Configure your own operating software

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Remote maintenance systems that monitor the status of facilities and machines have always had to be configured manually, a laborious task. But now a new system can be easily adapted for a range of facilities with no need for programming expertise.

Is the oil pressure in the hydraulic system too high? What's the current condition of the rotor blades on that wind turbine plant? It is important for the people who operate facilities and machines to be able to answer this sort of question at any given time, because malfunctions and failures can prove to be costly.

Condition monitoring systems, or CM systems, are used to monitor machines remotely: sensors mounted on the equipment feed continuous measurements back to a control box, which records and stores the data, and if an error occurs, the system alerts the operator.

However, before a CM system goes live, it has to be adapted for use with the specific facility it is to monitor. This requires laborious manual programming work which can often cost in excess of 100,000 euros.

Things may prove a lot simpler and less costly in the future, however. Researchers at the Fraunhofer Institute for Experimental Software Engineering IESE in Kaiserslautern have developed a CM system for Lösi GmbH which can be adapted for use with various types of facility without the need for manual programming. "We've developed our own configuration language that is specially tailored to CM systems," explains project leader Dr. Mario Trapp. "You don't need any programming

expertise to work with the language - it's a straightforward process for the engineer to set up the operating software using the 'drag and drop' function."

The user sees the available tools in icon form on the screen, clicks on the ones he wants and simply drags them to where he wants them. For example, if he wants to include a pressure sensor in the operating software, he selects the appropriate icon and sets pressure threshold values. An Options menu allows him to control how the system should react if these values are exceeded. Depending on how serious the error is, the control box can load deviating measurements into a central database, or else inform the facility operator via SMS. Emergency shutdown of the facility is a further option that can be configured. Once everything has been set up, a code generator automatically programs the corresponding control box.

"Our CM system is every bit as powerful as solutions which require manual programming, but it's significantly more cost-effective. Clients can potentially make five-figure savings," says Trapp. Even after it has gone live, the CM software can be altered at any time, for example to add new sensors. With conventional systems, by contrast, the client would have to bring the manufacturer back in to do this. Several clients are already trialing prototypes of the software.

Source: Fraunhofer-Gesellschaft (news : web)

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