

# HE

High Efficiency

Ecodesign Directive Magazine of Wilo 2010/2011

# news

*European Ecodesign Directive  
will save the electricity generation  
of 6 power plants!*



***Circulators and Pumps:  
The future is high efficiency***

- *electricity savings of 23 TWh/a\* by 2020*
- *equivalent to 11 Mt of CO<sub>2</sub>* \*only circulators



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*Dear Reader,*

Over 90 % of the glandless circulators for heating and air conditioning, which are available on the market today, will soon be prohibited for sale. This is due to the enforcement of a Commission Regulation for glandless circulators under the European Ecodesign Directive. Throughout the EU, it will introduce increasingly stricter requirements on the energy efficiency of glandless circulators in three stages beginning in 2013.

Currently, many heating systems are equipped with unregulated circulators. As a result, unnecessary amounts of energy are consumed – energy consumption is up to ten times higher than required by the latest pump generation. For this reason, under the directive, only high-efficiency pumps with extremely low energy consumption will be permitted to be sold. This will not only provide environmental benefits, the building owners and users will also benefit from a lower energy bill. Of course, this option is already possible today, as this pump technology is currently available for many applications. For this reason, switching to the latest pump generation is a good investment for the future and is also worth it in the short term!

The Ecodesign Directive is orientated towards eliminating the majority of inefficient glandless circulators currently available on the market. At the same time, it will trigger a massive wave of innovations to develop newer, more efficient pumps. From 2011, another Commission Regulation under the European Ecodesign Directive will also be regulating the energy efficiency of electric motors. Glanded pumps are also affected by this. You can read more on what this means specifically for your market and how you can prepare for it in your edition of HEnews.

Enjoy reading!

Yours sincerely

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*Beginning in 2011*

# ErP Directive Changes the Market of Circulators and Pumps

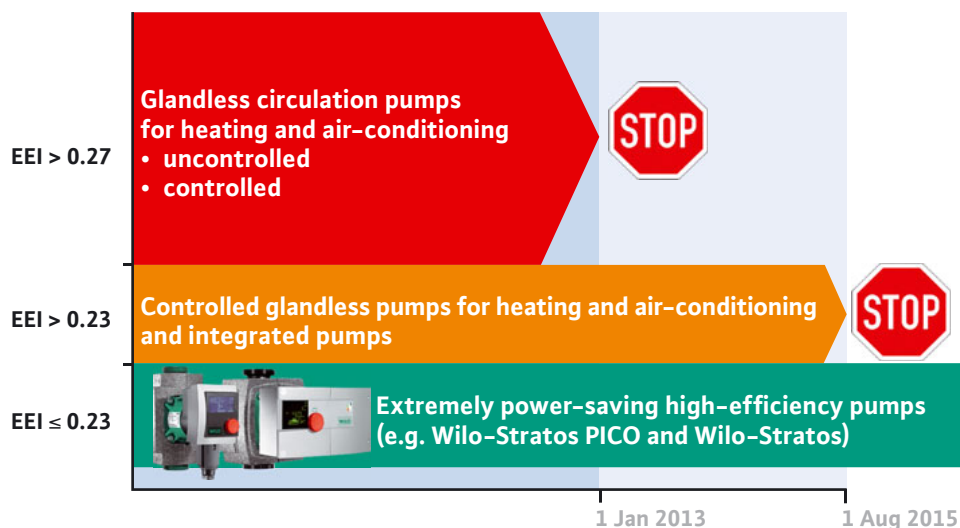
**Good news for European climate protection as well as for users of pumps in building services engineering, communal applications and industry. The future belongs to energy-saving products. They have been developed over the past few years at a high cost. Out-dated technical “electricity guzzlers” will be systematically banned from the market in all European Union states over the next 10 years. The reason is they cause avoidable costs and climate pollution due to an unnecessarily high consumption of energy.**

In 2005, the European Union approved the new 2005/32/EC Directive with requirements on the environmental design of energy-using products. Since then, it has been known as the EuP or Ecodesign Directive. The abbreviation EuP stands for “Energy-using Products”, meaning that it comprises all products which use energy (except cars and public transport). On 20 November 2009, it was replaced by the new 2009/125/EC Directive. The most significant modification is that the scope of “Energy-using Products” was expanded to include “Energy-related Products”. Accordingly, it is now normally shortened to the “ErP Directive”.

