



# University

YEARLY SAVINGS (EUR)

**25,169**

PAYBACK TIME (YRS)

**4.64**



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# Executive Summary

YEARLY SAVINGS (EUR)

**25,169**

PAYBACK TIME (YRS)

**4.64**

ENERGY SAVINGS (kWh/YR)

**206,978**

EMISSION REDUCTION (CO<sub>2</sub> T/YR)

**72.24**

INVESTMENT COST (EUR)

**116,715**

We have now finished your Energy Check and it shows that you can save (EUR) 25,169.33 annually on energy expenses through some relatively straightforward improvements to your pump installations.

This savings estimate is based on our inspection of 9 pumps installed in your facilities. By investing in more energy efficient pumps and other small improvements, your organisation can reduce energy usage by 206,977.52 kWh per year. Your investment to realise these improvements is EUR 116,715.37, which translates to a payback time of 4.64 years. This report explains in more detail how you can achieve this.

Our recommendation is that the opportunities presented in this Energy Check Report be considered carefully. We are ready to help you every step of the way in achieving these savings, and look forward to helping you realise the additional operational, environmental and business benefits of these recommendations.

If I can be of any further help in explaining these findings to you or anyone else in your organisation, please don't hesitate to contact me.

Yours sincerely,



#### Disclaimer

The potential savings shown in this Energy Check report are based upon a straight replacement without changes to the whole system and also the pump data gathered whilst on site comes from the pump/motor nameplates and/or the site engineer. Whilst every effort is made to present as accurate information as possible, Grundfos cannot be held responsible for findings in this report and delivery and services terms (effective 10/2013) also apply. This report is to be treated as confidential and therefore should not be passed onto any third party without the written permission from the local Grundfos office.



### PUMP LIFE CYCLE COSTS

# Why is your Energy Check so important

**The Energy Check can help you find the hidden saving in your organisation. The purpose is to identify potential energy savings in your pump installation and help you understand how to save on your pump operating expenses.**



# How your Energy Check was conducted



International Organization for Standardization

The Energy Check has been conducted in accordance with the ISO 14414 Pump System Energy Assessment Standard and is a theoretical calculation with an accuracy of +/- 10% based on the following:

Key Data	Motor/pump nameplate	Supplied by customer
Pump head & flow	•	
Motor power data	•	
Operating hours/yr		•
Year of installation		•
Pump use		•
Operating needs		•

The table above shows the key information needed in order to carry out an Energy Check and where that information comes from whilst on site.

From this data set, we calculated the potential energy savings for each assessed pump. The Energy Check results are based on the criteria that nothing in the installed pump system will be changed except the pump set.



## Breakdown of the potential savings

From the data collected during the Energy Check we have calculated the potential energy savings for each assessed pump. We then considered the price of purchasing newer, more energy efficient pumps, the annual operating cost with the new pumps and the related payback time.

For an investment of EUR 116,715.37 a potential energy savings of 206,977.52 kWh/yr can be achieved with a payback time of 4.64 years.

More details are shown below:

## Energy Check results

YEARLY SAVINGS (EUR)

**25,169**

PAYBACK TIME (YRS)

**4.64**

ENERGY SAVINGS (kWh/YR)

**206,977.52**

INVESTMENT COST (EUR)

**116,715**

## Pump data

Number of pumps assessed	<b>9</b>
Number of pumps with potential energy savings	<b>9</b>

## Supplied data

Price per kWh (EUR)	<b>0.12</b>
Energy price increase yearly (%)	<b>0.0</b>
Expected target payback period (yrs)	<b>7.00</b>
CO <sub>2</sub> rate (g/kWh)	<b>349.0</b>

## Pump life cycle

Savings over 10 year period (EUR)	<b>134,977.95</b>
Savings over 15 year period (EUR)	<b>260,824.61</b>

