



Pump Users
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Optimization of pumping systems

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Summary

Pumps are used in many different applications. These applications include installations in buildings (heating, air-conditioning, water supply), in the chemical industry, in sewage treatment and in energy plants.

Low energy consumption and low lifecycle costs of the whole installation are general requirements for the majority of end users.

Legal constraints aimed at promoting optimized components and systems in order to reduce energy consumption have been introduced or will be introduced in different regions, for example in Europe (Directive on Energy Using Products), in China, in Korea and in the USA. The potentials and the estimated effects on pumps and drives of some of the proposed measures are explained in the paper.

In the second part of the paper a detailed analysis of the pumping systems in buildings (air-conditioning and booster systems) is described. The analysis was carried out using numerical and experimental methods.

Based on the results of these investigations several options for the reduction of energy consumption are shown.

Some proposals are focused on the optimization of the components (hydraulic, drive, control algorithms) while other proposals show a completely new system approach.

The effects of all proposals on energy consumption are shown and explained in detail.