

On-line diagnostic system with intelligent software instrumentation based on neural-fuzzy networks

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In the present paper the authors aim to illustrate the applicability and the advantages of an intelligent software instrumentation technology, based on fuzzy logic and neural networks, for the implementation of effective low-cost systems in the field of previous on-line diagnosis and predictive maintenance. It will be presented a new software product based on PC/Windows platform, developed by SESPIM R&S - Naples, as a "neuro-fuzzy" tool to build skilled custom applications - included C source code generation - running on most common HW/SW platforms. It will be illustrated a successful industrial application concerning a diagnostic system to detect the anomalies of a cooling system (AFO2-Taranto), integrated with the real-time expert system for maintenance DIMMI® Afo (working on the plant since 1994 - by SESPIM): the application collects and analyses the equipment status and the instrumentation measurements changing them in basic information, that can be better managed by expert system. The powerful on-line diagnostic system like DIMMI, applied to complex technological plant, typically allows a pay-back in a very short period (less than one year); the intelligent software instrumentation technology offers the possibility to have a more large diffusion based on the modularization, flexibility and low cost. Finally, it is a matter of evidence that the global international market with its hard competition rules involves not only the large industry but also the small and middle-sized firms, changing into opportunity of success what just a little time ago was considered an element of risk (the equipment failures or damages - a drop of production - problems with the customer-low profit).

SESPIM R&S has been involved for a long time into the development and the diffusion of SW application based on artificial intelligence techniques; SESPIM offers the solution to specific and original problems for different industrial area

according to the requirements of the Quality System. ■



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Nello Di Biase has been working at SESPIM with current qualification of project manager since 1991. Actually is also involved in the marketing activity of Sespim. Di Biase took a degree in electronic engineering at the University of Naples, with final work about "Automatic test equipment". He has developed knowledge based systems for the intelligent monitoring and predictive diagnosis for the walking beam furnace at the Falck "Unione" works of Sesto S. Giovanni (MI), the hot strip mill of AST works of Terni and for various wastewater treatment plants.

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