



cees

A bright future



Power electronics makes pumps energy-efficient

– Reduce the world's energy consumption by 5%

10% of the world's energy consumption is used to operate pumps. Pumps to provide hot water in your radiator and cold water in your drinking tap. Pumps to move liquids from one location to another. If we replaced the current pump fleet with the most energy-efficient pumps, the energy consumed by pumps could be halved – and the world's energy consumption would be reduced by up to 5%. The secret is primarily the use of power electronics.

Energy losses in circulation pumps

Grundfos is the world's largest manufacturer of circulation pumps. They are used to pump hot water around houses, so that there is hot water in radiators, taps and showers, when it is needed. The circulation pump has traditionally been an invisible energy guzzler – all homeowners have one or more, and very few people realise it.

Until power electronics emerged there used to be major energy losses associated with using circulation pumps, and efficiency was not a focus area. Inefficient motors with simple controls were used, which merely circulated water around and could not adapt to the needs of the system. This meant that up to 90% of the energy consumed was wasted.

Grundfos uses power electronics in the solution

By using power electronics and more efficient motors which require an intelligent controller, Grundfos has reduced energy consumption considerably. With this combination, the company has ensured that the pump 'learns' the system's characteristics, and only uses the energy necessary for the system to maintain the required pressure. Older circulation pumps constantly used 70 W, while the newest and most efficient pumps use approx. 5 W.

Perspectives for the future

The improvements in energy efficiency are so large in the latest circulation pumps from Grundfos, that we are very close to the theoretically lowest possible energy consumption to do the work required. However, there is still enormous potential for energy savings, as there are hundreds of millions of inefficient circulation pumps in homes all over the world. Replacing the old pumps with energy-efficient circulator pumps would be a simple and easy way to achieve a dramatic reduction in the world's energy consumption. This is a multi-billion euro market, which Danish industry – and Grundfos in particular – is in a good position, in terms of technology and expertise, to claim a solid share of.

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Centre for Electrical Energy Systems (CEES) is a Danish network for companies and research institutions. We research and develop electrical energy systems, the global market for which is DKK 300 billion annually.

The partners in the network are universities and companies in Denmark. Our goal is to consolidate Denmark's strong position in the field of power electronics and to train enough qualified manpower. We also research the intelligent control of power electronics.

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