

NET ZERO EVENT

SOLUTIONS TOWARDS ENERGY SAVING
CHALLENGES

GRUNDFOS 

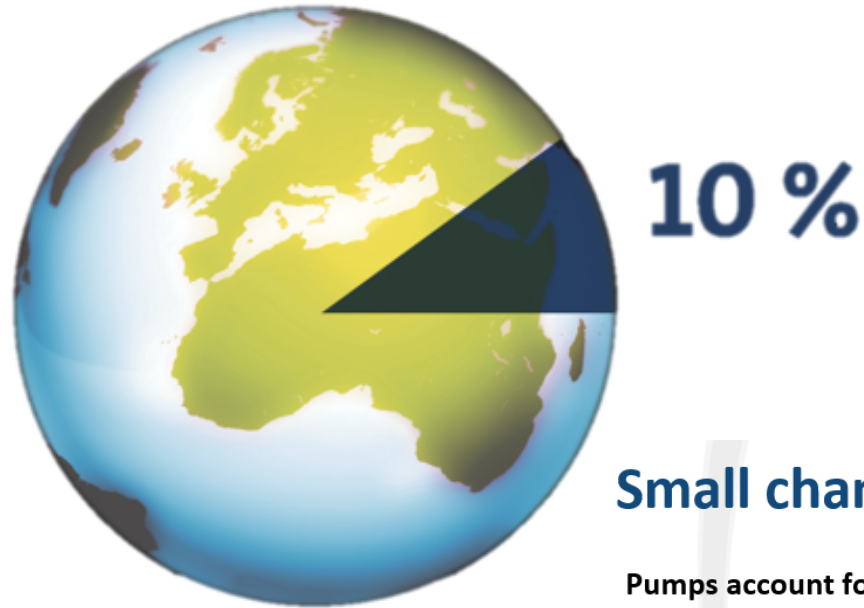
Possibility in every drop

Energy Optimization



The total amount of electricity consumed by pumps adds up to far more than most people realise

*Pumps account for a massive **10%** of the world's electricity consumption – way too much is pure waste*



Small changes – great impact

Pumps account for a staggering 10% of the world's total electrical energy consumption.

Even a slight reduction will have a huge impact on the environment worldwide, making energy optimisation an essential focus for all.



