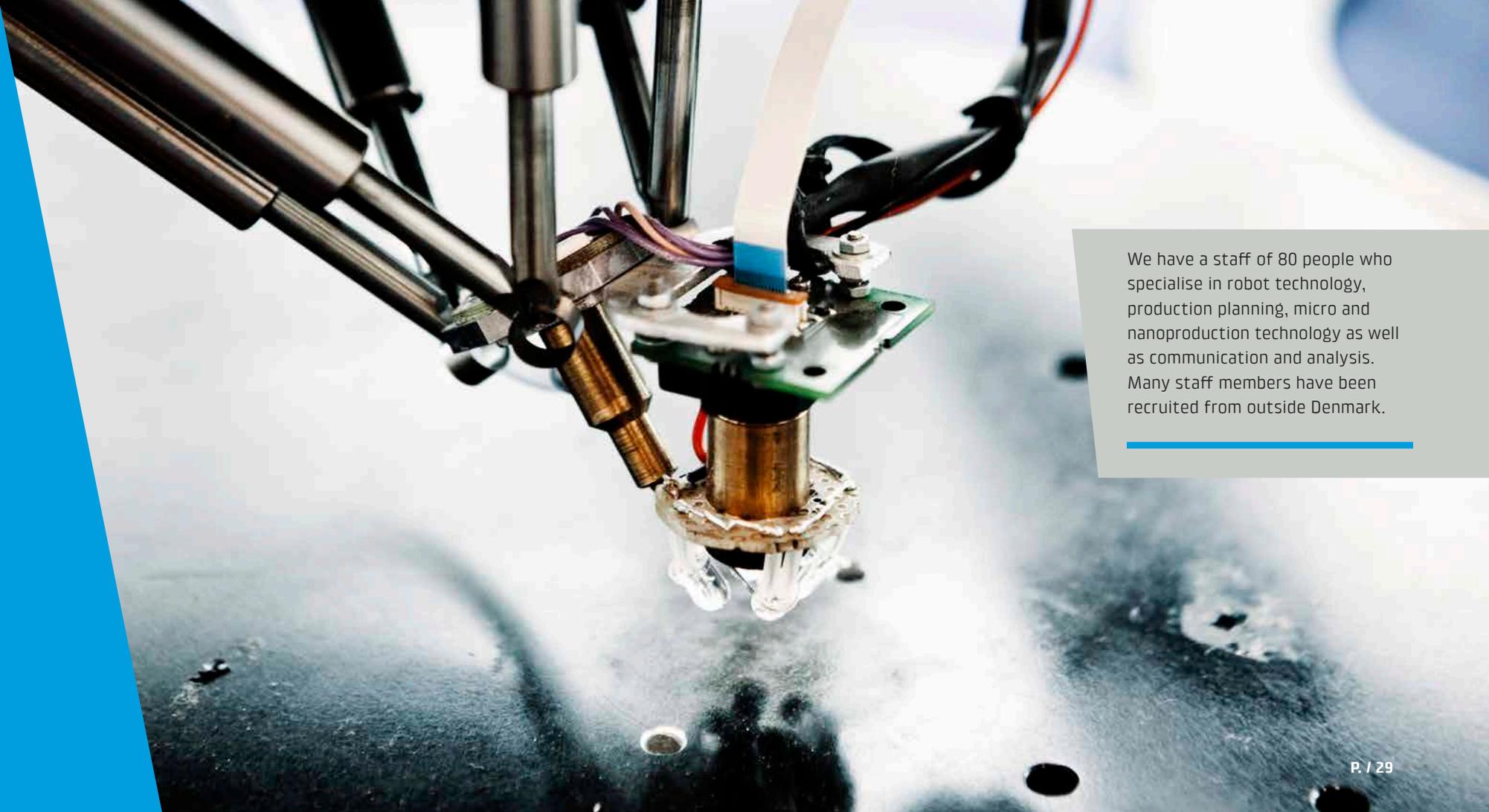
Manufacturing is of fundamental importance to the economic strength of all countries. Global competition in advanced manufacturing is growing more intense as technological life cycles accelerate. One way forward is to create a sector rich in technology, using state-of-the-art materials, and to bundle goods with integrated services to maintain competitive performance on a world scale.

*Production* at the Danish Technological Institute is responsible for the entire value chain from production strategy to the production process itself, and encompasses automation, robot technology and new micro- and nano-production technologies as well as quality control documentation.

Production laboratories include:

- Robot laboratories in Denmark and a subsidiary in the US for testing and developing state-of-the-art production and welfare technology
- A laboratory for micro- and nano-production technologies and related advanced characterisation methods
- A metrology laboratory comprising coordinate measuring and CT and  $\mu$ CT scanning
- Production also has a share of the clean-room facilities at DTU Danchip.