## Financial data

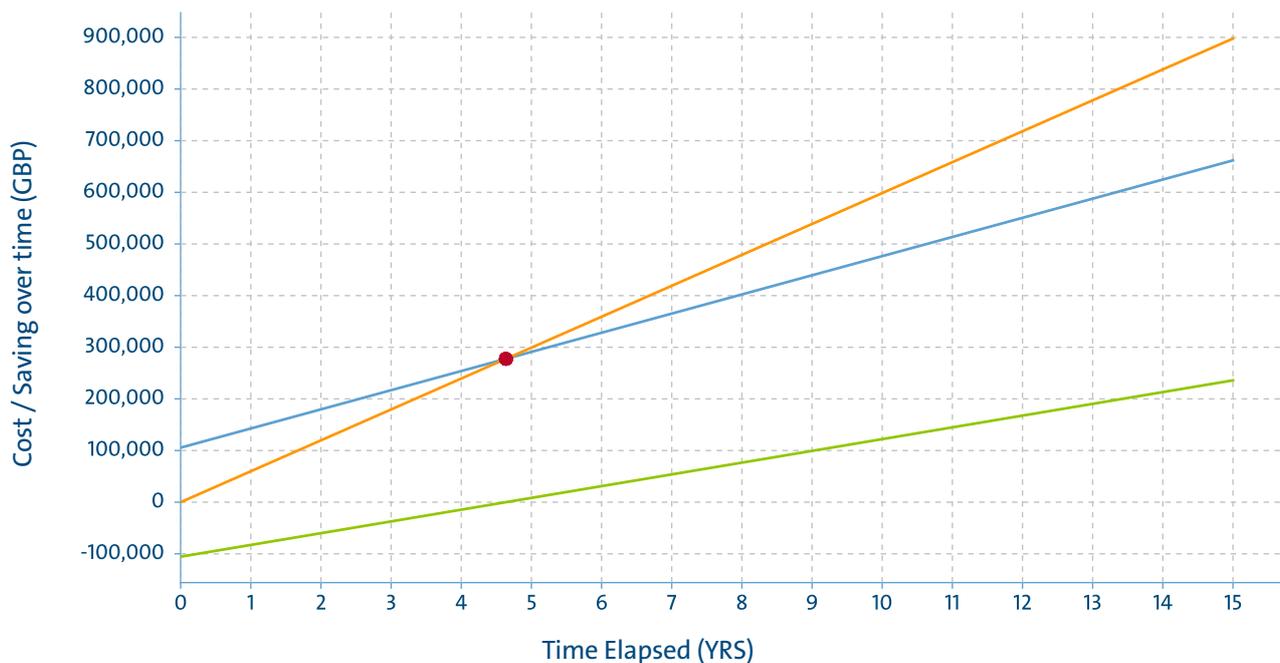
New pump equipment (EUR)	<b>104,560.48</b>
Installation/commissioning (EUR)	<b>12,154.89</b>
Accessories (EUR)	<b>0.00</b>
Service contract (EUR)	<b>0.00</b>
Maintenance of cost of existing system (EUR)	<b>-0.00</b>
Grants/Incentives (EUR)	<b>-0.00</b>
Total Investment (EUR)	<b>116,715.37</b>



## 95% of the life cycle cost of a pump is related to energy consumption, service and maintenance

The price of a new pump typically makes up just 5% of the total lifetime cost of operating it. Maintenance accounts for the next 10%, while the remaining 85% are expenses related to running the pump. Life cycle costs comprise of many contributing factors, however the energy consumption and maintenance are the most important factors to take into consideration.

The Energy Check provides a realistic picture of the total cost of ownership of a pump over time. Below is a comparison showing the existing pump systems costs against the new energy efficient Grundfos pump systems over a 15 year period.



- Existing system
- New system
- Savings
- The start of your savings

### Savings Opportunity with the new system

Initial Investment (EUR)	<b>116,715.37</b>
Savings after 10 years (EUR)	<b>134,977.95</b>
Savings after 15 years (EUR)	<b>260,824.61</b>



#### OPERATIONAL BENEFITS

- Reliable Operation
- Low failure rates
- Reduced down time
- Reduced repair costs
- Complete overview of pump installations



#### OPERATIONAL BENEFITS

- Reduction in your CO<sub>2</sub> emissions
- Greener corporate image
- Pump life-cycle analysis and documentation
- Compliance with energy regulations

EMISSION REDUCTION (CO<sub>2</sub> T/YR)

# 72.24

## Benefits beyond the balance sheet

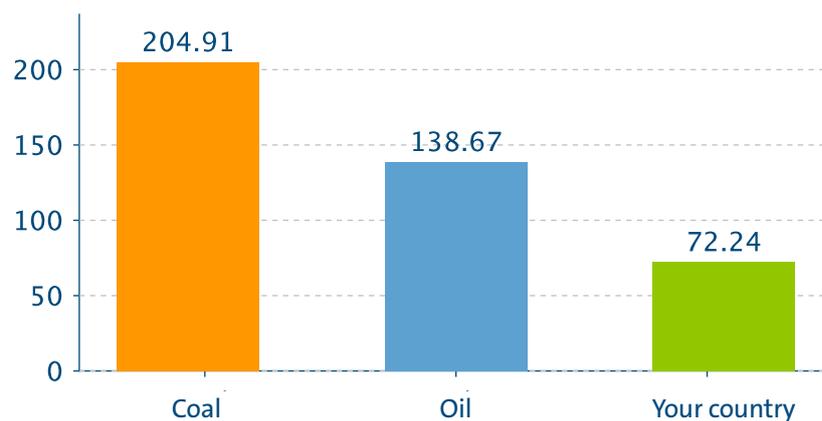
The Energy Check gives a better understanding of how reducing energy consumption in your pumps translates to reduced operating expenses with a short return on investment timeframe.

