
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*

10 %

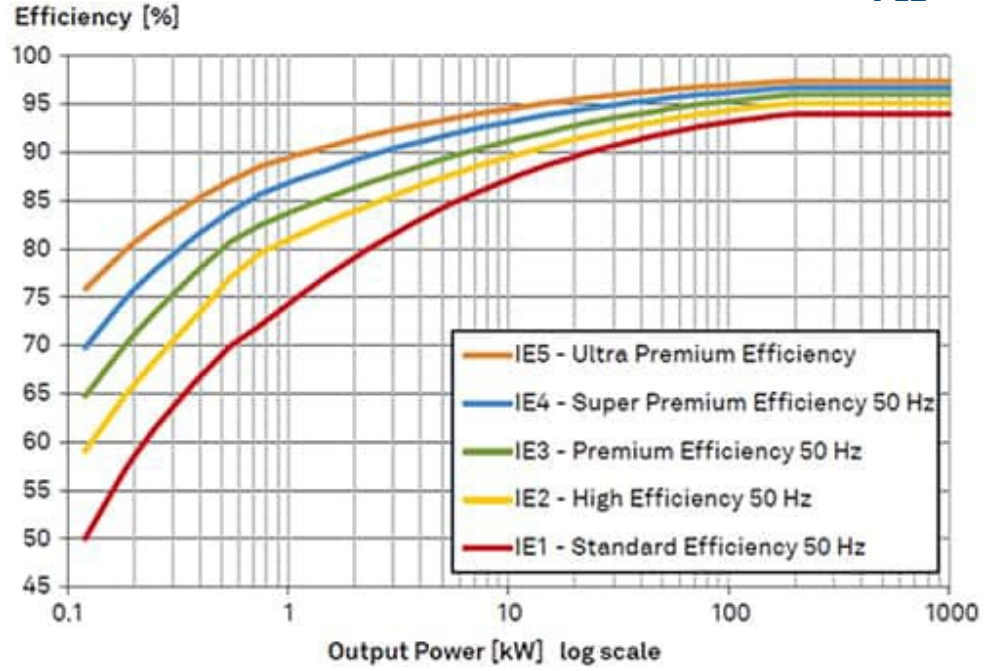
Small changes – great impact

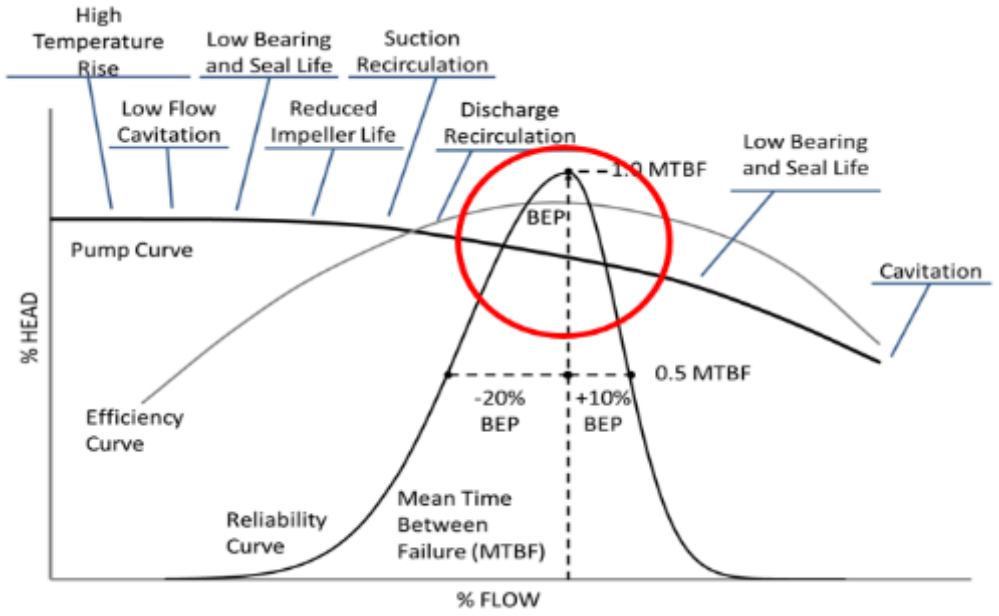
Pumps account for a staggering 10% of the world's total electrical energy consumption.