We are currently planning a new 1,000m<sup>2</sup> robot laboratory and the establishment of a High Tech Pilot production facility for micro fuel cell components.



We have a staff of 80 people who specialise in robot technology, production planning, micro and nanoproduction technology as well as communication and analysis. Many staff members have been recruited from outside Denmark.

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## Production

“The robot technology and new nano and microproduction methods will lead to the flexible high-technology production that advanced manufacturing businesses need to remain at the forefront of their industries.” *Anne-Lise Høg Lejre, Vice President, Production.*



### Increase in sales of products and services

The ability to combine modern technologically advanced production methods with competent consultancy services in relevant application areas makes Production strategically valuable to our customers. As global competition increases, the potential for helping customers is huge and growing.

We will:

- Develop High Tech Pilot Production for micro and nanotechnology businesses as well as robot technology businesses
- Sell and introduce knowledge about robot co-workers, strategic automation and technology dissemination
- Produce and sell nanomaterials and structures to research communities and businesses

- Offer consultancy services on available welfare and industrial technologies
- Develop and sell advanced scanning and characterisation techniques.

### The robots are here—in greater numbers and smarter than ever

Manufacturing can save billions from production automation. Robots, as new colleagues for the blue collar workforce, can pave the way for 14,000 new jobs in the long term.

We will:

- Develop technologies and components that make it easy and intuitive to program and instruct a new generation of cognitive industrial robots: the robot co-worker
- Develop strategic automation methods and tools to supply decision support systems that can

assist Danish businesses in their choices of automation.

### Future energy systems start at nano-level

Intensive utilisation of nanotechnology is critical for the development of tomorrow's environmentally friendly and sustainable energy resources.

We will:

- Analyse the requirements and opportunities for creating a Technology Push
- Put together and expand a platform for the industrial development of nano-based materials so businesses can make use of environmentally friendly and sustainable energy resources
- Design, develop and manufacture components for fuel cells, tailored to the customer's specific needs and performance requirements.



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### **Documentation is a must in global markets**

In a global market where small and medium sized manufacturing businesses often represent minor links in international production chains, process and method documentation are critical to success. Many small businesses do not have the resources required to develop and integrate quality documentation into their products.

We will:

- Offer to help businesses integrate documentation and quality assurance into their production processes at such an early stage that they will achieve a competitive edge
- Develop models for automatic collection, sorting and analysis of production data so external business partners can obtain access to relevant data
- Test new measurement methods and instruments in the production process so that measuring strategies for e.g. new production processes can be devised based on evidence and not intuition, and advise on these
- Offer to act as an external quality centre for businesses that do not have their own sufficiently advanced quality assurance department.

