

Control service for energy efficiency in pumps

IDENTIFY OPPORTUNITIES FOR ENERGY SAVINGS

Evaluation of B.E.P. (Best Efficiency Point) and real characteristic curve.

Optimization of investment for replacing or repairing.

Improvements in preventive maintenance.

Reducing your pump's life cycle costs.



FINANCING OF PROJECTS IT IS POSSIBLE THROUGH THE SAVINGS

THERMODYNAMIC METHOD OF MEASURING PUMP EFFICIENCY

(Accuracy $\approx 1\%$) (*)

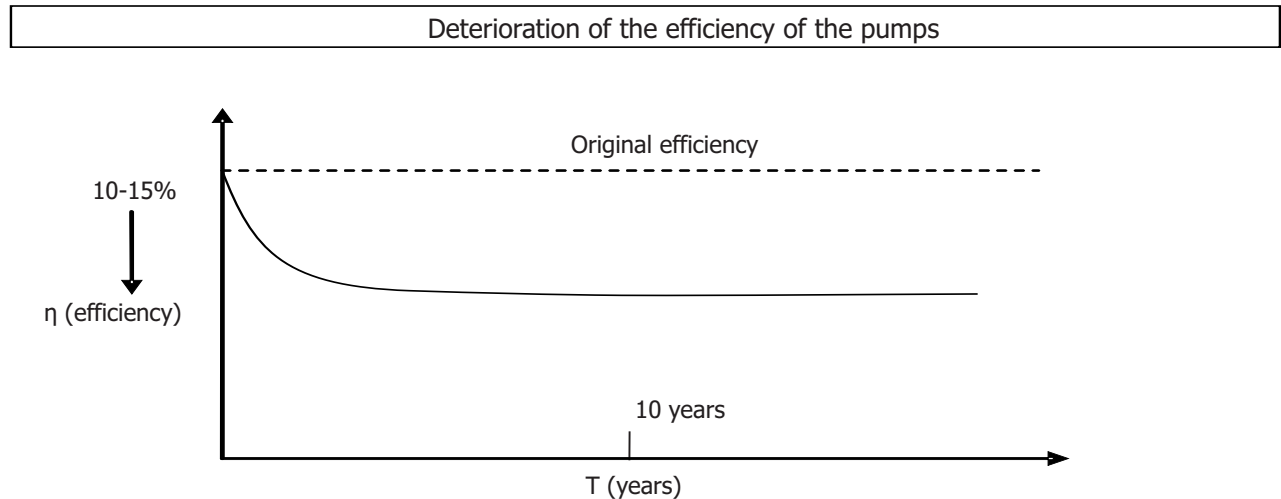
According to Standard International:
BS EN ISO 5198:1999, Centrifugal, mixed flow, and axial pumps – Code for Hydraulic performance tests.

(*) Recommended by SAVE report European Commission.



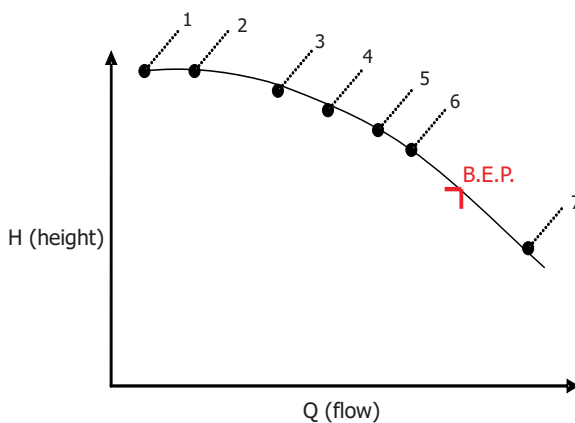
PROBLEM

The efficiency of any pumping equipment deteriorates through its life cycle. This deterioration is due mainly to mechanical wear and scaling. According to the "SAVE report", prepared by the European Commission, the efficiency tends to decrease between 10 and 15 percent compared to their original values. There have been cases where efficiency has lost up to 20 percent in the first two years of operation. In the chart below illustrates the evolution of efficiency in a typical pumping equipment:



Source: SAVE report "Study on improving the energy efficiency of pumps" developed by the European Commission, February 2001

Causes of deviation of Best Efficiency Point (B.E.P.)