Pumps account for a massive
10% of the world's electricity
consumption

**9 out of 10 pumps in operation
are not optimised for their application and
therefore waste energy**



Energy Optimization



85%
ENERGY CONSUMPTION



5%
PURCHASE PRICE



10%
SERVICE & MAINTENANCE

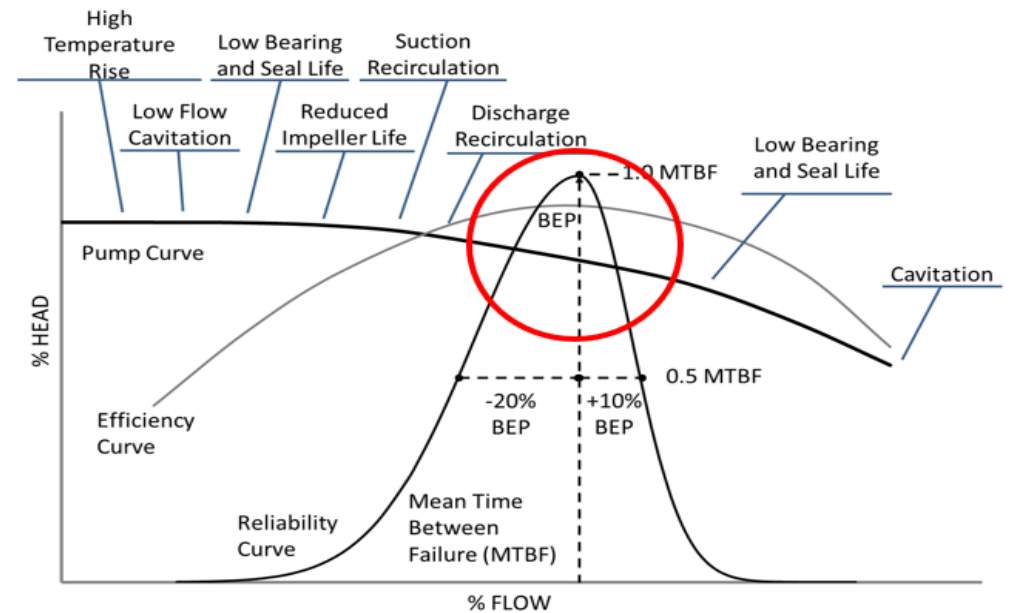
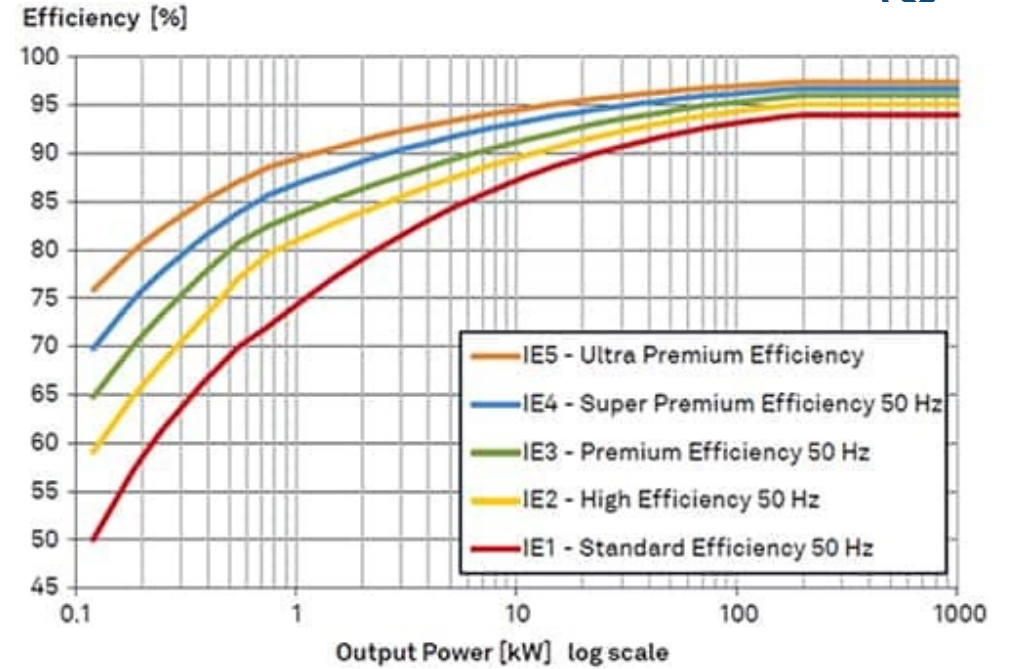


If you think pumps are expensive, consider the costs of running them

AVERAGE ENERGY PRICE INCREASE



You don't have to do the maths!



Energy Optimization



How to identify the pumps that offer the greatest energy savings?

MOTOR
SIZE

AGE
OF THE
PUMP

USAGE
PUMP
RUNNING
HOURS

ENERGY
PRICE

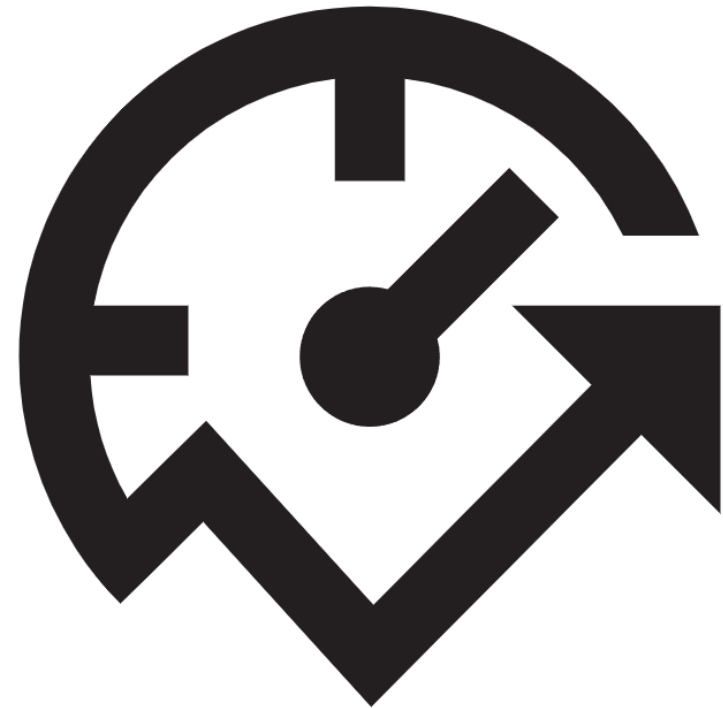
OVERSIZED
OR WRONGLY
SIZED
PUMPS

There are five categories that if applied to any pump could help determine the pump ability to offer high energy savings and/or low pay-back time.