# Building and Construction

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# Building and Construction

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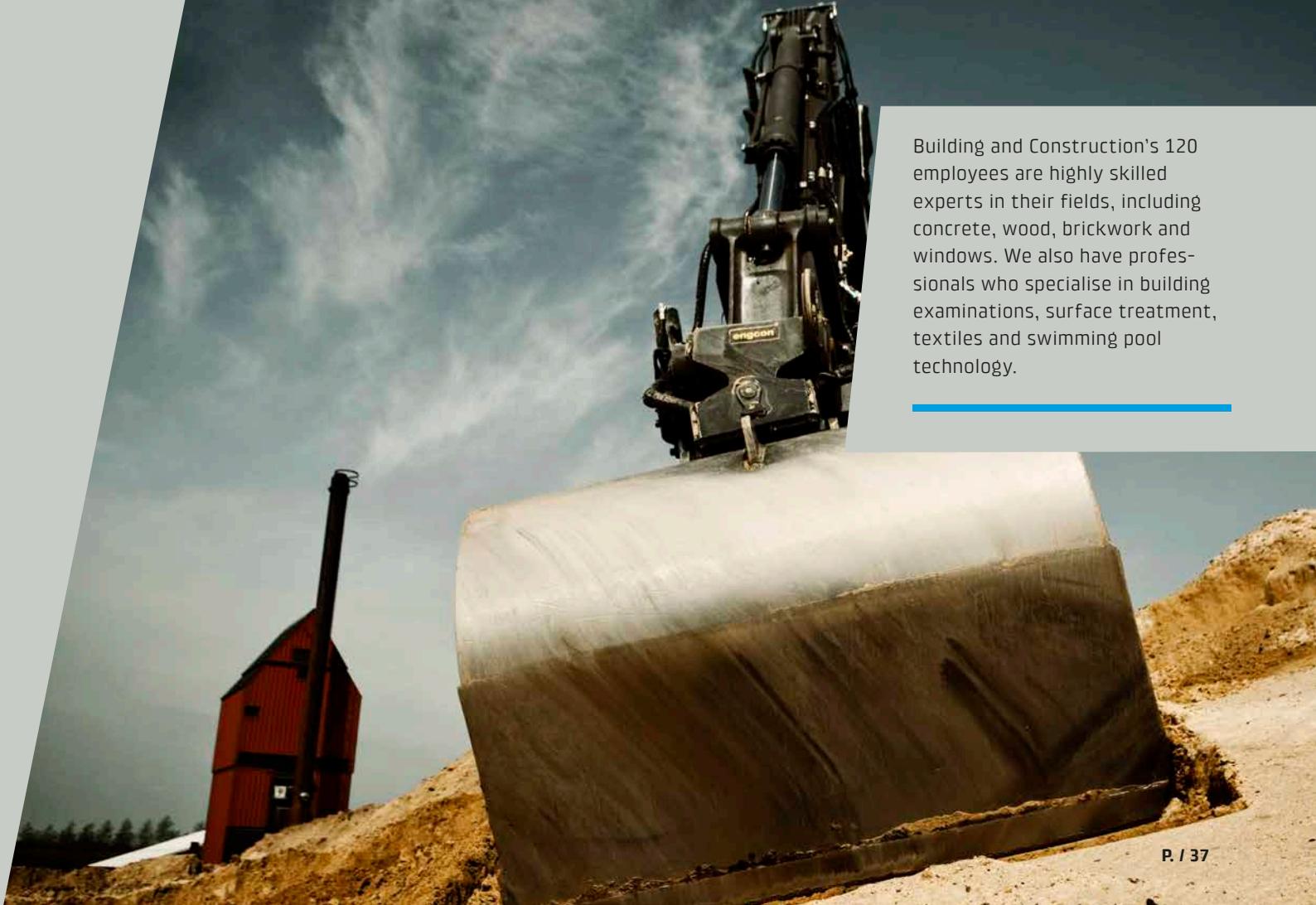
The building and construction sector plays a key role in society and is a major engine of growth. The sector is one of the largest employers in the EU, with 16,4 million jobs contributing to about 10,4% of the GDP with 2,7 million businesses being small and medium enterprises. The sector is also the highest energy consumer in the EU. It consumes about 40% of our total energy consumption and is responsible for a third of carbon emissions. Special efforts need to be made to motivate businesses, many of which do not typically conduct research and development, towards greater innovation.

The task of Building and Construction is to help the sector overcome major challenges such as low innovation and productivity as well as to help them adapt to new requirements related to energy and sustainability, climate change and demographic changes. Future public investment in new hospitals and infrastructure will create a big demand for tailor-made and flexible building processes and extreme durability.

We have at our disposal sophisticated equipment for documenting and analysing properties of building materials, components and conducting on-site measurements of buildings and structures.

These include:

- Equipment for measuring mechanical, physical and chemical properties of building materials
- Equipment for accelerated ageing
- A high-technology concrete laboratory with mixing plant and robot plant
- A textile-, indoor climate- and mould laboratory
- A scanning electron microscope for materials analysis
- Guarded hotbox for measuring the thermal performance of building components
- On-site equipment such as thermography, georadar and Impact Echo.



Building and Construction's 120 employees are highly skilled experts in their fields, including concrete, wood, brickwork and windows. We also have professionals who specialise in building examinations, surface treatment, textiles and swimming pool technology.

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## Building and Construction



### Increase in sales of products and services

Building and Construction enjoys a unique relationship with the Danish building industry, thanks to our many years working on customer projects and research and development collaborations. This provides a solid platform for cooperating with companies outside Denmark.

We will:

- Reach a greater number of small and medium-sized enterprises through increased strategic cooperation with trade associations and organisations
- Organise businesses with uniform needs in clusters and networks to better serve their business needs
- Develop services with high-end laboratory testing and on-site measuring of materials, buildings and structures in the field of PCB, mould fungus, durability, energy and the environment

- Expand the range of consultancy services in, for instance, building surveys, energy renovation, materials development and sustainable building.

### We provide the best energy solutions in the world to the building industry

With building regulation 2020, Denmark takes the lead in the EU in terms of formulating the requirements applicable to future building energy consumption. This calls for radical innovative thinking and access to new technologies.

We will:

- Develop smart materials suited for changing properties or structures to develop energy-efficient buildings
- Develop light and strong materials that are either very light or much lighter than the materials they replace, and thereby contribute to

improving the overall environmental profile

- Develop sustainable recyclable building materials which are based on bio-based materials, etc.

### Sustainable infrastructure

EU's road network extends about 5 million kilometres and many countries are investing heavily in new infrastructure projects to connect countries and regions. This puts significant demands on optimisation, increased productivity and long service life.

We will:

- Develop new sustainable materials and solutions for infrastructures that meet the requirements for high durability and minimum maintenance
- Develop and implement new methods for intelligent monitoring, registration and renovation

- Be in charge of collecting experience data, model calibration and subsequently disseminating knowledge from parties such as Femern a/s, Metroselskabet, Rail Net Denmark and the Danish Road Directorate.

