MAGMA News
Thailand Edition

M5 Engineering
Casting Process Optimized

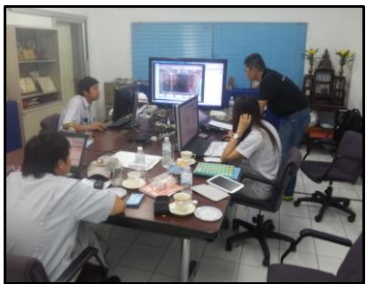
Issue No.: 2 ● October 2014

MAGMA Thai Newsletter

We are glad to inform that the MAGMA newsletter will be submitted to the Thai Foundries monthly in English and Thai.

If You want to publish an article or success story contact us: info@m5engineering.co.th

Whats new?



Training is an Investment – Not an Expenditure!!!

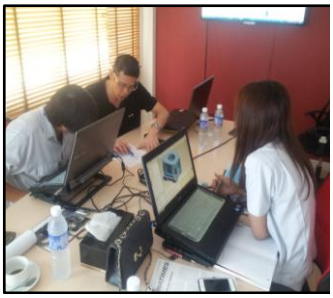
MAGMA academy

In today's competetive market, one can no longer afford to see training as optional. Training is a matter of survival. Trained personal contributes more efficently and rises productivity. MAGMA training is more than building skills of individual employees. It is an investment to the company.

Statistically the top users out from MAGMA training academy:

- Gained speed and effectiveness
- Gained in-depht knowledge in design & modelling
- MOST IMPORTANTLY: increased their value for the company

The benefits gain to Your organisation & customers:



- Improved bottom line
- Stronger competitive position
- Measurable profit increase
- Improved project success rates
- Adaption of global processes & vocabulary
- Stronger communication

The benefits gain to individuals:

- Improved work performance
- Elimination of skill gaps and improved problem solving
- Improved interpersonal skills
- Much more…

All in all we are able to offer you professional training by a team of certified foundry engineers…

Thank You for Your feedback….

Last month we submitted the 1st issue of the MAGMA News to more than 500 Foundry contacts in Thailand. The feedback was utmost positive! In the name of MAGMA we thank You for that!

The voice from the foundries and our users is very important to us for continuous improvement and adjustments to the local market!

Purpose of this newsletter is to inform the Thai foundry men and Foundry women what is going on in the foundries, what simulation is, and how others are using MAGMA simulation as a very powerful tool to solve casting problems and optimize foundry processes.

Therefore do not hesitate to send us your ideas, comments, questions or success stories for publishing.

To implement MAGMA Casting simulation success in Thailand we need all Your support… and we in turn are here to support You!

Thank You krub!

M5 Engineering Team

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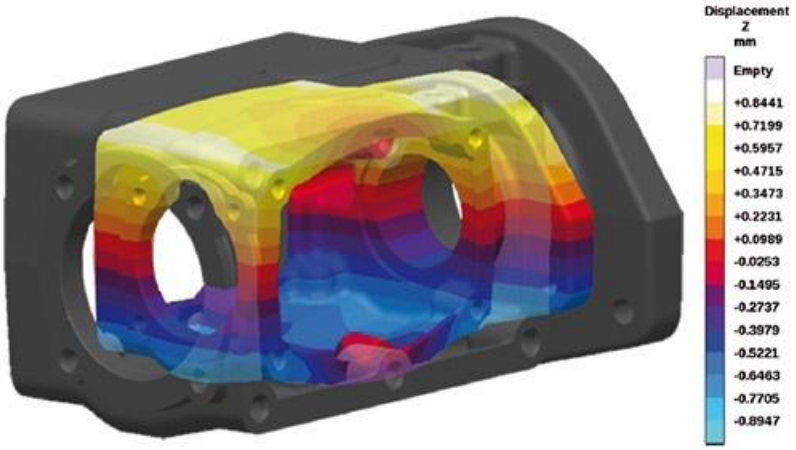
Improved Casting Design Helps Both - Customer and Supplier

Bremen Castings Inc. (BCI) is known worldwide for its quality gray and ductile iron machined castings. Casting process simulation at BCI is not only used to optimize casting processes but also to communicate root causes of a defect issue to a customer and to propose design changes to eliminate them.

Foundries commonly quote 200 or more castings per month. This is after they eliminate unfeasible parts. Of the quoted parts, usually 1-2% will eventually be awarded to the foundry. It is unfortunate, but practically unavoidable, that a foundry eventually ends up with some castings that several other foundries have failed to make. Nearly always when this happens, the casting design is at fault and leads to casting defects that cannot be eliminated by any casting process adjustments or only at unreasonably high costs. Casting buyers usually do not volunteer information about this history when they send requests for Quotes to yet another foundry. Many foundries quickly “give up” in such cases and cancel the contract, even if this will incur penalties.

