



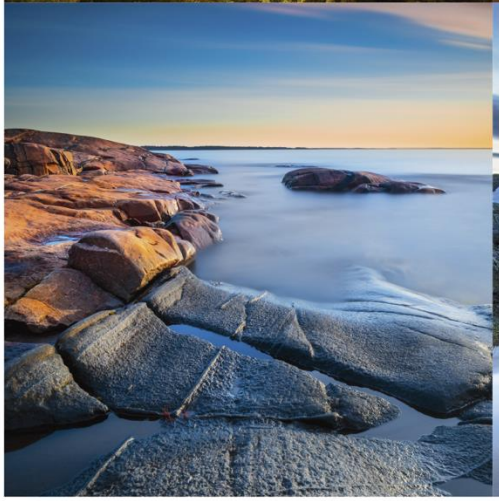


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David Kroon

NIBE ENERGY SYSTEMS

Energy label / Ecodesign for heat pumps – Challenges from a producer perspective

Products produced or sold by NIBE Energy System

- Heat pumps (both for space heating and hot water)
  - Brine/water HPs
  - Air/water HPs
  - Exhaust air HPs

Lot 1

- Electrical boilers
- Biomass boilers

Lot 15

- Electrical storage water heaters
- Hot water heat pumps
- Storage tanks

Lot 2

- Ventilation units
- Air/air HPs

Lot 6/10

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The implementation of EcoDesign/Energy label

(Lot1 – products)

- NIBE has followed the process since the first Working document were published
- NIBE used mostly EHPA and the Swedish energy agency to communicate with the EC
- Main benefits of the final version of the Regulations 811/813
  - *Efficiency was based on SCOP according to EN14825*
    - *3 climates (cold, average and warm) were mandatory*
    - *Efficiencies based on heating system temperatures 35C / 55C*
  - *Several technologies included under the same Lot*
    - *Heat pumps can be compared with oil and gas boilers etc*

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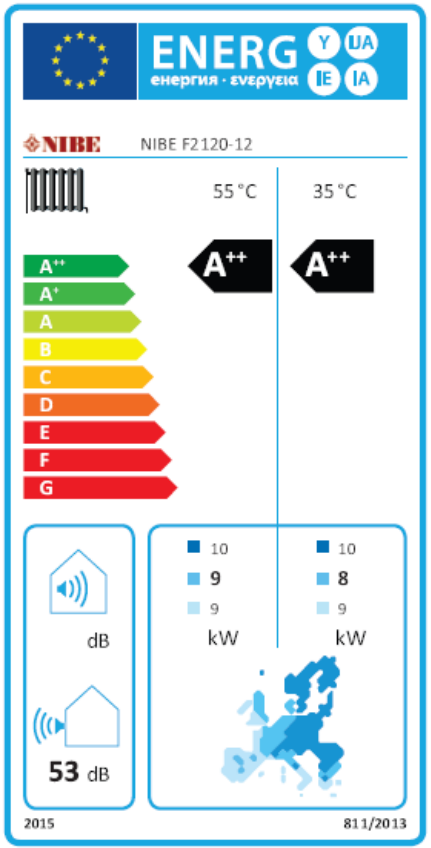
The implementation of EcoDesign/Energy label

- Main disadvantages of the final version of the Regulations 811/813

  - *Energy label only showing efficiency class for Average climate*
  - *No efficiency values on the Energy label*
  - *Confusion around the use of the product labels and package labels*



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The implementation of EcoDesign/Energy label

Confusion about the use of the product labels and package labels

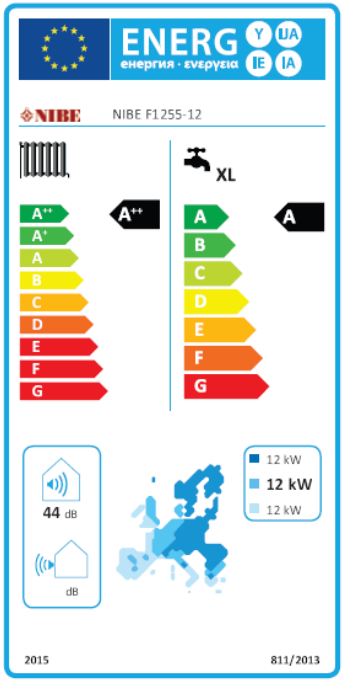
- According to the definition, a ”Package” is:

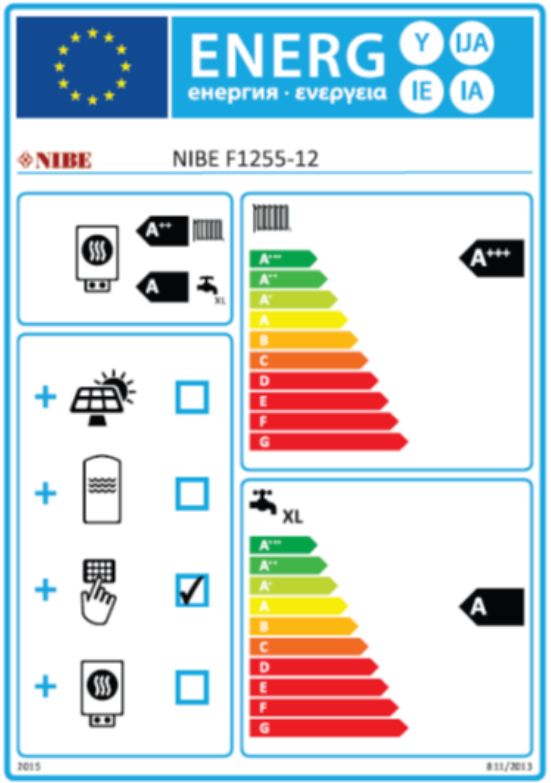
    1. One or more space heater or combination heater + temperature control

    2. One or more space heater or combination heater + temperature control + solar device

The implementation of EcoDesign/Energy label

Confusion about the use of the product labels and package labels





The implementation of EcoDesign/Energy label

Confusion about the use of the product labels and package labels

- Heat pump space heaters in combination with hot water storage tanks

- This is not a Package – It becomes a ”Combination heater”!

- Not considered in the Regulation – no method described how to deal with this

1. *Installer leave out the hot water performance*
2. *Manufacture tests or estimates the hot water performance for the combination*

The implementation of EcoDesign/Energy label

Requirements of test data and parameters in the technical documentation

Model(s):		NIBE F1255-12						
Type of heat source/sink:		Brine-to-water						
Low-temperature heat pump:		No						
Equipped with supplementary heater:		Yes						
Heat pump combination heater:		Yes						
Climate condition:		Average						
Temperature application:		Medium temperature (55 °C)						
Applied standards: EN14825 and EN16147								
Rated heat output	P_{rated}	12,4	kW		**Seasonal space heating energy efficiency**	η_s	157	%
Declared capacity for part load at outdoor temperature Tj					*Declared coefficient of performance for part load at outdoor temperature Tj*			
Tj = -7 °C	Pdh	11,1	kW		Tj = -7 °C	COPd	3,18	-
Tj = +2 °C	Pdh	6,8	kW		Tj = +2 °C	COPd	4,12	-
Tj = +7 °C	Pdh	4,4	kW		Tj = +7 °C	COPd	4,67	-
Tj = +12 °C	Pdh	2,6	kW		Tj = +12 °C	COPd	5,06	-
Tj = biv	Pdh	12,3	kW		Tj = biv	COPd	2,91	-
Tj = TOL	Pdh	12,3	kW		Tj = TOL	COPd	2,91	-
Tj = -15 °C (if TOL < -20 °C)	Pdh		kW		Tj = -15 °C (if TOL < -20 °C)	COPd		-
Bivalent temperature	T_{biv}	-10	°C		Operation limit temperature	TOL	-10	°C
Cycling interval capacity for heating	Pcych		kW		Cycling interval efficiency	COPcyc		-
Degradation co-efficient	Cdh	0,99	-		Heating water operating limit	WTOL	65	°C
Power consumption in modes other than active mode					*Supplementary heater*			
Off mode	P_{OFF}	0,005	kW		Rated heat output	Psup	0,1	kW
Thermostat-off mode	P_{TO}	0,015	kW					
Standby mode	P_{SB}	0,007	kW		Type of energy input		Electric	
Crankcase heater mode	P_{CK}	0	kW					
Other items								
Capacity control		variable			Rated air flow rate, outdoors			m^3/h
Sound power level, indoors/outdoors	L_{WA}	44/-	dB					
Annual energy consumption	Q_{HE}	6213	kWh		Rated brine or water flow rate, outdoor heat exchanger		1,46	m^3/h
For heat pump combination heater:								
Declared load profile		XL			**Water heating energy efficiency**	η_{wh}	98	%
Daily electricity consumption	Q_{elec}	7,78	kWh		Daily fuel consumption	Q_{fuel}		kWh
Annual electricity consumption	AEC	1709	kWh		Annual fuel consumption	AFC		GJ
Approved by:								
Contact details	© NIBE Energy Systems - Box 14 - Hannabadsvägen 5 - 28521 Markaryd - Sweden							

x 6:

3 climates

2 heating temperatures

The implementation of EcoDesign/Energy label

Requirements of test data and parameters in the technical documentation

Technical data for Storage tanks

Volume, L
Standing loss, W

Summary of the implementation of Energy label/EcoDesign

Alot of work and resources for:

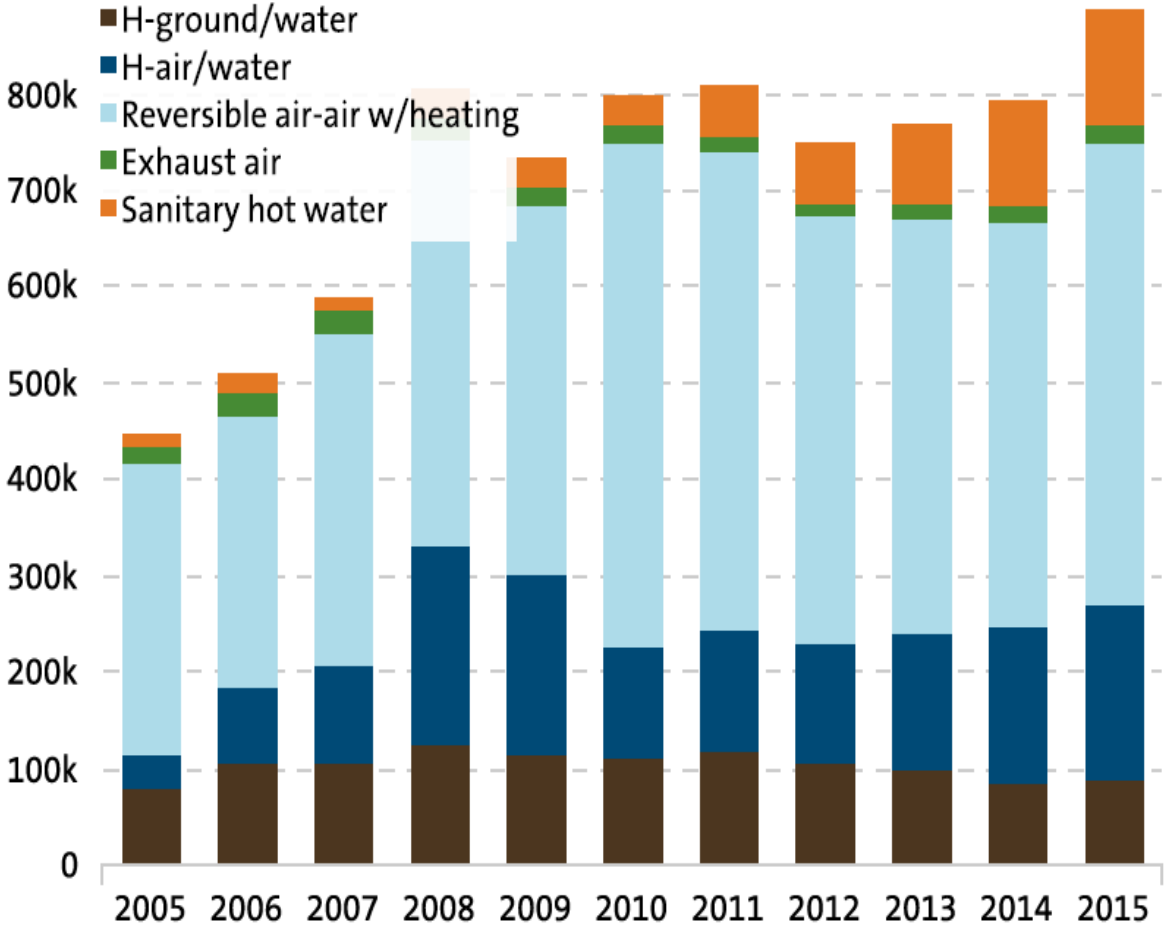
- Interpretation of the regulations
- Testing and calculation
- Developing tools for sales/installers
- Preparing web sites and documentation
- Administration
- Educating the organisation

After implementation – reactions from the Market

Very quiet!