#### **Sustainable buildings have enormous export potential**

The upcoming EU requirements for building sustainability mean that we are faced with great challenges, but also great opportunities.

We will:

- Develop new technology for sustainable buildings, comprising building sustainability from blue print to the finished solution for both new buildings and renovation
- Create sustainable renovation solutions where comprehensive environmental, social and economic criteria are used to assess needs and results
- Develop methods and tools for documenting sustainable buildings

- and materials, with particular focus on choice of materials, indoor climate, user behaviour and aesthetics as well as overall economic assessments
- Help businesses prepare and verify environmental product declarations.

“Building and Construction intends to be Denmark’s first provider of choice for specialist services to the building and construction sector.” *Mette Glavind, Vice President, Building and Construction.*



# Business and Society

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Alarmen går hele tiden, så ingen reagerer længere

1. Hvordan forbruget vises, så brugeren reagerer?
2. Hvordan gøres energiforbruget synligt?
3. Hvordan gør man det let at spare energi i arbejdet?

Energi, adfærd og holdninger

# Business and Society

The current global crisis has revealed weaknesses in many economies around the world. In several OECD countries its impact has highlighted not only financial imbalances, but also failures in the way economies adjust to emerging comparative advantages. Globally, a new consensus is being established around the need for more sustainable economic development. Within this context, the crisis presents a unique opportunity to rethink traditional modalities of doing business at the enterprise level and in policy making.

While this pathway may lead to a more resilient economy, it presents a number of challenges to policy makers, institutions and businesses alike.

In this light, the division for Business and Society is a unique and internationally acknowledged source of expertise thanks to our focus on innovation

performance, both at a micro level in specific companies and organisations and at the macro level in the form of policy making and support for institutional and system reform.

In the coming years governments will need to find new ways to create more and better welfare with fewer means. Businesses will need ways to regain market shares through more sustainable solutions. Key enablers are smarter deployment of technologies, new business and partnership models, a better-skilled workforce, and breaking down of policy silos. That is why Business and Society is a natural part of the solution.

#### Our core competencies:

- Design and benchmarking of citizen-centric e-government strategies and how these can be implemented at

the local level, for example as efficient citizen-centric health care solutions and service for the elderly

- Facilitating knowledge diffusion and tech-trans models that support business internationalisation processes and innovation

- Policy studies, policy reform support and enhanced innovation capabilities at all system levels

- Social innovation for sustainable change

- Impact assessments, reviews and evaluations, with a focus on What Works

- Idea commercialisation, from screening of ideas to commercialisation of products and services through licensing

- Skills requirement analysis and educational planning, design of education and training solutions, workforce development.



Business and Society has about 100 employees possessing both analytical and process consultancy skills and competences at an advanced level. Several of the staff have extensive international experience to the benefit of both national and international customers and partners.



## Business and Society

### Increase in revenue from sales of products and services

Our key assets are our integrated and systemic understanding of innovation, our interdisciplinary staff, and a strong network of partners—nationally and internationally. We have been partner for the World Economic Forum in their annual competitiveness analysis since 2012.

We will:

- Increase our training activities by adding more topics and embracing new approaches to teaching and learning where it adds value for our customers
- Accelerate the transformation of insights gained from development projects to innovative commercial solutions and concepts in areas such

as sustainable work practices, new innovation approaches including service innovation and social innovation as well as the implementation of welfare technologies

- Be a gateway to technological expertise
- Strengthen our international activities through strategic partnerships and service contracts by applying lessons

from evaluations and impact assessment studies in our business activities.

### Technology Management – the right technologies at the right time

Today, technological R&D takes place in multiple centres of excellence all over the world. Emerging technologies present both threats and opportunities to national competitive advantages based on existing technological competencies. Even incremental innovations can shift the lead from one country or region to another, and radical innovations may eliminate entire markets. Furthermore, technological innovation often stems from the combination of two or more technologies in one product solution. That is why technological innovation has become more complex and more risky.

We will:

- Deploy our data modelling expertise in the development of new concepts

for strategic technology mining based on big data to increase the capacity of firms to strategically spot, screen and prioritise technology investments

- Integrate value chain perspectives in technology assessment.

### Integrated welfare innovation

The need to reduce public expenditure on welfare and an aging population is driving innovation in the delivery of health and social services. The design of welfare technology services is an expanding market and holds great potential for more efficient and tailored solutions, which can spur business growth and benefit to society.