Bremen Castings has taken a different approach: in the case described here, it ran the part through MAGMASOFT ®, evaluating if cracks showing up in 8% of the castings were caused by the casting process and could be eliminated by changing it. A complete filling, solidification, and stress simulation during the solidification and cooling process revealed that the casting process itself was not at fault. The design of the casting lead to very high stresses not only in sharp corners, but also on surfaces that were bent by distortion during the solidification and cooling process. The simulation results clearly showed how the casting distorts, eventually leading to stresses and strains that exceed the strength of the material at the temperature level at that time.



The part tries to contract, but is hindered by the core

Through three iterations, the casting design was modified to develop a robust design, which reduced the overall distortion and avoided the bending of surfaces, as well as avoided stress peaks in corners (which were rounded). It is interesting to see that the final design looks much more like an airplane window, a design commonly known for avoiding peak stresses.

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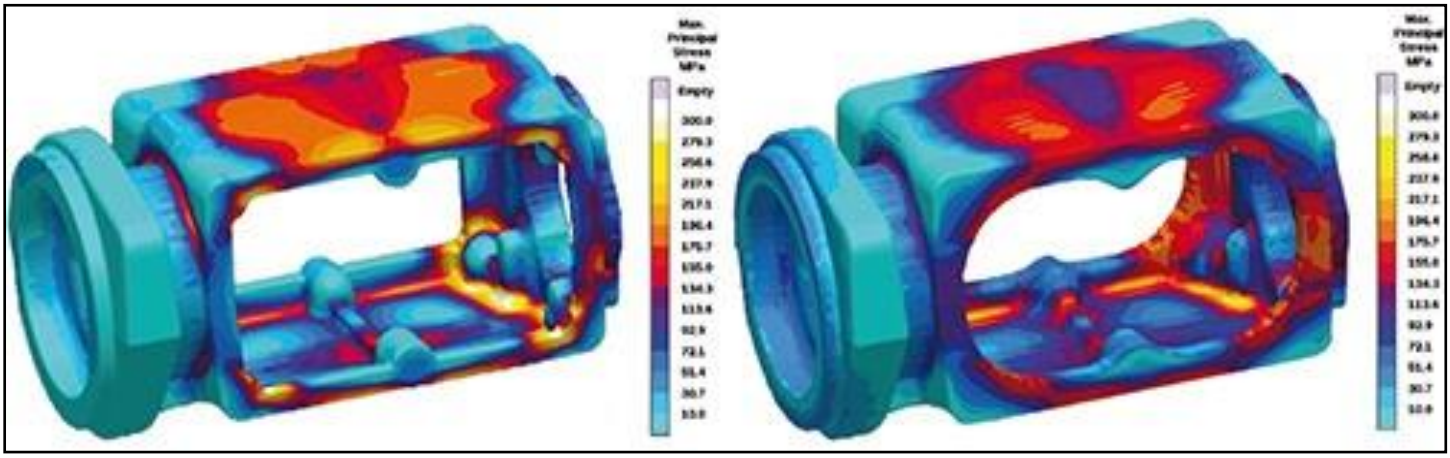
Improved Casting Design Helps Both - Customer and Supplier

MAGMA's casting process simulation results were used to clearly communicate the design issues to the customer's designers. MAGMASOFT ® became the "neutral assessor" of a defect issue, avoiding blame and arguments about who is right or wrong and focusing the discussion on facts and physics. The optimization of a design in the virtual world allowed for testing several approaches to resolve the issues, leading to a final, cost effective way to develop a design that can work for both – customer and supplier.

Founded in 1939 as a family owned and operated foundry, **Bremen Castings, Inc. (BCI)** is now in its 4th generation. With over 70 years of experience, the company continually reinvests in new equipment for production, environmental, and automation improvements. In 1996 BCI launched its own internal machine shop with the expectation to diversify across many markets, forcing quality and engineering to become more diverse in both machining and the foundry. This gives BCI the advantage that both departments communicate before product launches, resulting in lower costs.

BCI now has over 13 CNC machines in its arsenal. Keeping up with technology is high on the priority list to maintain its worldwide reputation as a foundry for quality gray and ductile iron machined castings. The purchase of their two MAGMASOFT ® licenses in 2005 was quickly followed by the addition of the optimization module, enabling BCI to use autonomous optimization to optimize casting designs and processes.