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

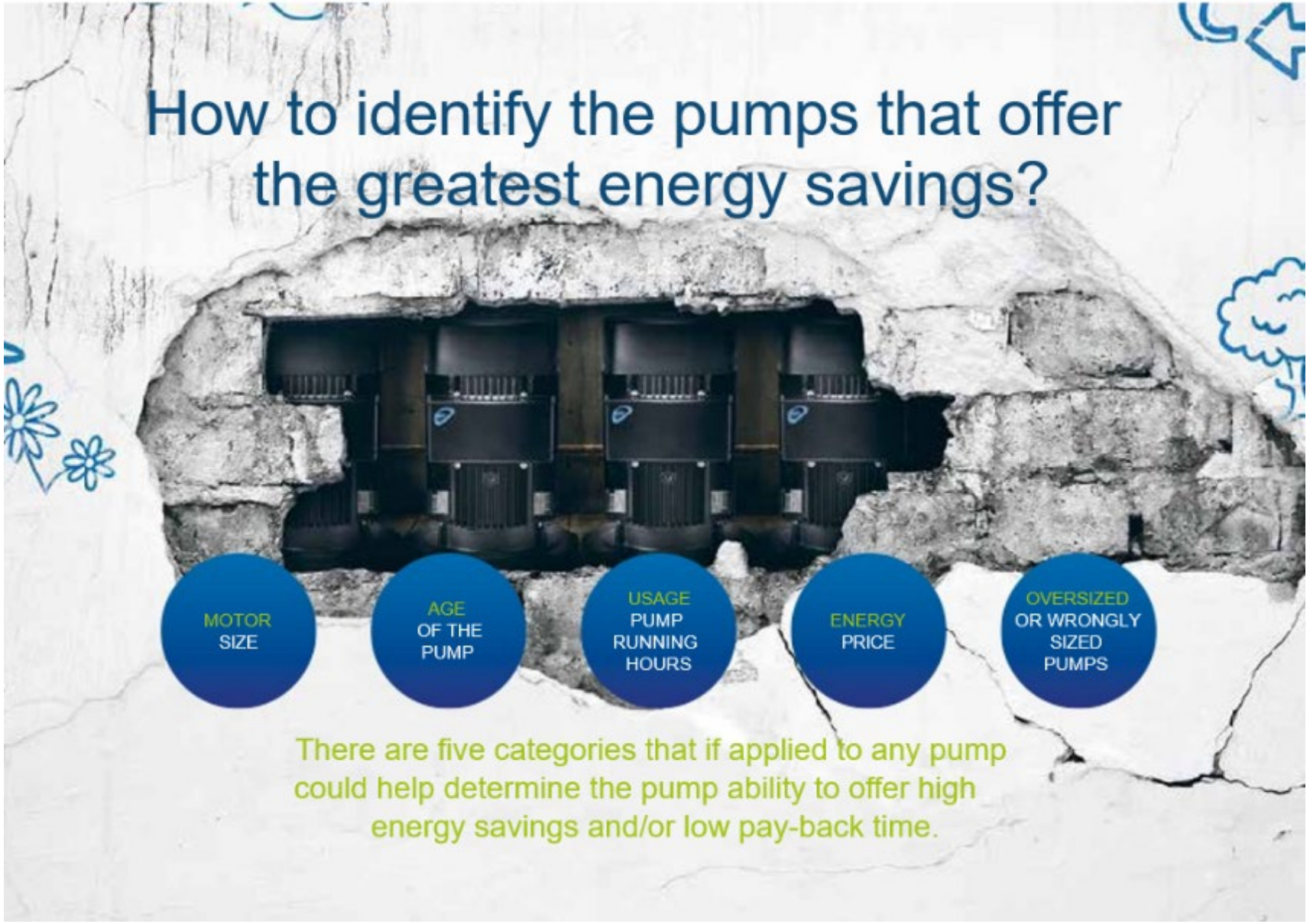

Pumps account for a massive
10%
of the world's electricity consumption
9 out of 10 pumps in operation
are not optimised for their application and
therefore waste energy

