

Hi-tech approach to predictive maintenance

SK - At a glance

ISKI first came into existence in 1981. Largest provider of water and wastewater services in Turkey.

MCM project is working to help keep İSKİ's rotating machinery 24 hours working, supporting to operation & maintenance team and implementation of predictive maintenance concept. MCM's are being used in our motor control centers for early fault detection and on-line condition monitoring of our rotating machinery which is the most critical equipment of the Istanbul. The MCM'S are all controlled by MCMSCADA which has diagnostic capability and trending analysis features.

MCM Solution

Thanks to strong support from ARTESIS, the MCM project, launched in 08/082005, has now developed a new and powerful software tool MCMDiagnosis for integrated MCMSCADA. Issues of primary concern for the project were the overall pump station system, optimised management of maintenance activities, preventing unexpected breakdowns of our equipment (both motors and pumps), early warning fault detection systems, possible maintenance actions, and decision-making by using MCMSCADA diagnosis. The new MCMSCADA system gathers data from MCM's (Motor Condition Monitor), including information energy quality (harmonics and total harmonic distortion), energy consumption (Active power and reactive power), mechanical problems (misalignment, imbalance, cavitation, coupling, bearing/bearing housing etc) and electrical problems (stator isolation, rotor bar)

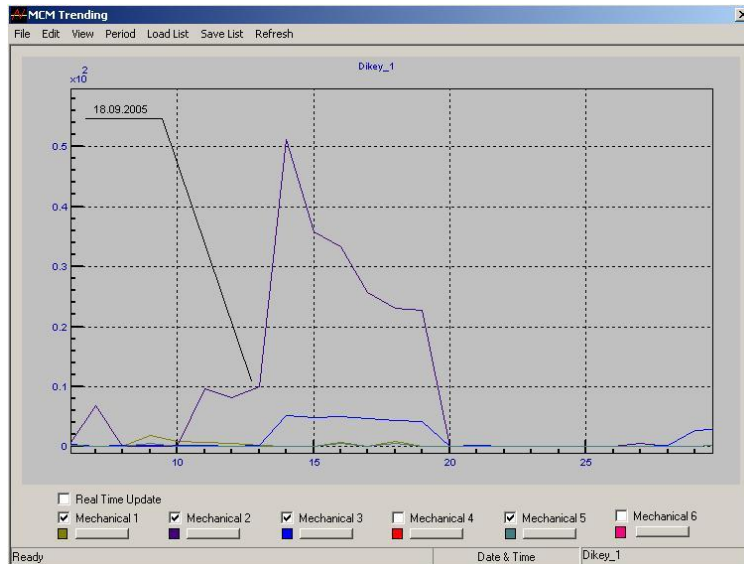
Featuring an easy-to-understand user interface, MCM and MCMSCADA describes all of the necessary inputs and steps to be taken for maintenance and the quality of maintenance.

"We were very positively surprised by the MCM technology"

Akif Kabadayı, Manager –European Side
Koray Binler Maintenance Engineer

A CASE STUDY AT ISKI (WATER UTILITY)

Following the alarms that came from MCM, starting September 18th, an increase was noticed on the mechanical parameter (Mechanical parameter 2) with an increased trend. The operation & maintenance team analyzed the situation using the output that MCM has provided, and determined that the nonreturn valve was broken and the broken nonreturn valve was replaced before failure. After the maintenance work that was done at the same day, it was noticed that the mechanical parameters went back to their normal values, and the system started to work with its previous performance. As a result, an unplanned breakdown was avoided.



After the analysis, one thing to note was that the 12th mechanical parameter on vertical pump #3 has been showing high values. After the analysis, it was concluded that the rise in this parameter, that points to cavitation, is not at the sufficient level to trigger the alarm, however the high values show that the pump housing and shaft might be damaged soon if the situation continues. The diagram (below) shows the cavitative effect on the vertical pump #3 while it is in operation on the tests that were implemented at the pump station on 23/11/2005