Source: Guide for selection of pumps of the European Manufacturers of Pumps, www.europump.org

- 1.- Overheating
- 2.- Low flow cavitation
- 3.- Reduced life of mechanical seals and bearings
- 4.- Reduced impeller life
- 5.- Recirculation in the suction
- 6.- Recirculation in the discharge
- 7.- Cavitation due to lack of $NPSH_A$



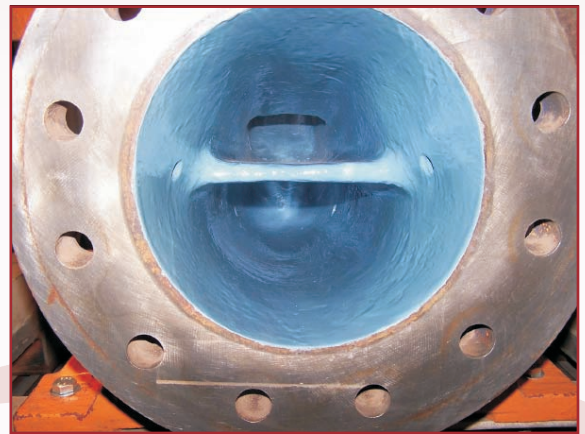
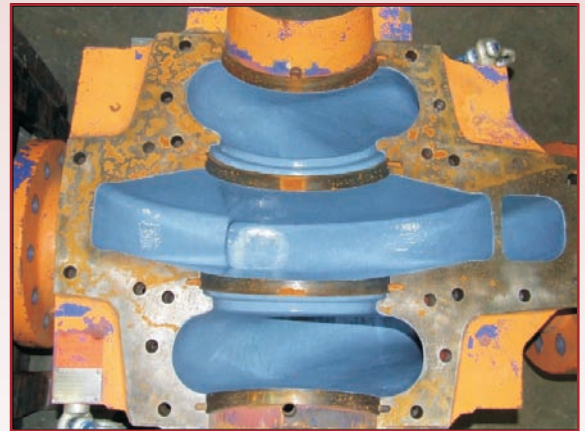
SERVICES ECOBOMBA

- Scheduled measurement of efficiency (with Iatop).
- Planning of preventive maintenance.
- Repair of pumps to increase energy efficiency.
- Overall energy audits (including thermographies, economic studies, etc.).

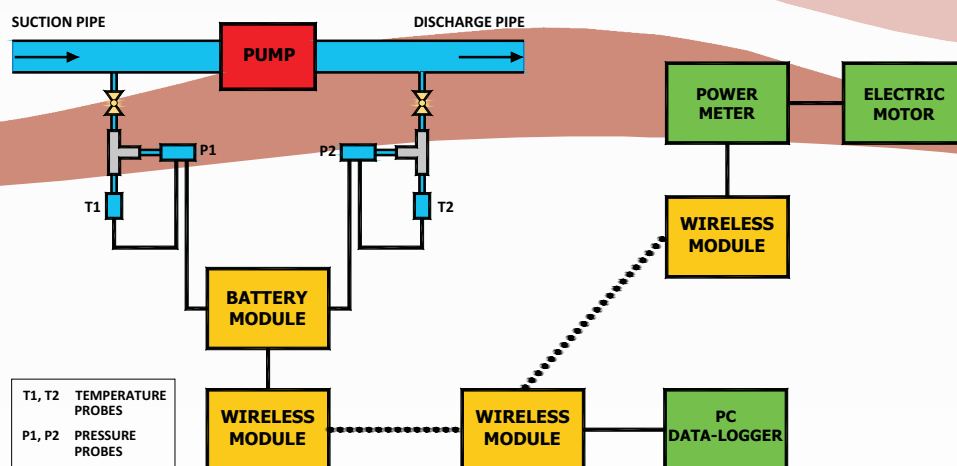
BENEFITS

- Test efficiency in new equipments (compared to factory settings).
- Accuracy in the quantification of savings for future increases in efficiency.
- Planned preventative maintenance work, stops and optimizing costs.
- Assessing the quality of repairs carried out to improve efficiency.
- Control and monitoring of the repairing subcontracting companies. Improvement in the contracting of maintenance services.

Internal coatings of pumps to improve energy efficiency.



TECHNOLOGY



In the so-called “conventional” method the measurement of three parameters (height, flow and adsorbed power), are needed to estimated the pump efficiency. In thermodynamic method the only two variables needed are pressure and temperature either in the suction or discharge line.

The increase in temperature is directly related to efficiency.

ENERGY AUDITS

INEXA has specialized in energy audits in water treatment plants, SWRO desalination plants, sewage water treatments plants and pumping stations.

INEXA has an extense reference list of projects and clients.

Results of energy audits (october 2009):

	ANUAL CONSUMPTION (kWhr)	ENERGY SAVINGS (*)		REDUCTION IN CO ₂ EMISSIONS (Tm CO ₂ /year)
		kWhr/year	%	
RO desalination Plants	160.039.060	58.738.021	37%	22.908
Sewage Water Treatm. Plants	10.988.155	1.308.054	12%	510
Pumping Stations	9.983.314	3.008.468	30%	1.173

(*) All proposals for savings are considered economically profitable.



CONTACT



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