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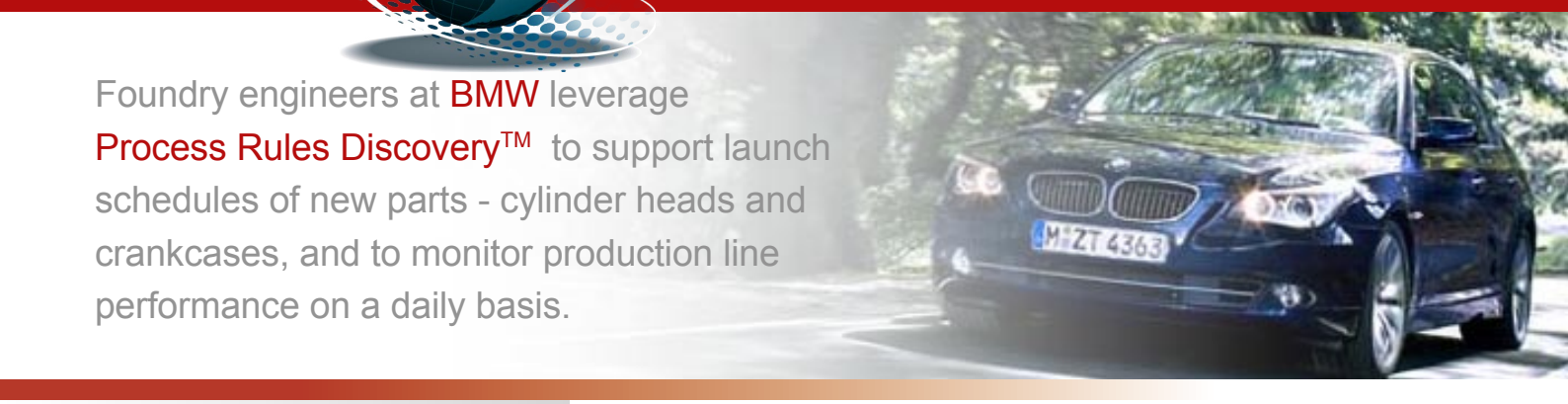
SUCCESS STORY

OPERATIONAL EXCELLENCE FOR ALL



Foundry engineers at BMW leverage Process Rules Discovery™ to support launch schedules of new parts - cylinder heads and crankcases, and to monitor production line performance on a daily basis.

Challenges

- Decrease scrap rates during the foundry's launch schedule for cylinder heads and crankcases
- Analyze performances and adjust the parameters of the main production lines on a daily basis
- To test, both in the field and within different projects, of Process Rules Discovery™ capabilities to add the title "Best Practices" to the Landshut plant

Solution

- Pertinence Suite powered by Velocity Process Rules Discovery™ module

Benefits

- Helped decrease the scrap rate during the launch schedule of a new crankcase
- Helped manage performances and costs on the foundry's 10 primary production lines
- Provides the foundry's trade professionals with autonomy from the quality control technicians in analyzing the high volumes of data recorded by the machines.

"Process Rules Discovery™ was tested during the series start-up phase of a new crankcase. Many of our engineers were very satisfied, they now use it to analyze the performance of their production lines on a daily basis. What do they like the most? Ease of use: the system requires no additional skills beyond job expertise. Users also like the autonomy that the system provides." ***Jean-Marc Ségaud, BMW director of products and tools department***

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All BMW vehicles, 1.18 million in 2006, leave the production line with parts from the Landshut (Germany) plant, which specializes in foundry work and plastic injection. "Although it has been around for a long time, foundry work is much more complex than it seems," explains Jean-Marc Ségaud, director of BMW's products and tools department. "Manufacturing our cylinder heads and crankcases, which consumes roughly 45,000 tons of aluminum and magnesium per year, takes a combination of chemistry, thermodynamics, metallurgy, casting, machining, and assembly processes...many different specialties with specific parameters and steps in which unexpected events can occur."