Glandless circulators and the electric motors of glanded pumps also fall under the ErP Directive. In two regulations, the EU Commission defined minimum efficiency requirements in 2009. They far exceed the requirements of the current “A” energy efficiency class for glandless circulators and the current best “EFF1” class for electric motors. The regulations will be implemented in several stages over the coming years.

*ErP Directive 2013/2015*

## The Future is High-efficiency



*Over 90 % of the glandless circulators for heating and air conditioning, which are available on the market today, will soon be prohibited for sale. The reason for this will be the implementation of a Commission Regulation for circulators under the European Ecodesign Directive, which will introduce increasingly stricter requirements on the energy efficiency of pumps throughout the EU from 2013.*

EEI = Energy Efficiency Index according to EG 641/2009 directive of the European Commission (Determined by comparing the different power consumptions within the load profile to an average reference pump)



High-efficiency pumps, such as the Wilo-Stratos PICO, are part of the future. They already fulfil the particularly strict energy efficiency requirements of the second phase of the Commission Regulation for glandless circulators, which will be valid from 2015 onwards.

A Commission Regulation for electric motors under the Ecodesign Directive will also affect units installed in glanded pumps for heating and air conditioning as well as water supply, pressure boosting and waste disposal.

### Glandless Circulators: High Savings Potential by 2020

The market for glandless circulators, especially, is being changed as a result. This is because in many EU countries, unregulated models are virtually the only ones being used at the moment. However, these products have an enormous energy consumption. On the other hand, the savings and climate protection potentials of energy-saving high-efficiency pumps are significant.

Throughout Europe, the EU Commission Directive could save about half the energy consumption of glandless circulators by the third stage of implementation in 2020. This amounts to the giant quantity of **23 terawatt hours of energy per year** – the energy production of approx six medium-sized coal-fired power stations. This corresponds to a reduction of European CO<sub>2</sub> emissions of approx **11 million tonnes a year**.

The basis for determining which pump models will be permitted for use in the future is the Energy Efficiency Index (EEI). This is calculated in accordance with a calculation method defined in the (EC) 641/2009 Commission Regulation, comparing the different power consumptions within a load profile with an average reference pump.

Three stages are scheduled:

1. From January 2013, the EEI requirement for energy efficiency class "A" is set to 0.27 for glandless circulators designed to operate independently from the heat generator (standalone circulators). In addition, the current energy efficiency classes will be supplemented by the additional imprint of the EEI on the pump.
2. From August 2015, the EEI requirement will be increased again to 0.23. This will then also apply for pumps designed to operate in newly installed heat generators or solar systems (integrated pumps).
3. In a last phase of implementation, the regulation from 2020 will also apply for the replacement of integrated pumps in existing heat generators. All glandless circulators in the heating and air conditioning sector will then be affected by the regulation.

DHWS water circulators are the exception to this. There is only an obligation to label these.

### Harmonisation of the European Pump Market

The main load of the tasks resulting from the ErP Directive will be borne by the manufacturers of heating pumps. This is because they will be responsible for providing the European market with appropriate energy-efficient products. From the dates mentioned, the new Commission Regulations will create a harmonisation of the European market with labelling standards. Together with its distribution partners, Wilo will ensure a perfect transition of its range at the relevant cut-off dates.