Energy Optimization





Energy Optimization



Grundfos Service & Solutions

Energy Optimization Program

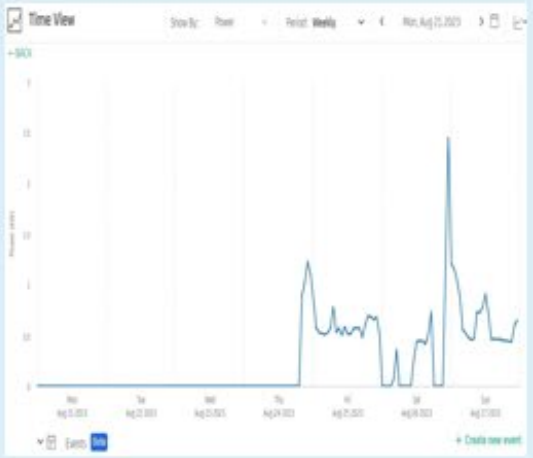
Energy optimization services

COST LEVEL

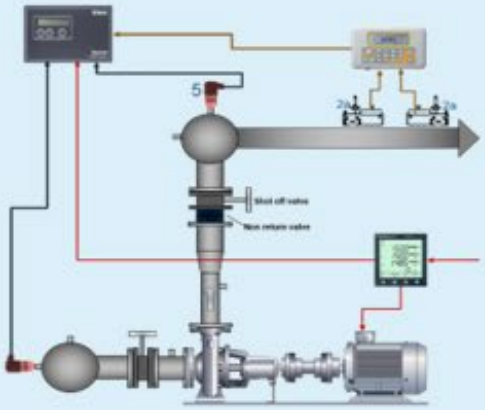
COMPLEXITY & LEVEL OFF EFFICIENCY POTENTIAL

Energy check basic

Energy check advanced



Pump Audit



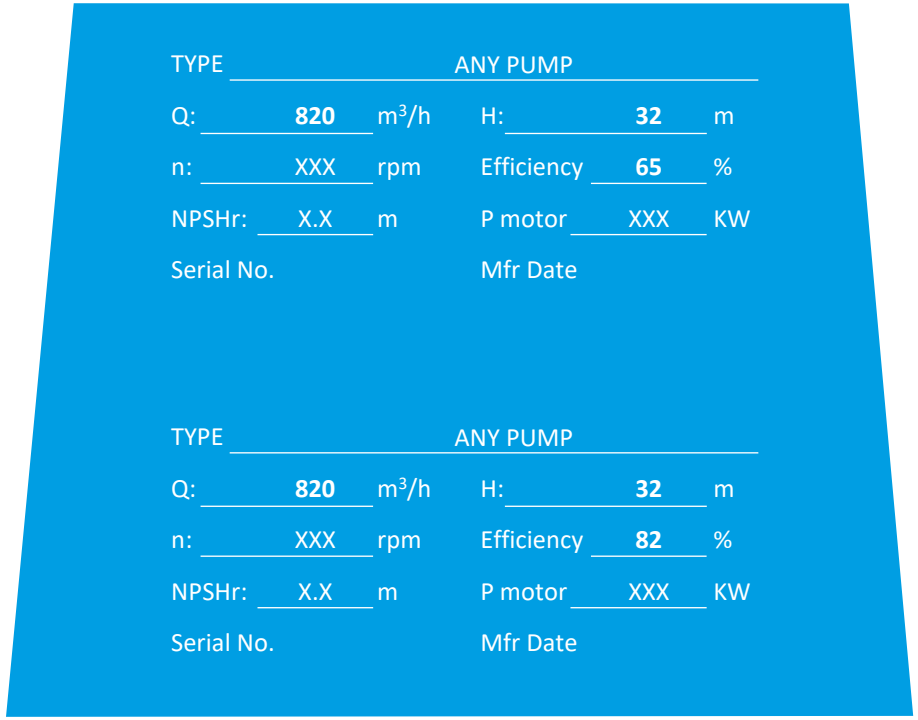
Energy Check

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.



