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p.127 Concept Analysis for Service Oriented Manufacturing Based on Interpretive Structural Modeling
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In the last years we have assisted to several and deep changes in industrial manufacturing. Induced by the need of increasing efficiency, bigger flexibility, better quality and lower costs, it became more complex. The complexity of this new scenario has caused big pressure under enterprises production systems and consequently in its maintenance systems. Manufacturing systems recognize high level costs due equipment breakdown, motivated by the time spent to repair, which corresponds to no production time and scrapyard; and also money spent in repair actions. Usually, enterprises do not share data produced from their maintenance interventions. This investigation intends to create an organizational architecture that integrates data produced in factories on their activities of reactive, predictive and preventive maintenance. The main idea is to develop a decentralized predictive maintenance system based on data mining concepts. Predicting the possibility of breakdowns with bigger accuracy will increase systems reliability.

Pressure/support factors

- Globalization, new markets coming in sight
- Bigger exigency in products quality
- Development and incorporation of informatic and communicative technologies
- Products life cycle and time to market decreasing
- Technological changes and products bigger complexity
- Mass Customization

Perspectives

- Maintenance function is seen to the enterprises as a cost;
- Maintenance function, seen as a core, becomes more and more requested to contribute to cost reduction, based on bigger and consistent equipment reliability
- Manufacturing systems recognize high level costs due equipment breakdown, related with inspection costs, repair costs as well as costs associated with non production time or equipment non-utilization;
- Enterprises need to cope with market expectations, incorporating in their production philosophies new paradigms such as JIT, Just in Time, MTO - Make to order, Mass Customization, Agile or Lean manufacturing

Motivation/Objectives

- In literature there are some approaches that use data mining concepts to improve manufacturing activities
- It is not so common to find approaches that use to improve the capacity of predicting behaviors based on historical data
- In fact, if the case is the possibility of a distributed collaboration of independent enterprises sharing data between them, even if they are competitors, the examples are even rarer
- Create a system that will help enterprises to collect, extract and create knowledge in a way that enterprises will predict with more accuracy the moment to realize maintenance actions and thus improve the productivity of manufacturing process

SYSTEM FUNCIONALITY