BEST PRACTICE

Energy audits are valuable tools to safe energy in operational processes of water utilities

TOPIC:
Energy saving via field audits

COP:
Water Production and Asset Management

WOP:
WOP – Uganda

MORE INFORMATION:

CHALLENGE

Energy cost represent over 30% of total operating cost of water and wastewater utilities. Energy audits may help to: (i) obtain c**ost savings**: Analysis of energy consumption and identication of inefficiencies, water companies can establish potential energy-saving, lower operational costs, and long-term financial saving; (ii) s**ustain operations:** Reducing energy consumption contributes to sustainability goals and lower carbon footprints; solar panels may be instrumental; (iii) **Regulatory compliance:** In some jurisdictions, water companies are subject to energy efficiency regulations. An energy audit can help verify whether they comply with these regulations, (iv) **Risk management**: Evaluating energy consumption can assist in identifying risks and vulnerabilities in operations, and (v) **Continuity**: irregular electricity supply can reduce the lifespan of assets and threaten the financial healthiness of the utility.

APPROACH

During an energy audit, the energy consumption as well as the performance of pumping systems are measured. The values are compared with the design values of the system and the overall system, and the quality of its original design will be judged.

This analysis will translate in recommendations on system optimisation; how to save on energy consumption and reduce energy costs. During this field work Fluke Energy loggers are frequently used in combination with pressure and flow measurement devices.

Energy audits do require accurate on-site measurements, operational & analytical skills

RESULTS

An energy audit is a valuable tool for water companies to enhance their energy performance, reduce costs, promote sustainable practices, judge the maintenance condition of pumping systems, and comply with regulations. It helps them optimize their operations and contribute to a more efficient and sustainable use of resources. Within the operational regime of NWSC Uganda substantial gains have been achieved.

Inefficient (pumping) systems were eliminated, rehabilitated, or optimised thereby reducing energy consumption substantially. Energy costs and energy consumption were reduced by:
(i) Improvements on electric supply system, (ii) Improvements in operation and maintenance of the pumping system, and (iii) Replacement of the pump(s) or modifications of its piping system.

DOCUMENTATION

Further information is via the CoP Water Production or Asset Management. Or contact CoP experts: Marcel.Brouwer@vitens.nl and Kees.Hagen@vitens.nl. or Flavia Mwbeza from National Water and Sewerage Company (NWSC) Uganda (E: flavmwebaza@gmail.com)

SUCCES FACTORS

Main preconditions for successful audits are:
(i) Availability of design data(like system drawings and pump Q/H curves)
(ii) Availability of accurate portable equipment to measure flow and pressure (e.g., energy loggers)
(iii) Opportunity to connect measuring equipment on to the pumping system
(iv) Basic understanding of energy audit techniques and theory for accurate data analysis
(v) Safe working in a high-voltage environment
(vi) Availability of local operators/electro-mechanics

OTHER

The Global Water Operators' Partnerships Alliance (GWOPA) helps water operators help one another to provide quality services to all. GWOPA is an international network alliance supporting water operators to engage in WOPs. WOPs are peer support exchanges between two or more water operators, carried out on a not-for-profit basis with the objective of strengthening operators' capacity and performance to provide better services to more people (www.gwopa.org).
WaterworX is a major Dutch WOP programme engaging over 50 water operators in a joint effort to capacitate peers, strengthen work processes, and ultimately improve operational performance (www.waterworxprogramme.com).