Although experience and expertise play an important role at the foundry, there is a continual search for innovative technology to enhance processes and results. "We've seen over the last few years in particular that the foundry's pressurized molds are equipped with more sensors; currently they have about fifty," said Mr. Ségaud. "These sensors measure up to 300 parameters every second – temperature, pressure and speed in different places – for each molded part. It is impossible for one human to analyze such a large volume. However, this data holds precious information about the interactions between parameters."

Process Rules Discovery™: the best solution for foundry engineers on the shop floor

In its quest for data analysis solutions, BMW compared several different systems. "Positive references from other users, including those in our business sector, put Process Rules Discovery™ on to the system evaluation list." added Mr. Ségaud. "In the end we chose it because it was a simple solution that could be implemented without help from

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The BMW Corporation

- Began in Germany in 1917 under the name Bayerische Motoren Werke
- Number one in the “premium” car category worldwide.
- 2006 sales of €49 billion, 5% increase over 2005
- More than 70,000 employees worldwide: 23 plants in 13 countries
- 1.37 million units produced in 2006 under the BMW, Rolls-Royce and Mini brand names
- Landshut plant: approximately 4,000 employees: 1,400 of whom work in the foundry

About Intercim

Intercim is a global leader in Manufacturing Operations Management (MOM) solutions for the aerospace & defense, automotive, pharmaceutical and semiconductor industries. Our flagship product, the Pertinence Suite powered by Velocity, is a truly innovative software solution that bridges the gap between product design and supply chain. Our unique technology empowers distributed teams to collaborate on process planning, execution and quality to reduce manufacturing costs, time to market and cycle time. With 25 years experience Intercim operates from offices throughout the US and in Europe. Its customers include industry leaders like Airbus, Ball Aerospace, BMW, Boeing, Honeywell, Intel, Sanofi Pasteur. Partnerships with Dassault Systèmes, SAP and Microsoft support the company in its mission to provide operational excellence for all.

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quality specialists, computer experts, statisticians or mathematicians. It was the only solution that could be immediately put into the hands of tradespersons, such as our foundry engineers, as its user-friendly, intuitive interface did not require these engineers to have additional expertise.”

For a true assessment of Process Rules Discovery™ capabilities, BMW performed a test project: low-pressure casting of a crankshaft during series start-up. Despite efforts to lower the scrap rate, it remained a stagnant eight percent. Within several weeks, the rate decreased to six percent. Cautious foundry engineers took their time in deciding whether this was due to Process Rules Discovery™ or human expertise. “Empirically, our experts require an average of three months to lower the scrap rate to an acceptable level, which changes depending on the complexity of the part,” said Mr. Ségaud. The foundry continued testing, using the system in different projects to confirm Process Rules Discovery’s™ role in speeding up the launch schedule. However, one thing was certain: “Process Rules Discovery™ made enough of a difference to convince most of our experts to use it more,” he said.

Process Rules Discovery™ for daily management of production performances

BMW purchased Process Rules Discovery™ and trained about a dozen engineers to use it. Because “there was no way we could force professionals with 30 years of experience to work in English, Intercim quickly provided us with a user interface translated expertly into German. This ability to translate, and the simple use of this solution were deciding factors in our chief directors’ decision to buy the software,” said Mr. Ségaud.

Large-scale production

Beginning with large data sets recorded by production machines, managers use Process Rules Discovery™ to identify the best combination of parameters to produce quality-compliant parts. The machines recorded daily performance, which is analyzed in Process Rules Discovery™. Subsequently, parameters are adjusted to conform to quality standards. “Process Rules Discovery™ is used approximately forty hours per week. Under the critical eye of the expert using it, the system helps lower the scrap rate and, in turn reduces the costs of our main production lines,” concludes Mr. Ségaud. “As we use the system more, we see a snowball effect in foundry personnel talking positively about it to the site’s injection department. At BMW, “Best Practices” often trickle up: they begin at ground level before being recognized as such by quality services. After numerous, large-scale tests, Process Rules Discovery™ could very well win this title.”