We will:

- Develop integrated healthcare automation solutions for the healthcare sector
- Develop integrated services for the educational sector based on cloud computing, e-learning and mobile platforms
- Conduct state-of-the-art studies and

reviews on how open educational resources and platforms can improve learning outcomes as input to evidence-based policy making and institutional strategy formulation

- Develop models for organisational development and work process redesign in the implementation and scaling of technology-enabled health and welfare services
- Support the development of an integrated business and open source ecosystem for enhanced interaction, alignment and co-development models for telemedicine.

*"Committed and competent managers and staff are key to innovation and change."  
Jane Wickmann, Vice President,  
Business and Society.*

# Danish Meat Research Institute – DMRI



# Danish Meat Research Institute – DMRI

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The industrialisation of the food sector is developing rapidly. Technological complexity is increasing and innovative thinking targeting the value chains is in demand. In this turbulent environment, it is DMRI's mission to boost the competitiveness of the Danish food sector by constantly increasing the level of high-tech know-how and introducing new ways of thinking about industrial food production.

DMRI is one of the most important innovation partners for the Danish food industry. Thanks to the diversity of our different skillsets and disciplines we are uniquely positioned to innovate the entire process of turning livestock into high quality healthy meals with special

attention on improving the efficiency of the entire value chain.

## Our core competencies

- Deep insight into the interdependence of raw materials, processes, and the quality of food
- Extensive knowledge of manual processes, cutting patterns, and state-of-the-art automation technology
- Hands-on experience with objective measurement systems using advanced sensor technology.

Our highly specialised laboratories and advanced equipment forms a solid foundation for the high quality of our dedicated services to the food sector.

These include:

- Export-authorized pilot plant with prototype research and development equipment for processing, preservation, and packing
- Laboratories for sensory analysis/ taste and odour with trained and certified assessors
- Microbiological and chemical laboratories and two mobile CT scanners
- A fully equipped robot workshop with a test rig and facilities for testing robot prototypes.

A new DMRI domicile at the Danish Technological Institute campus in Taastrup will open its doors to clients and staff in 2014. The new headquarters will strengthen DMRI's position as

the world's largest and most advanced knowledge centre for international research and innovation in food of animal origin.

DMRI offers the services of 110 employees specialised in slaughter technology, automation, nutrition, measurement systems, hygiene, preservation and meat quality.

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## Danish Meat Research Institute – DMRI

### Increase sales of products and services

DMRI has generated solid growth in commercial revenues. The source of this revenue is mainly specialist consultancy services for Danish and international food manufacturers. From a commercial point of view, the Danish market is saturated and

holds limited growth potential. As a result, we expect future commercial growth to come primarily from markets outside of Denmark.

We will:

- Increase commercial revenue from services aimed at improving efficiency, productivity and environmental

performance in slaughtering, cutting and deboning of pork and in other industries, including the fish and process industries

- Apply Danish knowledge in key growth markets such as China, South Korea and Russia. Our goal is to serve these markets with at least one subsidiary

- Renew existing services to keep DMRI at the forefront of new knowledge, innovation and consultancy. We will continue to strengthen our position as the number one service provider in industrial food production.

### Better and lower cost food production is the challenge

We need to produce foods in new ways, ways that contribute more to the sustainability of the value chain. The goal is also to achieve higher levels of productivity and to minimize strenuous labour intensive

processes, without compromising food quality and safety. Production sites located in distant rural areas, modest educational levels among employees and high staff turnover present serious challenges to the food sector. In addition, producers have to meet growing requirements for perishable food traceability. These are substantial challenges given the considerable biological variation in many raw materials and the rigorous requirements for maintenance, food safety, hygiene and production cleanliness.

We will:

- Pursue new methods to assess the ability of food businesses to implement new technologies profitably and maintain quality at the same time
- Develop improvements in intuitive, interactive user interfaces for advanced equipment in the food industry. It should be easier for employees to use and maintain high-technology equipment.

“DMRI should be the centre for integrating research and innovation into the food industry.” *Lars Hinrichsen, Vice President, DMRI.*

# Accelerator Technology – Danfysik

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# Accelerator Technology – Danfysik

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Worldwide investments in new accelerator projects amount to about EUR 1,3 billion a year. The investments are divided between buildings, accelerator and experimental equipment. Denmark commands a technologically strong position in this field, which calls for high-technology knowledge combined with specialised production in mechanical processing, electrotechnology and the use of advanced testing and analysis equipment.