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:

Executive Summary

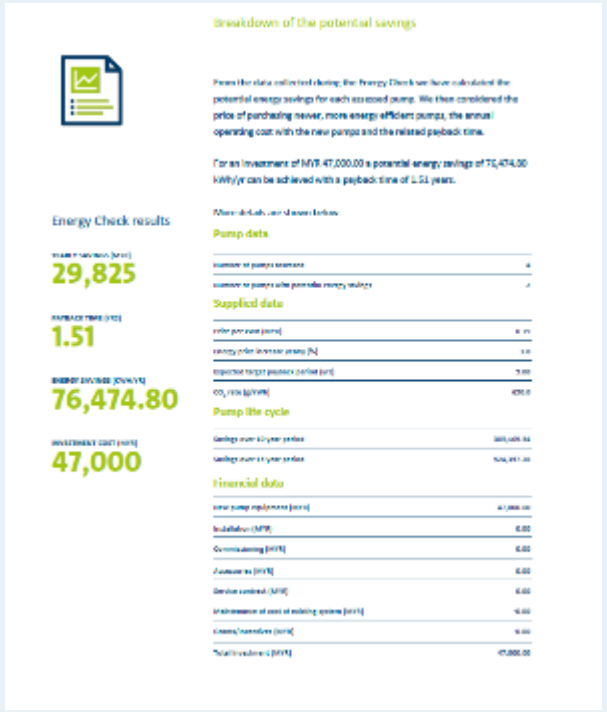
29,825

1.51

76475

49.71

47,000



Energy Check results

29,825

1.51

76,474.80

47,000

Breakdown of the potential savings

Pump data

Supplied data

Pump life cycle

Financial data

	Tag	Model	Pump Quantity	Operating Time	Pump Flow	Pump Flow	Outlet pressure	Inlet pressure	Head	Rated P2	Motor Efficiency class	VFD	Power P1	Total Efficiency	Energy	Energy Cost
				(hours)	(GPM)	(m3/hr)	(Bar)	(Bar)	(m)	(kW)			(kW)		(kWh/year)	(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%	