Grundfos Service & Solutions

Energy Optimization Program



Energy optimization services



COST LEVEL

Energy check basic



Energy check



Energy check advanced

Pump Audit

COMPLEXITY & LEVEL OFF EFFICIENCY POTENTIAL



Energy Check

Energy Check identifies opportunities for improvement of energy efficiency in your system based on pump nameplate specifications.

The energy check process includes:

- Site visit to gather data from your pumping system
- Energy check report
- Presentation of final report

The energy check report provides recommendations for replacement pumps with the same specifications but lower energy consumption.

TYPE	ANY PUMP	
Q:	820 m ³ /h	H: 32 m
n:	XXX rpm	Efficiency 65 %
NPSHr:	X.X m	P motor XXX KW
Serial No.	Mfr Date	

TYPE	ANY PUMP	
Q:	820 m ³ /h	H: 32 m
n:	XXX rpm	Efficiency 82 %
NPSHr:	X.X m	P motor XXX KW
Serial No.	Mfr Date	

Energy Check Advance - Wireless Power Sensors



- The sensors are installed on one of three phases in the pump control panels.
- The sensors log the P1 absorbed power of the pumps and enable us to build accurate load profiles for the monitored pumps.
- Sensors then feed the information to a bridge, which then sends the data to our monitoring site.
- The sensors give very accurate data which we can use to understand how the pumps are running and what we can do to reduce power consumption.
- Access can be given to the customer for the monitoring site and also the mobile app to view real-time data being logged.

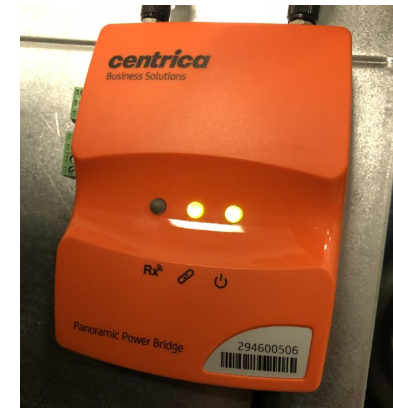
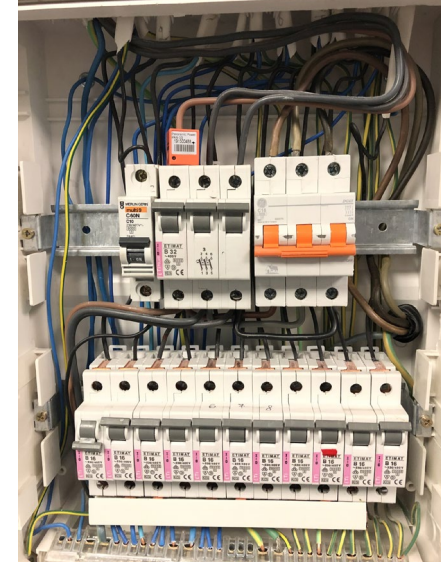
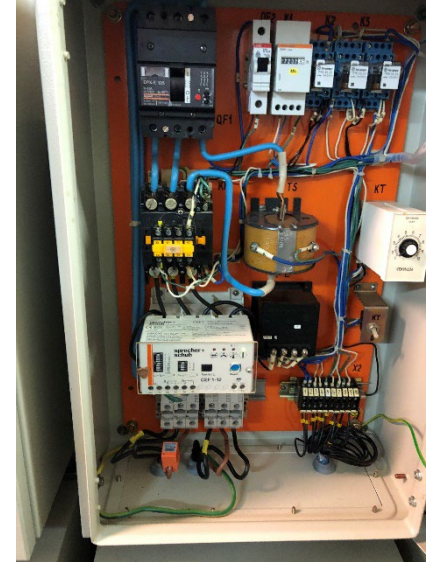


Connecting the customer site...

