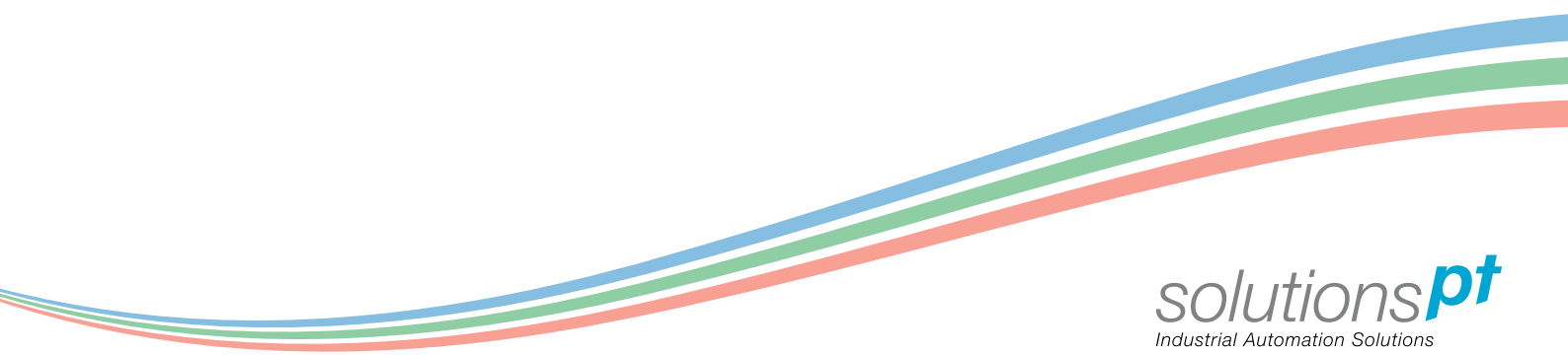


Real - Time Manufacturing

A Solutions Unleashed Whitepaper



For the first time developments in New Technology are bringing integrated enterprise/plant floor control to the masses. No longer the exclusivity of the major corporates, manufacturing operations of all sizes can now have access to information, which enables 'plant wide' production and performance management. To enable effective control to drive business results, however, this information must be

converted into usable business intelligence metrics and delivered in a visual, easy to understand real-time medium; such as dashboards. But real-time dashboards are only an effective tool of real-time manufacturing management if the 'intelligence' delivered is real-time.

If 'Time is the measure of business' * then manufacturing must have the processes in place to deliver the real-time KPIs providing those critical manufacturing measures. This can best be seen in the evolution of a company's business processes.

"Time is the measure of business"

Process Evolution.....

The advent of real-time manufacturing information can be traced to the use of programmable controllers in combination with SCADA systems, and in DCS. At this time process operators could see what was 'going on' – in real-time and thus were enabled to make local operational decisions. This produced a plethora of event history and alarm data, thus historians within and also external to SCADA were introduced to deal with the 'Data Volume'. Subsequent use of database reporting tools transformed this into information. The information was in real-time and available on client PCs to other functional groups such as quality control, operations and maintenance.

"The result = f (the plan)"

But real-time data was not an end in itself. The next step on this voyage was to find a way of comparing the difference between 'what was intended to happen' against 'what was actually happening' in real-time i.e. plan versus actual. The underlying business need behind this being to allow management decisions to be made within the production period as opposed to reporting the variance. However, there was a barrier to achieving this. The problem was the disparity between the essential systems that needed to be connected namely Planning and Execution Systems. This requirement introduced Manufacturing Execution Systems (MES).

"MES has been on the industry's wish list for many years"

The disparity...

Planning, scheduling and other enterprise level functions run in batch mode. Manufacturing runs in real-time. Worse than this is that their relative data structures differ and thus connectivity between the two, in a meaningful, efficient and useful way is 'difficult'. A standard for interconnection was sought and was a long time in arriving – ISA95.

"A standard for interconnection was sought – ISA95"

The fix...

ISA95 offers structures and mechanisms to allow this connectivity to happen. This is made possible by generalised and detailed processes that have been created in a standard way. These can be selectively applied to the particular application. Following the ISA95 standard delivers a high value benefit and one that according to market research is reported 'to work'. Reported beneficial measurements being schedule adherence, throughput and utilisation, amongst others. As MES is deployed, based upon ISA95, there is an implicit assumption that a company's business processes will change.

Better business processes...

It does not matter how costs are measured it is clear that what is available today represents the best value for money; Technology has now delivered better tools, which when aligned with key industry Standards, can be used to develop better business processes, better business processes meaning better management, better management delivering competitive advantage. The tools are there to allow real-time management - what was hype a few years ago, is now reality!