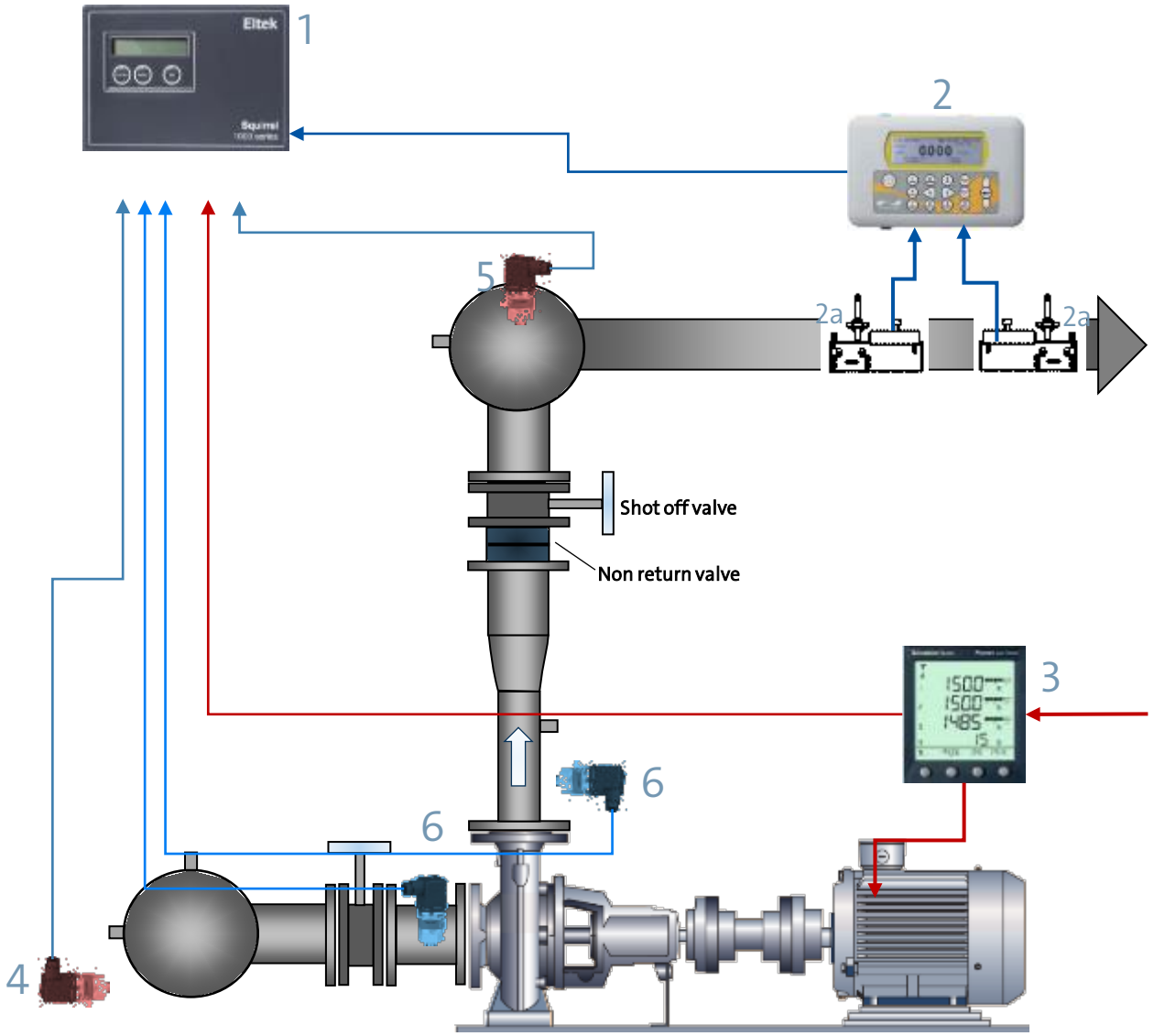
Calculation details

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?

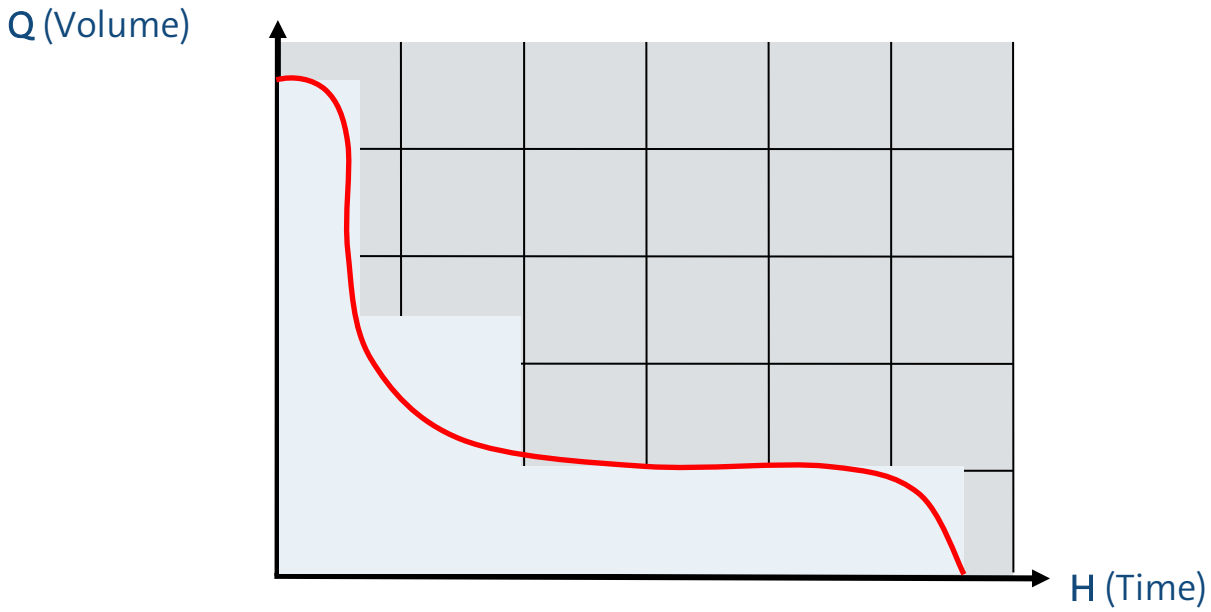
Energy Audit Example for Single pump application