Left: Original designs shows high stresses causing crack defects. Right: New design shows lower stresses, eliminating crack defects.

Do you wish to find out more about how to use MAGMA to tackle defects in your or your suppliers' castings? Then don't waste money waiting for the solution to come by coincidence or after lengthy trials. Take a structured approach and contact us now!

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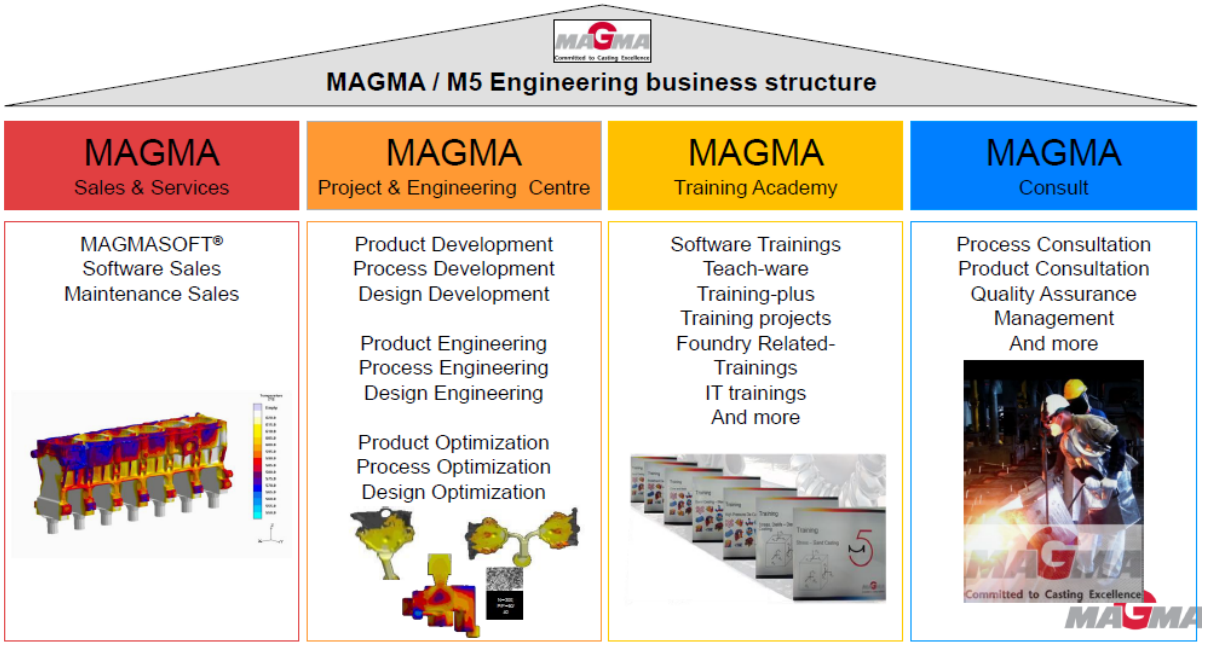
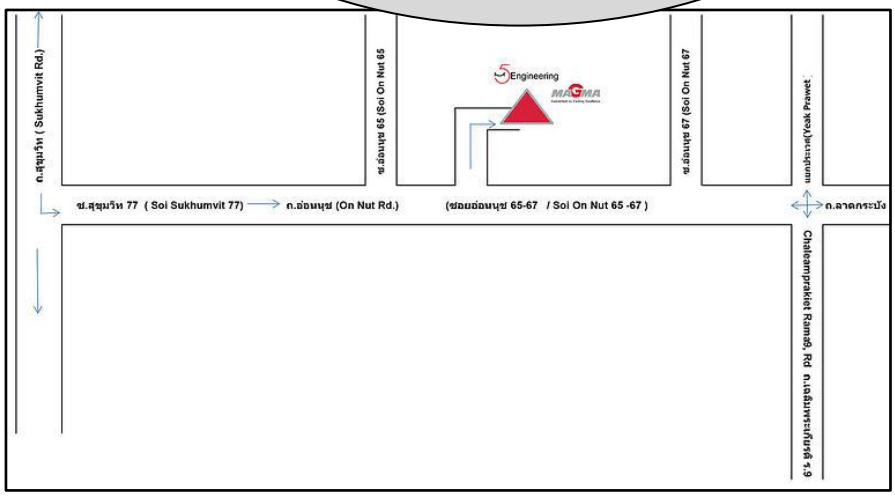
M5 Engineering provides the following services:



Contact us for more information:

0884911841

Line ID: magmasoft



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