- Need to be a qualified electrician and of course have customer permission
 - Service engineer with relevant qualification
 - Customer representative if qualified
- Need to document with pictures if possible:
 - Name of control panel
 - Name of control circuit/ equipment being measure
 - Serial number of sensor/s used
 - Serial number of data bridge

TIPS

1. Keep data bridge as close to control panel as close as possible
2. Check bridge has 2 green lights: may need extended antenna
3. Arrow on sensor must follow flow of current
4. Measure voltage and take notes



References:



YEARLY SAVINGS (MYR)
29,825

PAYBACK TIME (YRS)
1.51

ENERGY SAVINGS (kWh/Yr)
76475

EMISSION REDUCTION (CO₂ /Yr)
49.71

INVESTMENT COST (MYR)
47,000

Executive Summary

We have now finished your Energy Check and it shows that you can save (MYR) 29,825.17 annually on energy expenses through some relatively straightforward improvements to your pump installations.

This savings estimate is based on our inspection of 4 pumps installed in your facilities. By investing in more energy efficient pumps and other small improvements, your organisation can reduce energy usage by 76,474.80 kWh per year. Your investment to realise these improvements is MYR 47,000.00, which translates to a payback time of 1.51 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.

Azlan Shafie
Grundfos Malaysia
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Disclaimer

The potential savings shown in this Energy Check report are based upon a straight replacement without changes to the valve system and also the pump data gathered within an one hour from the pump/monitor accessible within the site engineer. While every effort is made to present an accurate illustration as possible, Grundfos cannot be held responsible for the data in the report and delivery and accuracy thereof. The 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.

PROJECT NAME: TOYO MEMORY



Energy Check results

YEARLY SAVINGS (MYR)
29,825

PAYBACK TIME (YRS)
1.51

ENERGY SAVINGS (kWh/Yr)
76,474.80

INVESTMENT COST (MYR)
47,000

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 MYR 47,000.00 a potential energy savings of 76,474.80 kWh/yr can be achieved with a payback time of 1.51 years.

More details are shown below:

Pump data

Number of pumps assessed	4
Number of pumps with potential energy savings	2

Supplied data

Price per kWh (MYR)	0.39
Energy price increase yearly (%)	3.0
Expected target payback period (yrs)	3.00
CO ₂ rate (g/kWh)	650.0

Pump life cycle

Savings over 10 year period	305,149.34
Savings over 15 year period	324,337.28

Financial data

New pump equipment (MYR)	47,000.00
Installation (MYR)	0.00
Commissioning (MYR)	0.00
Accessories (MYR)	0.00
Service contract (MYR)	0.00
Maintenance of cost of existing system (MYR)	-0.00
Grants/incentives (MYR)	-0.00
Total Investment (MYR)	47,000.00

	Tag	Model	Pump Quantity	Operating Time (hours)	Pump Flow (GPM)	Pump Flow (m3/hr)	Outlet pressure (Bar)	Inlet pressure (Bar)	Head (m)	Rated P2 (kW)	Motor Efficiency class	VFD	Power P1 (kW)	Total Efficiency	Energy (kWh/year)	Energy Cost (MYR/year)
Existing	UDI WATER PUMP	AB B33.4B.2	2	4380	480.0	109.0	5.5	0.5	51.0	37.0	STD	YES	36.19	41.8%	317,011	\$ 123,634
Replacement	UDI WATER PUMP	NK 65-225/232 -	2	4380	480.0	109.0	5.5	0.5	51.0	30.0	IE3	YES	21.91	69.0%	191,932	\$ 74,853
														Savings	125,079	\$ 48,781
															39.5%	