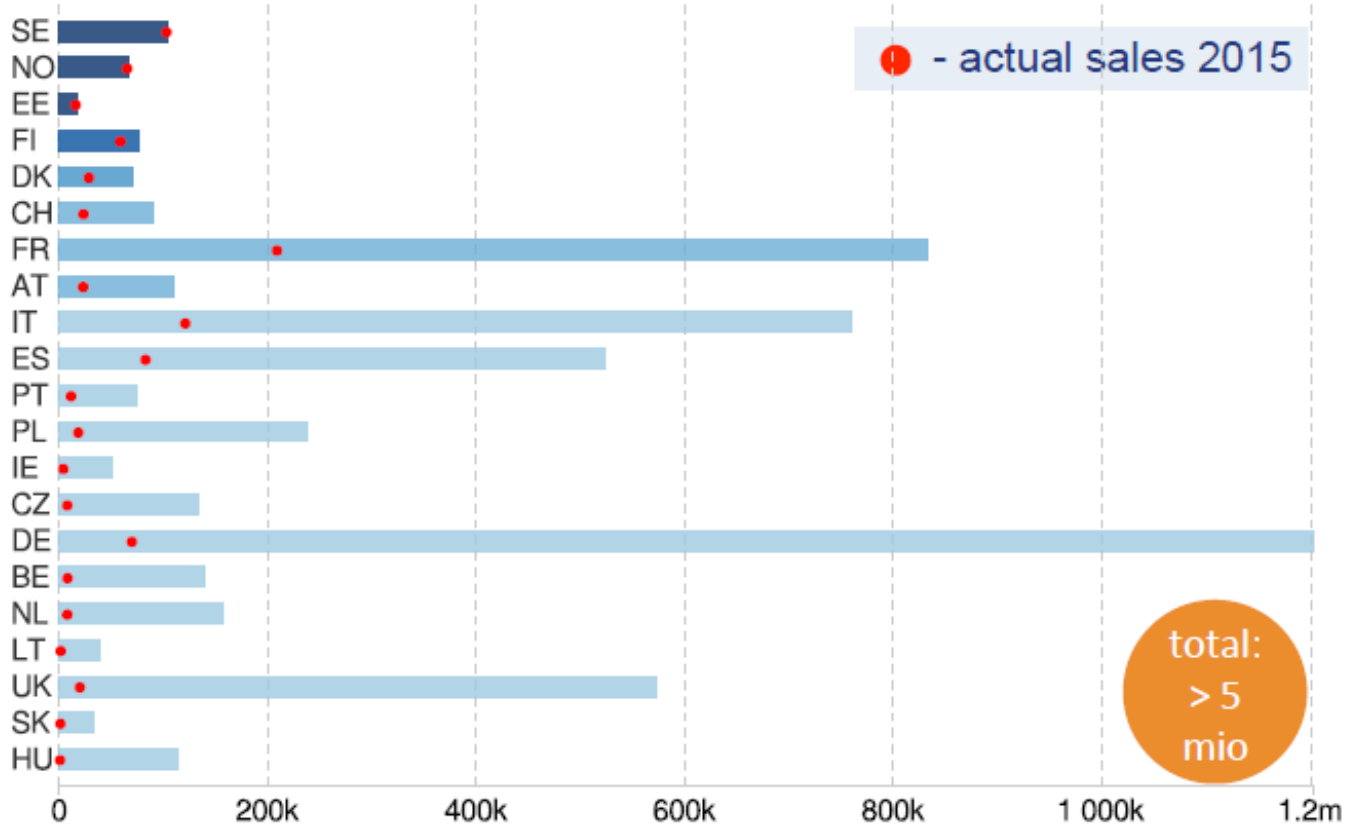
- The energy label and the efficiency classes
  - *Recognized and simple to understand, A is better than B etc*
- The product fiche and technical data
  - *Too difficult for most end-consumers and even installers to understand!*

The heat pump market



Source: EHPA

market potentials



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Source: EHPA

Energy label in the future

- Energy label is a good tool for the end-custumers!
- Keep it as simple as possible, but dont leave out crucial information
- Keep all heating technologies in the same Lot
- Primary Energy Factor is decisive for electrical driven products – PEF must reflect the present situation and the future – not history
- Development of standards must continue so all technologies can be fairly compared

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THANK YOU!

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