This project has received funding from the European Union's H2020 Coordination Support Action under Grant Agreement No. 894356.

Best Practice	REDUCTION OF RUNNING TIME FOR PUMPS – SWITCH OFF MOTORS WHEN NOT NEEDED	PUMP-01
Application	Optimisation of Pumping Systems	
SME sector	Industrial	
SME Sub-sector	All	
Technical description	Except for control electronics, if available, the consumption of electrical drives is zero when they are stopped. Therefore, it is important to stop a pump when there is no need. In many cases we still observe pumps that run without need: • continuous flows without link to the user need. Nevertheless, sometimes, a minimum flow rate is necessary to maintain a given temperature on users • avoid the formation of a biological deposit/film The question is more difficult when determining whether to operate at reduced speed or stop frequently. The choice in these cases is often not only related to energy aspects but also to effect on a process or on maintenance.	
Recommendation for optimisation	A general comparison between start/stop and controlled low flow does not make sense. From an energy point of view, it depends on the efficiency at full speed versus reduced speed. Moreover, it is necessary to consider that a pump has a minimum technical flow rate. Situations must be considered on a case-by-case basis. The on/off control is advantageously used when there is a stock (water lift pump, charging hot/cold water tank). In this case, on/off control also reduces the heat/cold losses in the pipes. In any case, the operator must consider the real need of a pump (considering the different users) and adapt the flow rate to it. The relevance of maintaining a minimum flow rate must be questioned. The reduction of operating times can usually be done manually by qualified personal of the company. To guarantee the maximum savings potential, automated systems are worthwhile and can often be realized via simple and cost-effective time controls.	
Relevant technical considerations	Reducing the operating time is more difficult when you decide to operate at reduced speed or stop frequently. The choice in these cases is often linked not only to the energy aspects, but also to the effects on a process or maintenance.	

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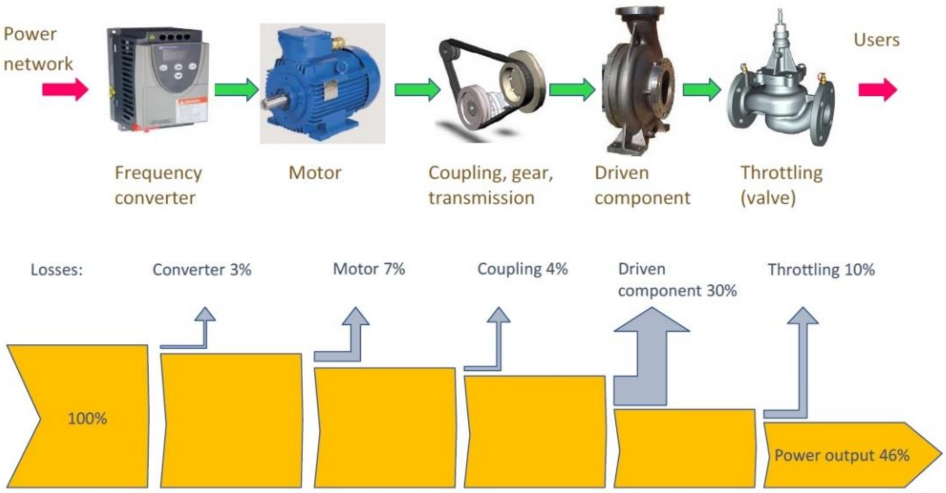
Schemes and diagrams	 Electric drive components
Economics	Unit cost of an industrial timer from 140 EUR
Energy savings	A detailed analysis of pumping systems generally allows energy savings of 20 to 40%. In cases with several sources of savings it can be even higher (70%).
Economic savings	The economic savings are closely linked to the reduction of electricity used to power the cooling system
Average Payback Time	Less than 3 years
Emissions	$0{,}7 kgCO_2/kWh_{el}$
Environmental benefits	Reduced CO_2 emissions due to lower energy needs.
Main NEBs (Multiple benefits)	☒ Environmental benefits ☐ Increased productivity ☐ Work environment/Health/Safety ☐ Increased competitiveness ☐ Maintenance
Replicability	High
Related measures	None

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Case study	Component replacement in cold production plant • Initial Situation: in the cold production plants, it is not uncommon to observe the condenser side circulation pumps or the distribution pumps to users that work with the cooling unit turned off (even if there is no free cooling). • Description of the optimisation: in these cases, the pumps must be connected to the operation of the refrigeration assembly. • Implementation costs: not available • Payback Time: not available
References	Nicolas MACABREY, Planair, 2019

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