Centrica power dashboard



Calculation details

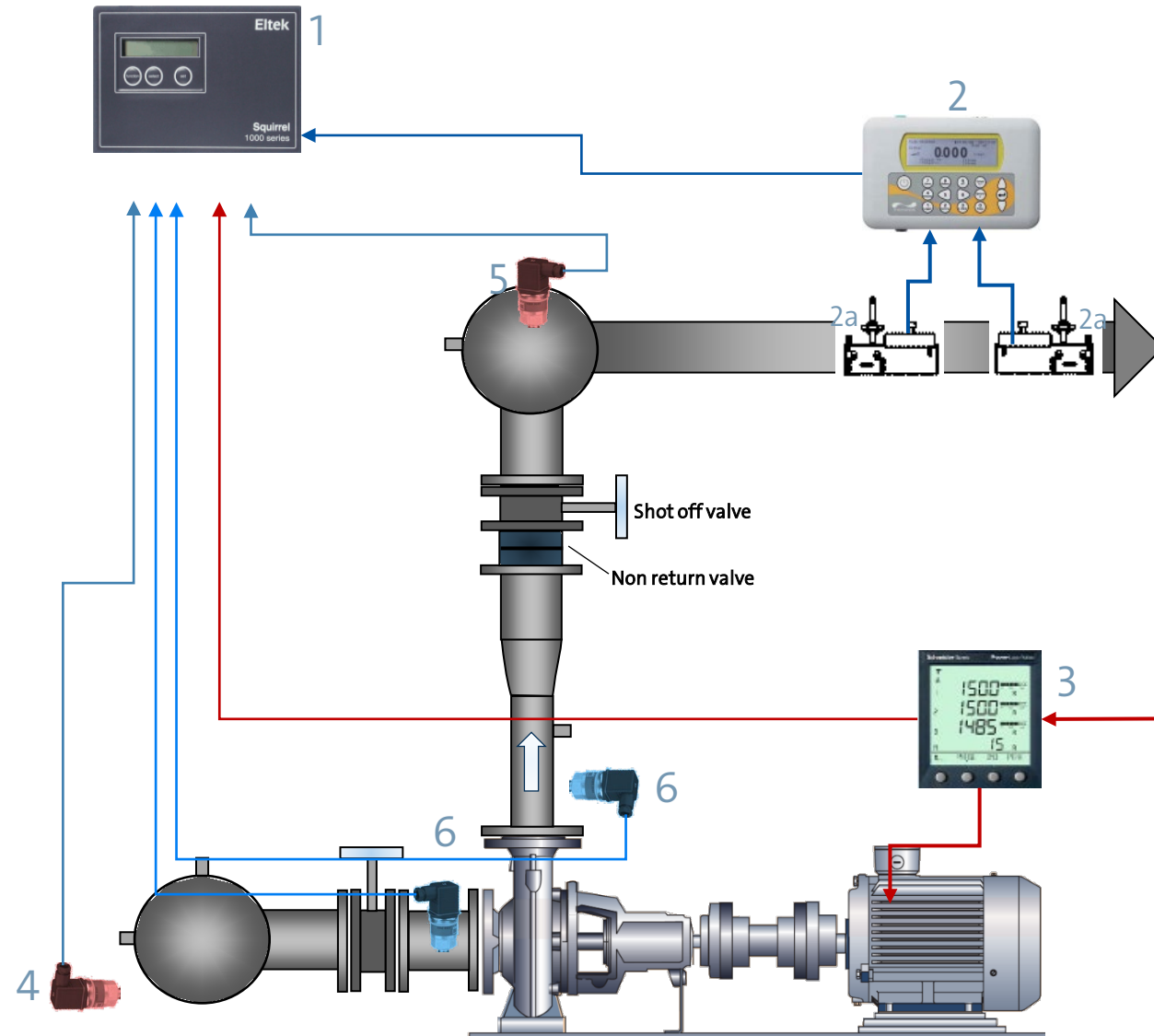
For UDI pump:
 -Measured flow 329GPM
 -Head 51m
 -Measured Power 24.8kW
 The resulting efficiency for the existing pump is 41.8%

How to do Energy Audit and how to get the data analysed?



