Power-OM Exploitable Results

## Offline Process Monitoring module for Predictive Maintenance

ARTIS' contribution to Power-OM is the application of Tool and Process Monitoring to new uses. Within the consortium, ARTIS has contributed its experience in condition monitoring to the field of predictive maintenance and to demonstrate the added value of CNC integrated data capturing.

While the project was aiming to deliver power-based solutions, ARTIS know how was requested to develop and demonstrate multicriterial solutions based on internal CNC data capturing. Geometrical parameters like position and speed of the spindle and each axis were used to enrich the picture of power consumption.

For this, a prototype was developed, the OPR Offline Process Recorder, being the device for mid term local data storage, interface to the KASEM eMaintenance intranet solution and MONITION local energy reporting. Using the reliable real time data capturing of process monitoring systems from ARTIS, the data base was set in a proper way. Transferring 0.56 TB per year into the KASEM database enriched the information base for data analysis, learning and reporting. At the same time, data were used for web based reports (see figure 3).

The focus of MONITION energy reporting was to summarize and aggregate tool based power consumption based on operational data. By using the short and mid term data stored in the OPR device, MONITION setup a local Power Dashboard (see figure 2). Inside the dashboard the machine user can identify the most problematic program and tool combination from the point of view of energy consumption. Therefore data are visualized in a graphic presentation for highest usability and to allow immediate feedback. The local dashboard is web-based and could also be linked against remote data of KASEM to generate a Power Dashboard fleet view.

The focus of KASEM platform from PREDICT was to act as a reliable mid and long term intranet data storage also having the fleet view through its multiple OPR connections. KASEM provides a reporting engine, which was used to generate, download and display inside the Genior Modular HMI. Most of KASEM installations are run as a private network to meet even strict IT policies.
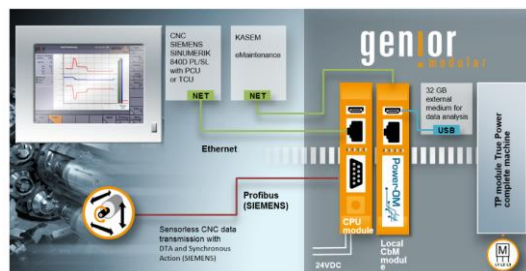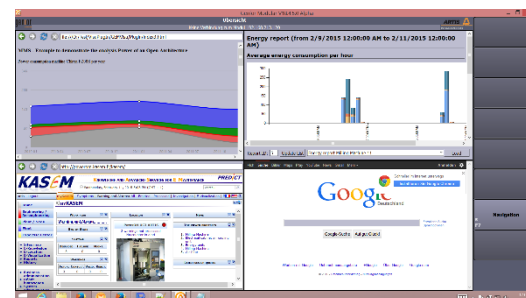

1) System architecture with ARTIS Offline Process Recorder
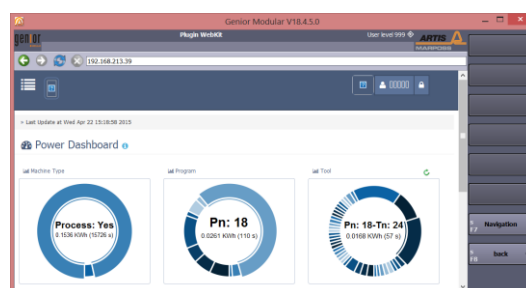
2) MONITION local Power Dashboard embedded in Genior Modular HMI to display energy optimization potentials based on the ARTIS Offline Process Recorder (OPR)
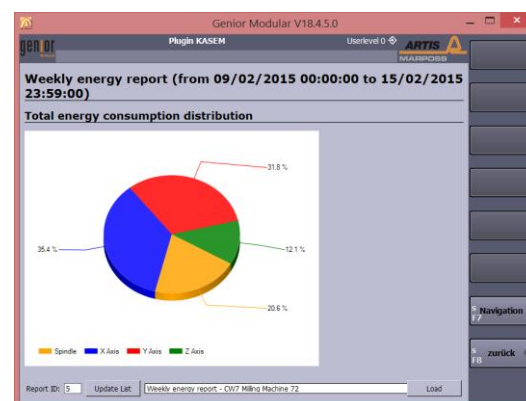
3) Genior Modular interacting with KASEM for reporting

Genior Modular, the fully automatic Tool and Process Monitoring System from ARTIS

With its modular architecture, Genior Modular is perfectly suited as the hardware basis for future requirements towards process monitoring, condition monitoring and predictive maintenance. As an already well established system it has the evaluation from the field as background for further development steps.

Different PlugIns serve the varying purposes of information gathering, processing and displaying. One is used to monitor and evaluate the jerksum of the axis. Others connect directly to intranet databases (KASEM) or via standard browsers to external services (MONITION).

With this open structure Genior Modular is well prepared for Industry 4.0.

4) Genior Modular HMI prepared for Industry 4.0

More information can be found on
www.power-om.eu and http://www.artis.de

Power consumption driven Reliability, Operation and Maintenance Optimization