Power-OM Exploitable Results

Power-OM

Fleet-wide monitoring and management services for Machine Tool

PREDICT has 15 years of experience in smart Prognostics and Health Management software solutions with its web-based application **KASEM®**

Within Power-OM solution, **KASEM** takes place as a remote solution, providing fleet-wide capabilities. From the local health assessment module developed in the project, two groups of data are made accessible to the remote server. The first group corresponds to the fingerprint analysis that is condensed in a small amount of characteristics features. For the second group of data, **KASEM** acquires data from the working conditions of the machines.

3 different data sources for operational data from 2 machines have been setup. In order to provide more "machine" to appreciate the results, historical data have been split in different data sets and "resynchronized" to simulate other machines. This way 5 different machines have been used to developed fleet-wide monitoring and management services.

A set of algorithm have been developed in order to process the operational data and provide several indicators. These indicators are periodically computed depending on the acquisition process and data flow. In our case, a daily assessment has been set up, allowing to daily summarize the machine operation and health. Indeed, some of the indicators enable early detection of machine component degradation (e.g; spindle) based for instance on temperature monitoring. In fig 1. an example of temperature estimation model and residual calculation is provided.

In addition to these health and condition monitoring indicators, +20 Key Performance Indicators have been defined and developed. At the machine level, these KPI are grouped to characterize the machine's spindle, axis and the machine itself. Thus from a given period of machine operation (e.g. day, week,…) the **KASEM** platform enables to generate dedicated reports summarizing the machine operation and performance (see fig. 2).

A key innovation lies in the KPI aggregation which provide a synthetic view of the machine components' performance and ease comparison within a fleet. The aggregated KPI are summarized and represented in a spider graph allowing several machine to be quickly and efficiently compared from a given period of time (see fig. 3).

To sum up, the Fleet-wide monitoring and management services developed within Power-OM allow an easy remote follow-up of fleet of machines operation condition & performance.
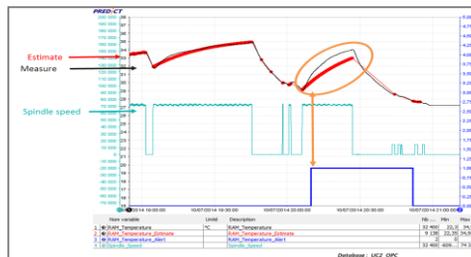

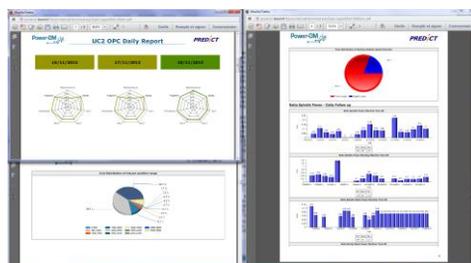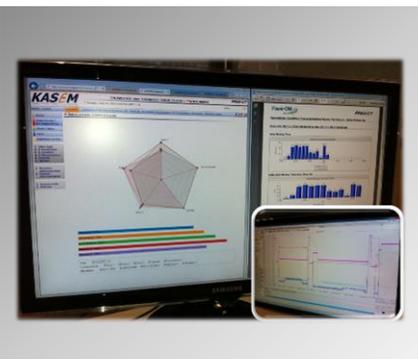*Fig. 1 - RAM temperature monitoring and drift detection*

Fig. 2 - Machine KPI assessment and reporting

Fig. 3 - Fleet-wide machine performance comparison

KEEP TRACK OF AND MONITOR YOUR FLEET CONDITION AND PERFORMANCE

SEVENTH FRAMEWORK PROGRAMME

Power consumption driven reliability, Operation and Maintenance Optimization

PREDICT