Energy Audit Example for Single pump application

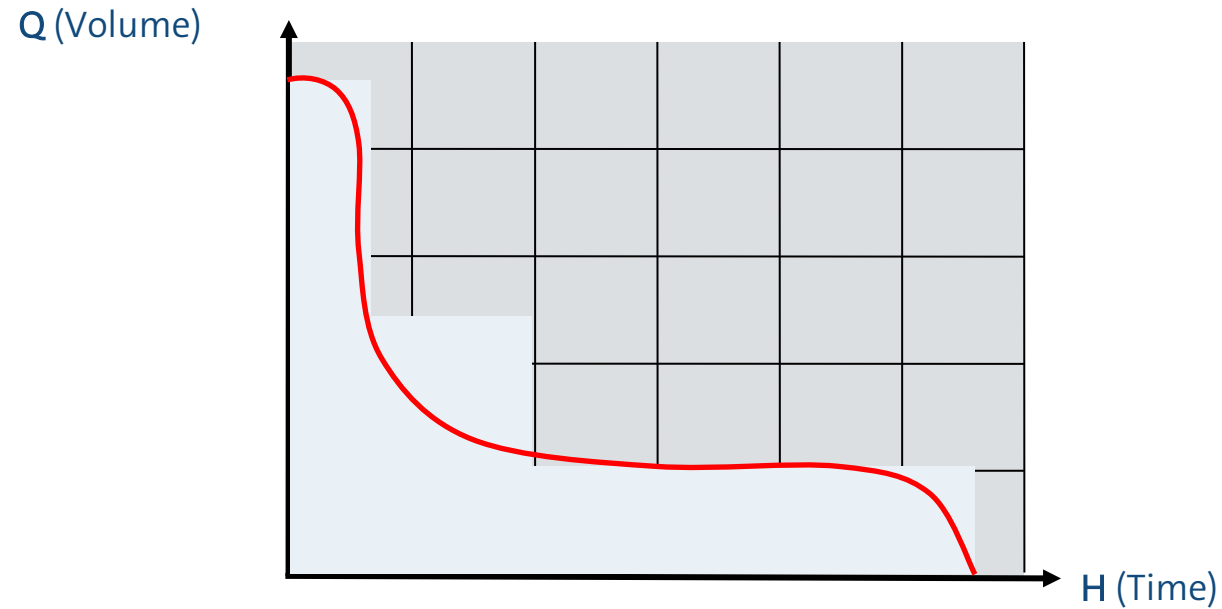
1. Data logger
2. Flow meter [2a ultra sonic sensors]
3. Power meter
4. Pressure sensor inlet
5. Pressure sensor discharge
6. Optimal place for pressure sensors



The majority of pumps are oversized



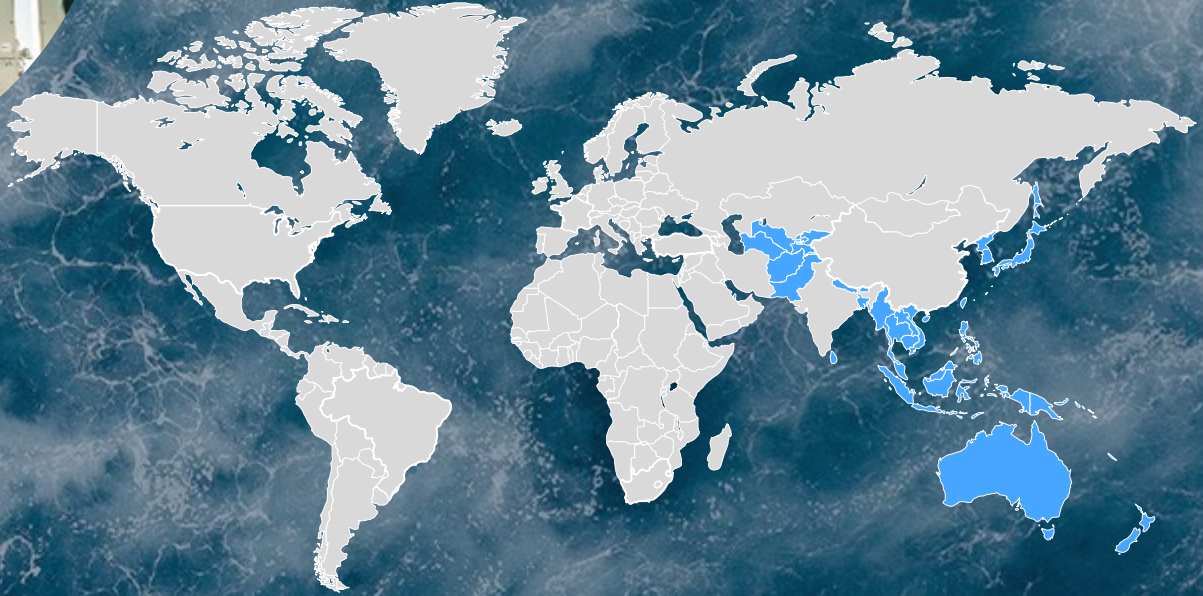
Most pumps only need to operate at 100% of their duty for a short time – if ever.