## Planning and Tendering – What should be done?



### Glanded Pumps: Particularly Efficient Motor Technology

A relevant EU Commission Regulation – (EC) 640/2009 – will take effect for electric motors, even earlier than for glandless circulators. This will also concern motors installed in glanded pumps for heating and air conditioning as well as water supply, pressure boosting and waste disposal. Against this background, new efficiency classes have been defined. The IE2 efficiency level will take the place of the current EFF1 category. Three phases have also been defined for this implementation:

1. IE2 efficiency level must be complied with from 16 June 2011 for all newly sold electric motors on the market – except for a few designs and fields of use. Pump motors with the current EFF2 efficiency level – labelled as IE1 in the future – will then no longer be permitted for sale in the European Union.
2. From 1 January 2015, an even stricter IE3 efficiency level will apply. At this point, it must be achieved primarily by motors with a rated output of 7.5 to 375 kW. Alternatively, they must meet the IE2 efficiency level and be equipped with a variable speed drive.
3. From 1 January 2017, these requirements will also apply for motors with a rated output of 0.75 to 375 kW.

### Effects on the Pump Market

What do these new requirements mean for the energy efficiency of pumps? Pump installers should by now be dealing with the most energy-saving versions of the current market range. The high-efficiency single pump series of Wilo-Stratos and Wilo-Stratos PICO already meet the particularly strict requirements of the second phase of the Commission Regulation for glandless circulators, which will be valid from 2015. For this reason, they can contribute to higher energy efficiency in heating systems and increased turnover for the building services professional immediately.

The forthcoming requirements of the ErP Directive will be of particular significance in terms of major building projects. Glanded pump motors of EFF2 efficiency class and unregulated glandless circulators are currently still available. The cut off date for sales of models of pumps which do not comply with the ErP Directive will be 16 June 2011 (for glanded pumps) and 1 January 2013 (for glandless circulators). Even if the new EU Directives have not taken effect when the building design is completed it is still advisable to concentrate on the most energy saving products.

Against this background, clients should be pointed in the direction of conversion and advised to work towards energy efficiency. Whenever the use of high-efficiency pumps, for example, is connected with higher construction costs, reference to the considerably lower operating energy costs is a convincing argument. Support is provided here by the LCC-Check from Wilo. At [lcc-check.wilo.com](http://lcc-check.wilo.com), the life cycle costs of a large range of circulators can be compared with those of the Wilo high-efficiency pumps. This tends to show that the achievable energy cost savings can lead to rapid amortisation of the additional costs associated with HE pumps.



*Wilo pumps, which match the demands of the upcoming directives up to 2015, are already being used throughout Europe in many thousands of new build projects and re-furbishment.*

## Complete Range of High-efficiency Pumps The Pump Standard of Tomorrow for Market Success of Today

In the heating and air conditioning sector, the choice of a higher-quality high-efficiency pump instead of an unregulated glandless circulator means that the new pump pays for itself after just a few years through considerable electrical cost savings. HVAC business benefits from the higher turnover per pump. The pump standard of the future can be an important key to market success of today.

The early replacement of an old, unregulated circulator will be quickly amortised, in many cases. As an energy saving measure, replacing the circulator has relatively low investment costs in the commercial sector as well as in detached and semi-detached houses and apartments. The success rate of the relevant recommendations when presented to customers are accordingly high due to the substantial benefits.

The current high-efficiency pump range of Wilo-Stratos PICO and Wilo-Stratos provide the building services market with a complete range of circulators which already conform to the strict threshold levels due to be introduced under the ErP Directive in 2015. This means Wilo is the only manufacturer in the World with a range currently available today that meets the criteria of the new Directive.

Back in 2001, Wilo-Stratos already set new standards. Since that time, it has been the reference for the "A" energy efficiency class in heating pumps. All pumps from this commercial heating and cooling circuit range have been continually supplemented and optimised since 2001, which now means they already fully conform to future requirements under the new directives.

## Wilo Innovations and their Breakthrough as Standards

As one of the largest pump manufacturers in the world, WILO SE is deemed a leader in innovation in many sectors. The 2001-introduced Wilo-Stratos, for example, was the first high-efficiency pump for heating and air conditioning in the world. With the introduction of the EU Directive for glandless circulators, it is becoming a standard product for building services engineering just 12 years after its initial presentation. With similar pioneering innovation, such as the 2009-introduction of the decentralised pump system Wilo-GeniAx, Wilo has already made a name for itself and will continue to do so with similar success stories.