The segment comprises technologies for producing, accelerating and controlling atomic and subatomic particles for research, healthcare

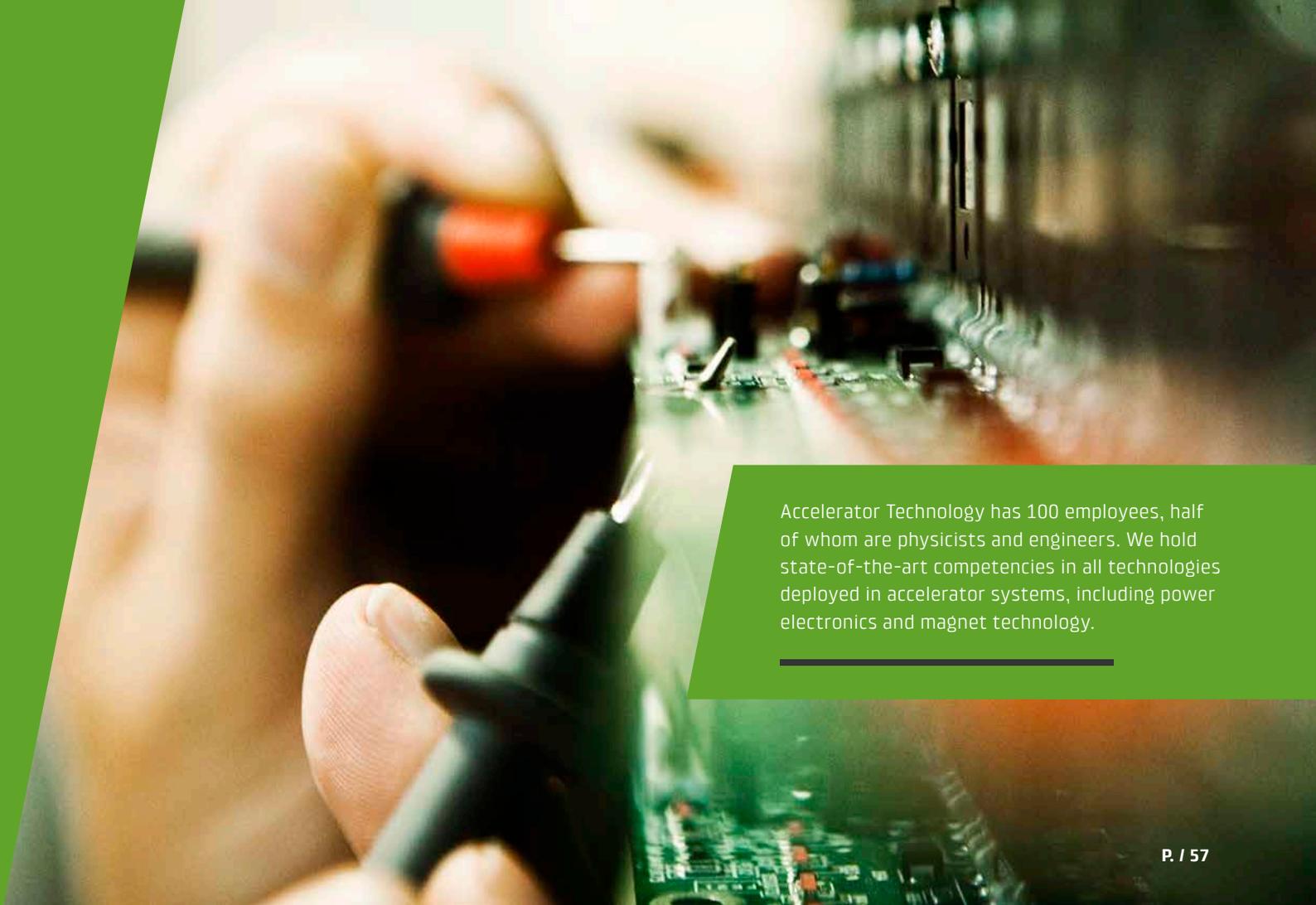
and industry. Danfysik is a leading supplier in the development, design and manufacture of magnet systems, power supplies and other accelerator components. We supply equipment to players in Europe, North America, Australia and Asia.

Over the past three years, Danfysik has made broad investments in manufacturing and testing equipment. In connection with our relocation to Taastrup, we upgraded our manufacturing equipment as well. These initiatives have included:

- A new factory for manufacturing magnet coils

- New magnet testing equipment
- New software for developing accelerator equipment.

Danfysik has strengthened its competencies in the field of particle therapy for which we expect a booming demand, especially for accelerator equipment for cancer treatment over the coming years. Danfysik is already involved in the installation of the most advanced particle therapy system in the Far East. The system can deliver beams to cancer cells precisely, without damaging the surrounding healthy tissue.



Accelerator Technology has 100 employees, half of whom are physicists and engineers. We hold state-of-the-art competencies in all technologies deployed in accelerator systems, including power electronics and magnet technology.

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## Accelerator Technology – Danfysik



### **We must maintain our position as a world leader**

In recent years, Danfysik has consolidated its position as a leading supplier in the global market of magnets and power supplies for accelerator equipment. In new growth countries like Brazil, South Africa, Russia, China and South Korea, Danfysik has untapped sales potential. We will also increase our activities in China and South Korea by focusing on particle therapy in the healthcare sector.