The rest of the time energy is wasted...
Do you want to know how much?



Case References Indonesia



HM SAMPOERNA Pandaan Plan

- Application: Distribution Pump
- Issue: : Existing pump running with over size Pump is 37 kW + inverter but still oversized
- Solution: GRUNDFOS propose Pump Audit to find how much energy cost would reduce & Promoting I solution Product (NBG)
- Prospect to implement Service agreement program



Energy saving:
275.940 kwh/year



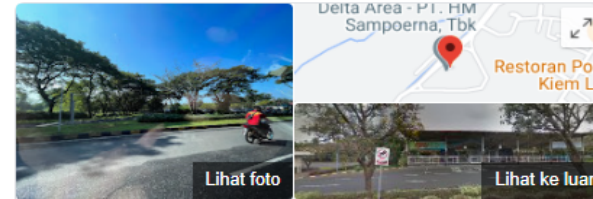
Return on Investment:
7 month



Earning in MYR:
386.000.000.-/year



PT HM SAMPOERNA Tbk.



Delta Area - PT. HM Sampoerna, Tbk.

[Situs web](#) [Rute](#) [Simpan](#)

4,4 ★★★★★ 44 ulasan Google

Produsen di Jawa Timur

Alamat: Jl. Raya Surabaya - Malang, Km. 51, 4 Pandaan, Jerukuwik, Ngadimulyo, Kec. Sukorejo, Pasuruan, Jawa Timur 67161

Jam: Buka · Tutup pukul 17.00 ▾

Telepon: (0343) 631203

Provinsi: Jawa Timur



Heinz ABC Karawang Plan iBoiler Case Story

- Application: Boiler Feed Pump
- Issue: Customer looking for more efficient system, plenty of water come back to deaerator (5-8 m³/h) due to vary of steam usage.
- Grundfos recommend to carried out the Energy check to identify the correct value to optimize the system and create the saving.



Energy saving:
46.515 kwh/year



Return on Investment:
2,4 year

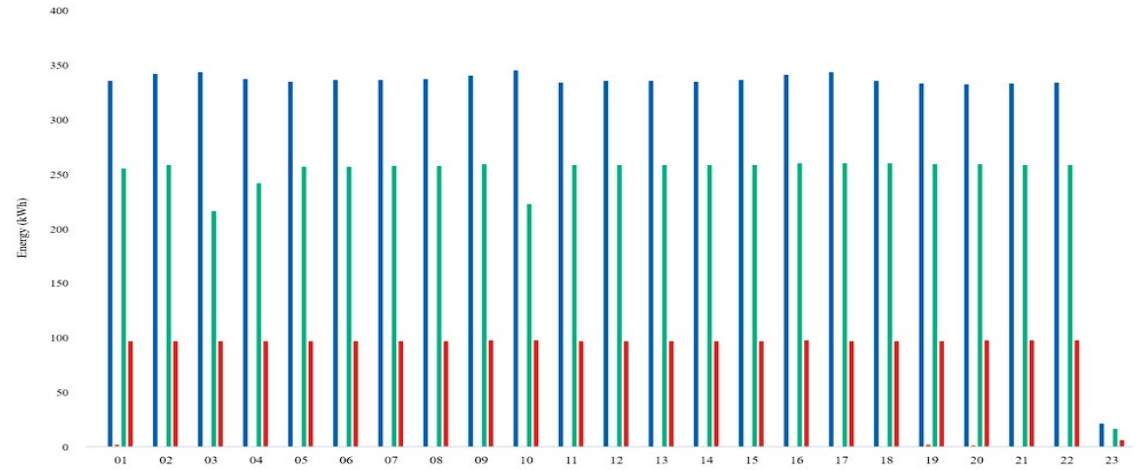


Earning in IDR:
52.795.000.-/year

Supravisi Rama Optik Plan

- Application: Multicoat Pump
- Issue: : Existing pump running with over size Pump (18,5 kW)
- Solution: GRUNDFOS propose Pump Audit to find how much energy cost would reduce & Promoting I solution Product (CRE)

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Energy saving
114.752 kwh/yr



Return on Investment:
12 month



Earning in IDR:
-.228.012.580/year