**1928**  
Worldwide first  
heating circulator  
(circulation accelerator)  
**Standard since about 1950**



**1953**  
First maintenance-free  
circulator  
Wilo-Perfecta  
**Standard since about 1960**



**1988**  
First fully-electronic  
energy efficient pump  
**Standard since about 1992**

Through their wide temperature range of  $-10^{\circ}\text{C}$  to  $+110^{\circ}\text{C}$ , they are really well suited to both heating systems and for use in cooling and air conditioning. To this end, all Wilo-Stratos pumps receive an electrophoresis coating as standard. In addition, any condensation water is safely discharged through a condensation discharge labyrinth.

The high-efficiency pump Wilo-Stratos PICO used for detached and Semi-Detached houses and apartments is particularly economical. Compared with unregulated heating pumps, it achieves energy savings of up to 90%. This is made possible by a newly developed pump motor with "3 watt technology". Below the line, the new model only uses half as much energy as the current best "A" energy efficiency class demands. Following the standard measuring procedure of the Europump Commitment, the German TÜV SÜD has certified a consumption value of just 46.5 kWh/a for a typical single-family house.

High-efficiency pumps "made by Wilo" provide an important contribution to energy saving in heat and cooling distribution. This is because Wilo pumps, which meet the demands coming into effect in 2015, are already being used throughout Europe in many thousands of new build projects and modernisation measures: in detached houses and apartment blocks and hotels, as well as in offices, public buildings, stadiums and the heating and cooling control centres of industrial companies.

The introduction of the first stage in 2013 will not bring any serious change for the installer. Except when replacing a defective unregulated pump as the identical or similar models will no longer be available.



**2001**

First high-efficiency pump Wilo-Stratos  
**Mandatory throughout the EU from 2013**



**2009**

High-efficiency pump Wilo-Stratos PICO with particularly low energy consumption  
**Mandatory throughout the EU from 2013**



**2009**

Worldwide first Decentralised pump system Wilo-GeniAx presented at ISH  
international roll-out is planned in the next years

### Wilo-GeniAx

In centrally heated buildings, Wilo-GeniAx saves an average of 20 % of the heating energy. It replaces thermostat valves and the circulator in the plant room. Instead, miniature pumps are fitted directly to the radiators or heater circuit, which only deliver hot water when needed. A central server regulates the heat generator and pumps. It adapts the supply temperature to the actual heat requirement. Individual heating times and temperatures can be set using room control panels, which increases the level of comfort as well as saving energy.



WILO SE with its headquarters in Dortmund, Germany, is one of the leading manufacturers of pumps and pump systems for heating, cooling and air-conditioning technology, for water supply and sewage and drainage. Wilo is represented by almost 70 subsidiaries all over the world and employs approx 6,000 people. In 2009 turnover amounted to 926 million Euros.

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## Timetable of ErP Directive in EU

### 16 June 2011

Electric motors fitted to glanded pumps for heating, air conditioning and pressure increase as well as sewage disposal must achieve at least IE2 efficiency level (corresponds to current EFF1).

### 1 January 2013

The Energy Efficiency Index (EEI) of standalone glandless circulators must not exceed a value of 0.27 (except standalone glandless circulators designed especially for primary circuits of thermal solar systems and heat pumps).

### 1 January 2015

Electric motors fitted to glanded pumps with a rated output of 7.5 to 375 kW must either achieve the IE3 efficiency level or the IE2 efficiency level and be equipped with a variable speed drive.

### 1 August 2015

The Energy Efficiency Index of standalone glandless circulators and glandless circulators integrated into OEM products must not exceed a value of 0.23 (except replacement pumps for circulators integrated into products, which were put on the market before 1 August 2015).

### 1 January 2017

Electric motors fitted to glanded pumps with a rated output of 0.75 to 375 kW must either achieve the IE3 efficiency level or the IE2 efficiency level and be equipped with a variable speed drive.

### 1 January 2020

The Energy Efficiency Index of replacement pumps for glandless circulators integrated into OEM products must not exceed a value of 0.23.

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