We will

- Strengthen our position through sustained development of our know-how and application of new technologies as well as intensive marketing
- Fulfil our objective of being the manufacturer of choice for accelerator equipment in terms of technological superiority and being a leader in accelerator equipment sustainability
- Develop compact electromagnets, superconducting magnets, sustain-

able magnets, special magnets, insertion devices and measuring systems

- Enhance existing power supplies, highly stable power supplies and future power supplies.

“Our long history, from 1964 until today, has given us unique knowledge that puts us in front of the international field.”  
*Bjarne Roger Nielsen, Managing Director, Danfysik.*

# Technological Institute AB – Sweden

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# Technological Institute AB – Sweden

Competence relies on three factors: knowledge, proficiency and insight.

Insight is the primary engine for building skills and on-going development. A failure to build competencies puts companies and individuals alike at risk. It makes them vulnerable to endlessly changing business conditions and weakens their ability to reach their full market potential.

Teknologisk Institut AB in Sweden, TIAB, is fully committed to increasing the awareness of the importance of competency development, and we

offer market training and education in fields that we believe will add great value to companies.

## **Our focus is to support companies build value through technical and business training**

TIAB offers a wide range of courses in fields such as construction, power, and heating and ventilation for practitioners as well as management. These courses are designed to strengthen our customers' technical leadership. We also offer soft skills training as a second lever to help our customers further develop their business.

TIAB delivers its services through three business units

- Courses - B2B training offered as openseat courses as well as customized
- Conferences and seminars – B2B-based seminars on hot topics and challenges
- Vocational college – a range of 1-2 year programs. Funded by Swedish governments and supported by Swedish companies to the benefit of younger people or people changing careers.

TIAB has 25 people focusing on ensuring sales, quality and development of competency building offerings

“Technological Institute AB aims to become Sweden’s leading competency company within our selected fields and enable further growth for the institute in the Swedish market.”  
*Peter Bergermark, Managing Director, Technological Institute AB*

## **Development of business for future key success factors**

Most classroom training today is based on a classic educational approach. We are moving towards a world where efficient and sustainable competency-building and knowledge-transfer are high priorities. These trends put greater demand on training companies to ensure even higher levels of competency and quality. They also require a more holistic approach. Towards this end, we have set the

following targets:

- Key clients: Establish 3 enabling strategic development partners
- Courses and trainers: Increase synergies between business areas
- Training material: Set higher standards to allow implementation into multi-channel formats
- Trainers: Be best-in-class
- Increase efficiency, lower costs and increase sales.



FIRMA 2000 Sp. z o.o.  
– Poland

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# FIRMA 2000 Sp. z o.o.

## – Poland

The global economy offers new opportunities for the Danish Technological Institute to expand abroad on a commercial and profitable basis. To do so, it has to be agile and respond quickly when opportunities arise. To better position itself, the Institute has been building alliances with partners in Poland. Poland is the fastest growing economy in the EU and the country with the largest economy in Central Europe.

Rapidly developing organizations need skilled people, yet unemployment remains high. As society and business strive to promote a culture of life-long learning and implement innovative business practices, the need for training and development is more important than ever.

People are motivated to improve their daily lives and take advantage of

expanding opportunities. And now, technology is expanding opportunities for taking advantage of the virtual workplace, where employees, partners, customers and governments can connect. That's why companies understand that teamwork and agility are critical to success. To accelerate these trends, we provide training and consulting services to enterprises, business support organizations, local governments, institutions and labor market participants.

### Learning by doing

Our key assets include our experience in managing large scale development projects and "learning by doing" education in three main areas: Training and passing on knowledge (knowledge transfer), project management and evaluation programs.

Over the last 13 years, we have:

- successfully diagnosed potential areas for development
- created tailored training programs and
- managed large scale development projects.

We are passionate about collective competence development, constantly improve our skills and stay abreast of new knowledge.

During this period, we have worked with numerous small and medium-sized enterprises, international organizations and Polish and foreign consultants to implement commercial programs, as well as projects carried out under the supervision of institutions such as the World Bank, the European Bank for Reconstruction and Development and The Polish Agency for Enterprise Development.

We have gained invaluable experience during the implementation of over 70 training and consulting projects in Poland and abroad, experience that we can share with our partners.

### Realising our mission in 2013-2015

In the next two years we will continue to nurture and promote our project management approach and strengthen our marketing communications and brand awareness in the Polish commercial market. Our mission is to become a leading business partner in project management.