Upgrading pumps can have other operational, environmental and business benefits as well.

Deciding to invest in greener and more energy efficient pump solutions will boost your environmental profile and bring down carbon emissions. It will also help your organisation to comply with the latest energy saving regulations.

## Environmental Impact

In accordance with the latest International Energy Agency (IEA) data source on CO<sub>2</sub> emissions, the chart below shows the annual CO<sub>2</sub> savings generated by the new Grundfos energy efficient pumps. A comparison is then made against Coal, Oil and local electricity consumption.



The energy saving potential for your pumps can be seen on the following page.



## Detailed results

NUMBER OF PUMPS  
ASSESSED

9

NUMBER OF PUMPS  
WITH POTENTIAL SAVINGS

9

ENERGY SAVINGS  
(kWh/YR)

206,977.52

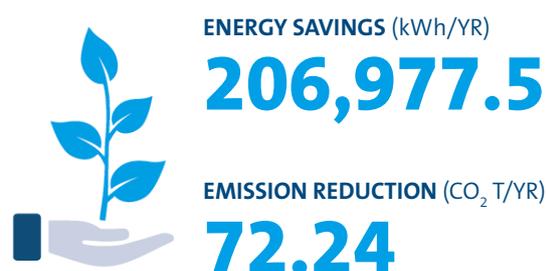
## Plant room

Tag	Brand	Product Name	Quantity	Operation hours/yr	Potential savings (kWh/yr)	Grundfos replacement
Boiler Primary Pumps 1&2	GRUNDFOS	UM 36-20 F	1	8760	43,907.86	TPED 100-250/2 A-F-A-BQQE+DPI T 0-4+Coms Card
DHW Circulating Pumps 3&4	GRUNDFOS	TPED 50-240/2	1	8760	1,392.86	TPE3 D 50-200-S A-F-A-BQQE+Coms Card
AHU Constant Temperature Pumps 5&6	GRUNDFOS	TPED 80-330/2	1	8760	12,731.28	TPED 80-330/2-S A-F-A-BQQE
Lab Block Variable Temp Pump 9 & 10	GRUNDFOS	TPED 40-230/2	1	8760	656.64	TPE3 D 40-200-S A-F-A-BQQE+Coms Card
Admin Block Variable Temp Pump 7 & 8	GRUNDFOS	TPED 40-270/2-S	1	8760	947.23	TPED 40-270/2-S A-F-A-BQQE+Coms Card
ABS Chiller Cooling Water Pump 5 & 6	GRUNDFOS	TPED 80-520/2	1	8760	71,455.44	TPED 80-520/2 A-F-A-BQQE+DPI T 0-6+Coms Card
Chilled Water Primary Pump 1 & 2	GRUNDFOS	TPED 100-250/4	1	8760	45,098.44	TPED 100-250/4 A-F-A-BQQE+DPI T 0-4+Coms Card
Chilled Water Secondary Pump 3 & 4	GRUNDFOS	TPED 100-310/2	1	8760	11,398.07	TPED 100-310/2-S A-F-A-BQQE
ABS Chilled Water System Pumps 7 & 8	GRUNDFOS	TPED 80-210/2	1	8760	19,389.70	TPED 80-210/2 A-F-A-BQQE+DPI T 0-2.5

## Conclusions and our recommendations

# The start of your energy saving journey!

With this Energy Check Report, we assessed a total of 10 pumps onsite, 10 of which have been identified as having potential energy saving opportunities



### There is money to be saved in your pumps

Our analysis found that you can save **(EUR)25,169.33** in annual operating expense by making an up-front investment of **(EUR)116,715.37** in new pumps. After just **4.64** years, this investment will have paid for itself and the improved efficiency of the new pumps will continue to generate both energy and economic savings.

Ninety-five per cent of the life cycle cost of a pump is related to energy consumption and to service and maintenance. The implications of this fact should not be overshadowed by the cost of investing in the most efficient pumps available. The potential for longer-term savings is substantial.