TrendMiner
A SOFTWARE AG COMPANY

INDUSTRY
Water & Wastewater

PROCESS TYPE
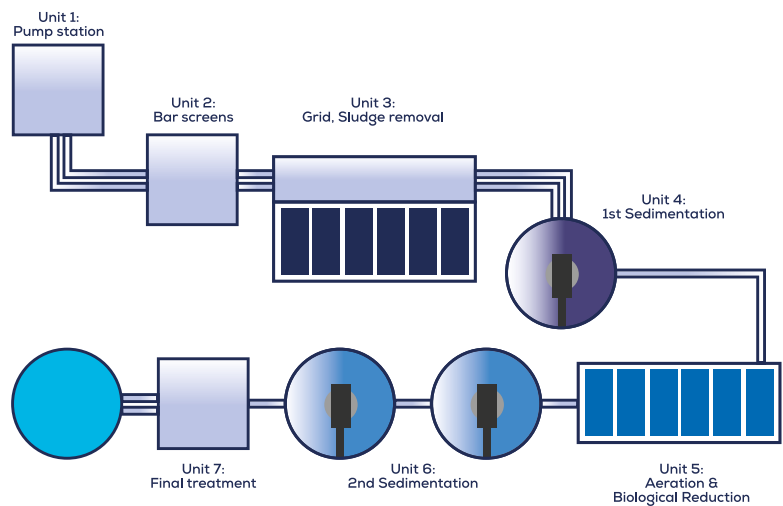Continuous Processing

ANALYTICS TYPE
Descriptive Analytics

KEY OBJECTIVE
Build a Custom Energy Management Dashboard

Creating an Energy Management Dashboard for a Wastewater Treatment Plant

BACKGROUND

The blowers for fresh air injection at a wastewater treatment plant and pumps used for motility account for a large portion of the total energy consumed during the process. Process experts can create a dashboard with decisive process parameters and energy management goals. This details the distribution, expressed as a percentage, of the plant's energy consumption and gives engineers a better overview of treatment performance and energy efficiency.

Unit 1:
Pump station

Unit 2:
Bar screens

Unit 3:
Grid, Sludge removal

Unit 4:
1st Sedimentation

Unit 7:
Final treatment

Unit 6:
2nd Sedimentation
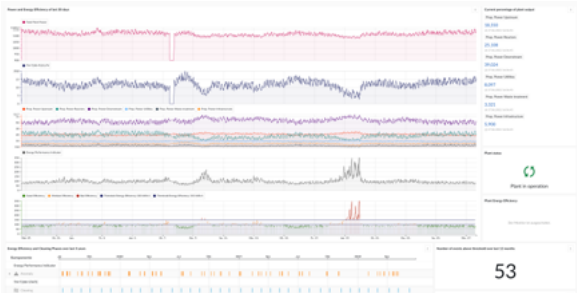
Unit 5:
Aeration &
Biological Reduction

SITUATION

Engineers want to create a dashboard to have an overview of energy consumption throughout the plant. The dashboard needs to include the percentage of total energy consumption that each unit uses. These include pump station, aeration tanks, and others. Process experts then would use the dashboard to evaluate periods of good and bad operation, and energy management anomalies that could result in excess power consumption. They also could use the dashboard to determine the main energy consumer. The energy performance tag is based on the correlation of the total energy and the treated wastewater stream.

SOLUTION

Process experts created tags in TrendMiner to determine the percent of energy consumed by each unit. They then made a TrendHub dashboard view with the newly created tags that used color coding to differentiate areas of good, mediocre, and poor energy efficiency. A comparison of areas of good and poor energy performance shows that the percentage of revitalization is about 12% higher than during periods of poor energy perfromance.

RESULT

- The new dashboard gives process experts a fast and convenient way of creating and displaying new tags to get a better understanding of energy usage throughout the plant.

- The Live Energy Management Dashboard now serves as the energy management control center, where process experts use the dashboarding for startup routines and to provide live discovery of process anomalies or other deviations in normal operating behavior.

- A comparison of areas of good and poor energy efficiency shows that the percentage of revitalization is about 12% higher than during periods of poor energy efficiency.

- Engineers learn they can decrease energy consumption by saving one pump and blower with the same good degradation of the pollutant load.

TRENDMINER FEATURES USED

f(x) TAG BUILDER

TrendMiner's tag builder allows the creation of time-series data using formulas on and aggregations of the tags. The results of these tags can be visualized just like any other tag. The tag builder can also be used for importing time series data via a CSV file.

PERSONALIZED OPERATIONAL DASHBOARDS

Each operational stakeholder is interested in a different part of the production processing and likes to create personal dashboards to monitor performance. Trend views or context item listings created by engineers can be added to their dashboard. In that way everybody gets empowered with actionable analytics-driven information, from the shop floor to boardroom.

COMPARE TABLE

TrendMiner helps to discover tags with significantly different values by comparing layers or timeperiods. Comparing statistical data distributions and evolutions is beneficial in finding performance anomalies. The value of each tag per layer is shown as columns in a resulting table, and the value of each tag in comparison to the reference layer is shown as rows in the same table.

DATA VISUALIZATION MODES

TrendMiner offers various visualization modes for analyzing time-series data. Besides the common time trend, time-series data of multiple tags can be shown in a stacked mode for specific time sequences or can be grouped together in a "swim lane." For multivariate analysis, our software offers a multi-scatter plot that shows tag histograms and multiple histograms of each pair of the selected tags.

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