"Rapidly developing organizations need skilled people, and the need for training and development is more important than ever."  
*Marcin Opas, Managing Director, FIRMA 2000 Sp. z o.o.*



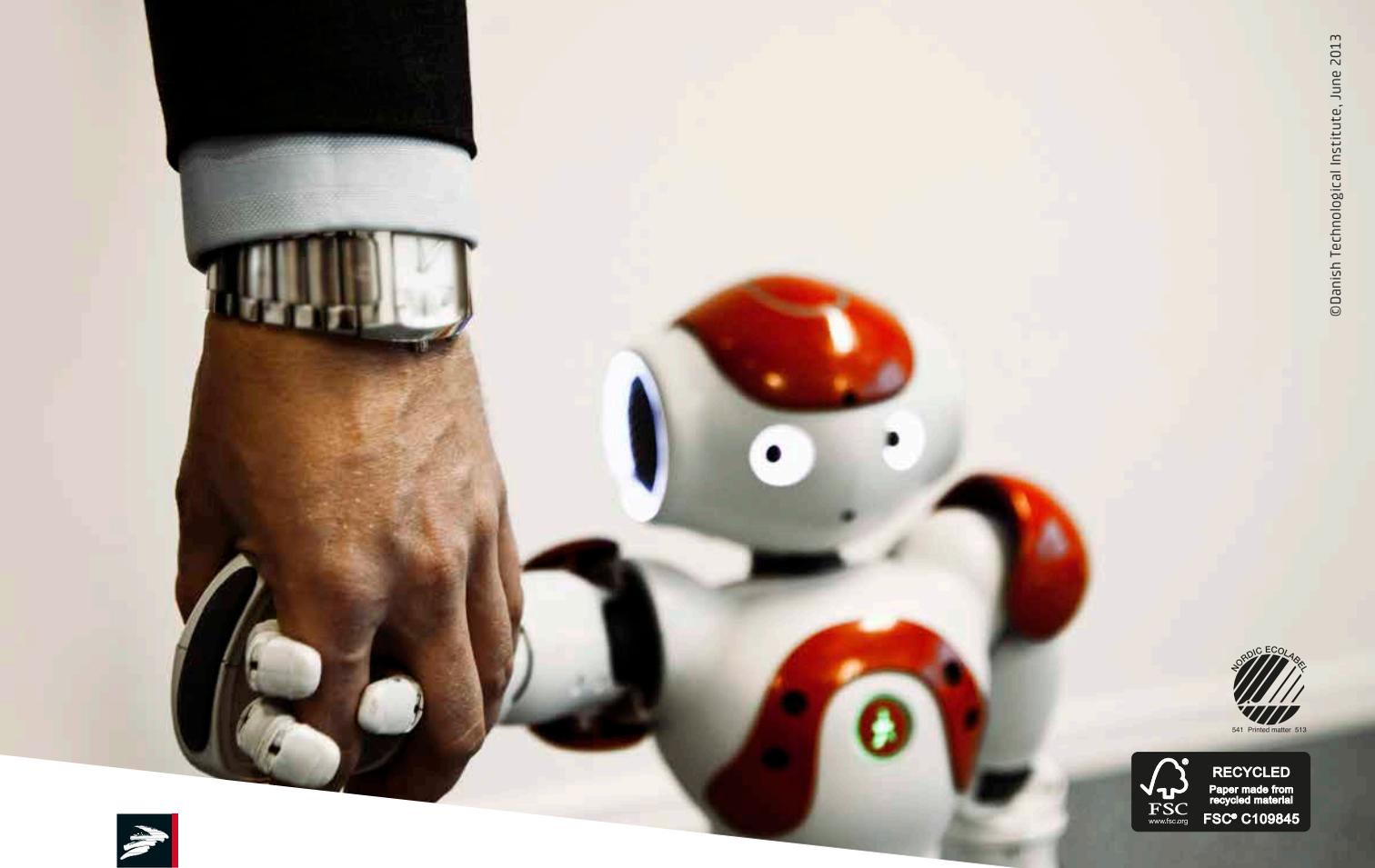


## Key financial figures

EUR million	2010 Final statements	2011 Final statements	2012 Final statements	2013 Budget	2014 Strategy budget	2015 Strategy budget
Total revenue	129,3	131,6	140,6	148,4	153,9	160,8
Commercial revenue	80,5	82,6	89,2	95,6	99,0	104,1
R&D activities	34,2	33,4	34,1	37,4	39,2	41,0
Performance contract funds	14,6	15,6	17,3	15,3	15,7	15,7
Operating profit	4,0	5,2	5,9	4,8	4,3	4,3
<b>Net profit</b>	<b>3,6</b>	<b>4,8</b>	<b>5,8</b>	<b>2,0</b>	<b>4,0</b>	<b>4,0</b>
<b>Balance sheet total</b>	<b>89,8</b>	<b>100,3</b>	<b>109,8</b>	<b>112,9</b>	<b>119,7</b>	<b>126,5</b>
Equity, 31 December	54,7	59,5	65,5	64,9	68,9	72,9



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