"What was hype a few years ago, is now a reality!"

Operational management...

Just as with enterprise level management (even with integrated shopfloor visibility delivered by MES), manufacturing management has its own particular needs. What is needed? Manufacturing needs one set of 'numbers', this is easily provided by having one single and tested database, sometimes called a 'galaxy'. This information domain receives inputs from all over the plant in real-time and stores them in chronological order. The information domain is reported upon and thereby provides information that leads to intelligence. The intelligence is continuously displayed as and when it is generated, where it is needed - real-time dashboards delivering critical metrics to your desktop, on your PDA, on large display screens. Achieving these 'simple' steps overcomes the situation of conflicting spreadsheet (and other data) and hidden surprises.

ISA95 Standard



“Automated analysis free up management to focus on the ‘Value-Add’”

How is real-time management achieved?

An example of what can be achieved is shown by a pharmaceutical manufacturer’s imaginative utilisation of Wonderware products. Their manufacturing is complex, precise and validated. Batching of the active ingredient is controlled by InBatch – allowing connectivity to ERP to provide manufacturing to schedule. The ingredients are then assembled to their dispensing pack through an automated line. It is here that intelligence is generated by automatic statistical quality control (QI Analyst) and automatic machine downtime with OEE (Equipment Performance Module - EPM). These two functions determine what has to be done. Management of the line is made effective by these provisions. The combination of automatic quality (also fed to the OEE engine) and downtime with throughput provides a continuous stream of data that is captured, trended and displayed. The display is in two forms; one is to use large format wall mounted screens that show easy-to-assimilate displays of OEE and its three components, the other is the use of manufacturing information dashboards (within Wonderware EPM) that are available on all the site’s PC’s through a standard browser. Thus the intelligence is everywhere to be seen, resulting in everyone knowing what the current status and trends are, and therefore knowing the current issues. This has led to significant and measurable results, the most noticeable of which are the OEE display of very high figures and an environment in which everyone knows where they fit. Each person acts directly towards Continuous Improvement. This is also sustainable as the core system data is of fine granularity, allowing ongoing improvements to be made through unique process insight even when conditions change.

Real-time Management...

We began this paper by stating that ‘Time is the measure of business’ but to enable real-time measurement has required the evolution of processes aligned to MES and ISA95 standards. As a result we have seen the integration of enterprise level functions and production activities. The availability of software combined with a vision of better business processes allows management in manufacturing to be done in real-time. The result of measuring business in real-time? Sustainable Continuous Improvement and ongoing Competitive Advantage.

SolutionsPT has the People, Technology, and the right methodologies to make Real-Time Manufacturing Management a reality for your operation whatever it’s size.

* (Francis Bacon, British Philosopher)



About Us

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Industrial Automation Solutions

About SolutionsPT@SolutionsPT specialises in the field of successful solutions for real-time manufacturing replacing the business risk of introducing new technology with results. Customer experience is paramount to our core principles and is provided by three divisions concentrating on Industrial Software, Industrial Hardware and the delivery of Real-Time Enterprise Manufacturing Solutions.

emspt

Enterprise Manufacturing Systems

About EmsPT@An MES solution provider to the UK and Ireland manufacturing sector with over 20 years of experience delivering enterprise manufacturing system solutions. With globally recognised experts in the field of Business Intelligence and MES solutions EmsPT stand at the forefront of helping customers make the correct commercial and industrial decisions. EmsPT unique 'Thin Slice' model enables customers to achieve rapid deployment, change and return on their investments by utilising the scalability of proven technology to support business initiatives including Lean Manufacturing, Collaborative Production Management and Continuous Improvement. From vision to definition to selection to implementation to adoption, EmsPT delivers services to ensure sustainable business benefit.

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Industrial Automation Hardware

About HardwarePT@HardwarePT offers a comprehensive range of world-class industrial hardware and connectivity tools suitable for all industrial environments. We supply branded products and integrated solutions built with leading edge technology to support key industrial requirements such as Industrial Ethernet, Embedded Computing, Wireless Technology, Data Acquisition, Industrial Connectivity and High Availability Servers.

We present a complete range of services and support packages for longevity of supply including design work, custom builds and legacy equipment.



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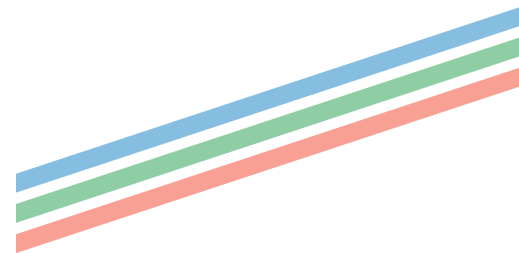
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