



# How one results-oriented foundry applied itself

*Unsatisfied with controls being achieved in the moulding department, Haworth Foundry managers Steve White and Lee Chase set about improving matters to ensure productivity was not adversely affected.*

Haworth Foundry is a sand and die foundry in the UK employing around 25 people. An independent family firm, the company has been in business for over 40 years producing high specification, safety critical aluminium castings including components for aerospace applications, parts for pressure tight applications, mid-volume production castings for the automotive industry, fluid coupling castings and a range of non-standard and intricate castings for a variety of applications.

Being able to produce castings consistently and reliably is vital to operations, so Haworth already uses fully framed pattern equipment and has invested in a

semi-automatic moulding system encompassing a computerised sand mixer and rollover moulding sand dispenser to minimise operator induced variations. Moulds are produced using a three part, polyurethane no-bake resin system.

Inconsistency in setting times in the moulding section was an issue causing particular concern. During hot or cold weather spells the mix, which was nevertheless calibrated for temperature variations, was giving inconsistent curing times and variable mould strengths. This was leading to poor productivity since

the moulders were either standing around waiting for moulds to set or producing moulds that were of inconsistent strength. The foundry was not able to achieve the control it was seeking despite the team carrying out various investigations into the binder system and equipment being used.

Foundry managers Steve White and Lee Chase set about looking for an alternative binder system that might give them the control and consistency they wanted. Having selected a binder product they felt might be suitable for their operation, also a polyurethane no-bake resin system, they visited another foundry already using this binder to see the system in operation. Once satisfied that



*Lee Chase and Steve White, foundry managers, demonstrating one of their castings*

the new binder system would be suitable they planned the changeover, with support from managing director Andrew Haworth and operations manager Chris Kavanagh, completing the switch to the new system within half a day.

All the setting up and mixer calibrations were completed by Steve and Lee, which was fundamental to the foundry being able to optimise the set-up for its requirements. All the mixer settings are now fully automated which has helped to minimise any variations that can result from different operators. In addition, each part is now coded so that exactly the correct amount of sand is delivered into the moulding box. "I now feel that we are able to use the equipment in the way it was intended to be used," said Lee Chase. "All of the skill and knowledge is at the front end, in design and planning for production and the consistency of the sand setting time enables Haworth Castings to meet output requirements for business efficiency and customer needs".

Indeed John Small, Foseco sales manager, was full of praise for the way the company staff had gone about implementing the new system. "We were able to fully cooperate with the foundry during the conversion and via follow-up visits but the foundry chose to take a lead in setting up and carried out all the calibrations themselves. We have been impressed by the way they have approached the whole project, from planning, to the changeover, to modifying the mix controls. They have taken complete ownership of the process and this has meant that they have been able to derive the maximum from the system we supply, even outstripping the performance that we would have anticipated from the binder system."

#### **Many benefits derived**

Since the changeover the foundry management has been delighted by some additional benefits derived from the change.

Not only have they seen a marked improvement in the consistency of the moulds which has enabled productivity to be increased and numbers of scrap moulds markedly reduced, they have also been able to significantly

reduce the overall addition levels by around 20%.

This has saved money on chemicals and has also made knockout quicker and easier. In addition the thermal reclamation of the sand is also more efficient; the foundry is now typically dumping only around 1% of its sand annually.

There has also been a reduction in fume levels during both mixing and casting as a result of the lower additional levels, a reduction in the occasional staining of castings that used to occur and a reduction in fettling and re-work.

All in all, Steve and Lee are delighted with the results that are now being achieved in the moulding section, enabling them to continue with their programme of continuous improvement. However, much of the credit must lie with them, for taking such a proactive and educated approach to understanding all aspects of the binder system.



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*Examples of moulds and cores in production at the foundry*