ABB is the most experienced technology provider for integrated plant optimization and management. Since decades utility operators trust in our know how of predictive mathematic models to optimize their operation and above all saving money with it every day.

Transferring this knowledge to the life essential water supply industry was therefore the next reasonable step. PEMS – decrease your costs increase your performance.

Modern pumping stations and pipeline systems are characterized by a tremendous number of data, measuring values and statuses which are reported by the control system and archive databases nowadays.

Goal of all this data collecting is to operate the facilities in a way that production cost come to minimum. But it is not uncommon that this effect is lost in the flood of information. Which data to analyze? Which time horizons to set? Which figures to calculate? This are the questions which influence the results.

But when you come along all this questions at the end it all comes down to efficiency. Pump efficiency is one of the key factors to operate cost efficient in large scale pipeline systems. So why not just measure it?

Increase your performance by choosing your best equipment

By continuously measuring the pump efficiency several new operation modes are possible. It is common that pump stations are operating in a duty plus standby configuration.

In case of error the standby unit can take over immediately.

But most of the time the standby unit is not used. Thus is resulting in higher capital costs.

So why not choose a different operation mode, an operation mode where the corresponding pump efficiency is the leading indicator for duty or standby (1|2).

And this is just one easy example of how to increase your systems performance. If you have the pump efficiency as a leading operation indicator you can optimize the whole pipeline system by choosing the right set points for flow control valves, variable speed drives or parallel operation modes. You can be sure that your system is running with the best performance possible. And by the way more efficiency means also less energy consumption resulting in less production cost.

1 Low efficiency due to wrong pump selection
2 Optimized efficiency with PEMS
**Decrease your costs by optimizing your maintenance schedules**

By analyzing the recorded pump efficiency PEMS helps to propose specific maintenance activities within a planned predictive and proactive maintenance program. The combination of predictive maintenance programs which are based on condition monitoring can save tremendous down time and helps the asset management to schedule a cost effective maintenance program.

The quality of asset management can be financially measured in the operation cash flow of a plant. During downtime the production rate is reduced or in the worst case comes to a complete stop (1).

The predictive maintenance strategy based on OEM recommendations does not protect against unexpected shortfalls which can lead to long downtime periods.

Only the combination with a condition based monitoring where actual process measurements like the pump efficiency are leading indicators lead to an optimized maintenance plan (2).

Maintenance plans can be scheduled with real online condition data therefore the asset management has enough time to prepare its operations. The maintenance team can move away from the behaviour of fighting fires to the development of prepared operations.

**Benefits when using ABB’s pump efficiency metering system PEMS**

- Saves energy costs
- Substitute expensive flow meters
- Rapid commissioning due to simple system configuration
- Protects your investment by getting the best out of equipment
- Saves time and costs in comparison with conventional methods
- Provides rapid and detailed information on pump efficiency and flow
- Optimizes maintenance intervals and reduced plant shutdown periods

1 Cashflow without proactive maintenance | 2 Proactive maintenance with PEMS
Overcoming barriers with an easy integration at low costs

Based on a thermodynamic measuring method PEMS calculates the efficiency by processing water temperatures, water pressures and the motor power which is associated with each pump. Therefore the system is easy to integrate because it don’t need any pipe cutting or long lasting reconstructions (1).

Especially in new plants PEMS is able to substitute expensive magnetic flow meters and therefore adds a value at lowest costs.

For data processing, evaluation, display and recording PEMS uses the powerful calculation algorithms in the ABB Information Management System PGIM.

Existing plant environments are no problem with PEMS which is suitable as stand alone solution or it can be combined with a retrofit of older control units.

In the case of integration one 800M controller is able to handle the whole pump set of a pumping station. Thus is resulting in minimum space requirements and low costs for additional equipment.
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