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



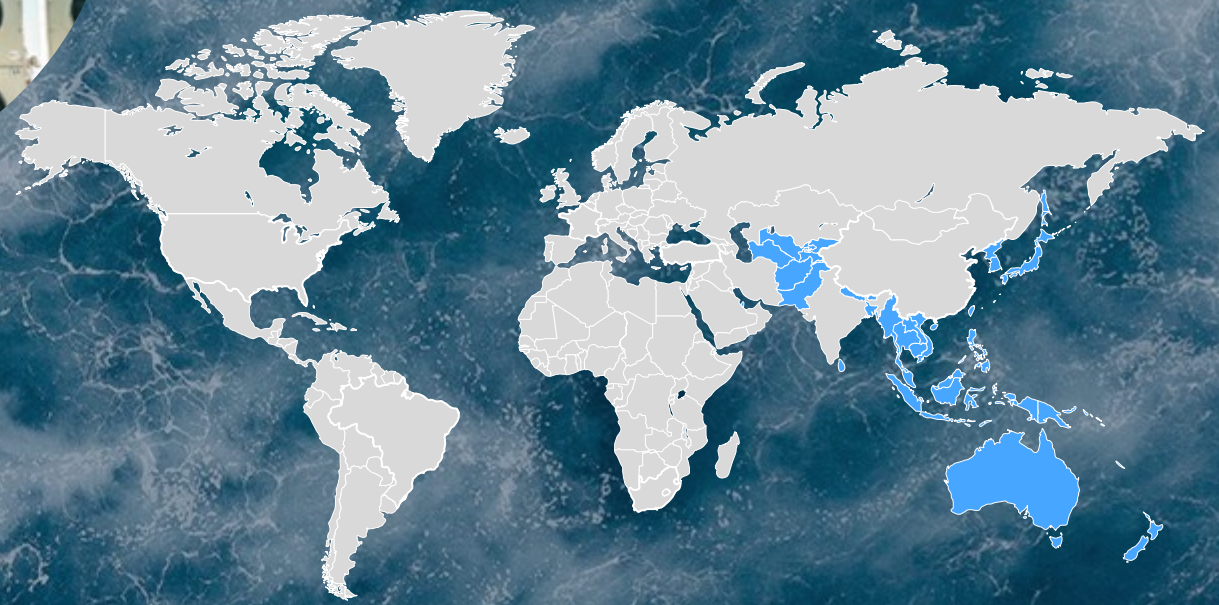
The majority of pumps are oversized

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 Malaysia



Project References 1:

- Application: UDI Water Transfer
- Issue: Customer looking new pump to replace the existing
- Grundfos recommend to carried out the Energy Audit & pump assessment to identify the correct value to optimize the system and create the saving. After completed the audit Grundfos will suggest the exact pump model with lower kw and size.

Energy saving:
76,475 kwh/year

Return on Investment:
1.5 year

CO2 Reduction:
49.71 kwh/year

Earning in MYR:
29,825.-/year

Project References 2:

- Application: Condenser Pump / Chiller
- Issue: Existing pump running with over size, they always throttling valve at 80%. Pump is 185kW for condenser and 110kw / 90kw for Primary and Secondary pump.
- Solution: Grundfos recommend to carried out the Energy Audit & pump assessment to identify the correct value to optimize the system and create the saving. After completed the audit Grundfos will suggest the exact pump model with lower kw and size.

Energy saving:
807,234 Kwh/yr.

Return on Investment:
1.1 year

CO2 Reduction :
524.7 ton/year

Earnings in MYR:
290.604,-/year

Q & A

THANK YOU!