Technology assistance programme has lasting impact on foundries

To assist South African foundry companies to participate in Eskom and Transnet’s competitive supplier development programmes, the Department of Science and Technology (DST) created a Technology Assistance Package (TAP) programme. The CSIR was extensively involved in the execution thereof.

SPECIALISED TECHNICAL SERVICES AND SUPPORT TO INDUSTRY

The TWO STATE-OWNED ENTERPRISES, Eskom and Transnet, have embarked on extensive multi-billion Rand infrastructure-expansion programmes. In the interests of developing and growing the economy, the South African government has developed the Competitive Supplier Development Programme, a localisation initiative aimed at increasing the technology gaps in individual sectors of the economy, the South African Development Programme, a programme,

The TAPs for the foundry industry were aimed at addressing the technology gaps in individual companies that must be overcome to better position them as competitive bidders for future infrastructure expansion programmes.

During a benchmarking exercise done in 2009 by the United Nations Industrial Development Organization (UNIDO) and specialist service providers, 28 foundries were identified for technology assistance from the TAP programme. Eventually, 23 of these participated. The CSIR and Mintek were contracted by the DST as technology partners to execute the two highest priority technology areas, the CSIR to support the industry on ‘Lean and Clean Manufacturing’ and Mintek on ‘Scrap Reduction’.

Identifying needs and implementing solutions

The TAP took place in two phases," explains Duncan Hope, project manager at the CSIR’s metals and metals processes group. "For the first phase, a collaborative approach was followed and a team made up of the CSIR, DST, National Foundry Technology Network (NFTN) and Mintek specialists visited the foundries. We identified specific technology needs, over and above those identified during the benchmarking exercises. It was also a valuable repositioning exercise and the start of longer-term relationships with these companies.”

The second phase involved the implementation of technology solutions for the needs identified during phase one. The exercise spanned 18 months.

“We assisted them with a range of interventions, from casting, process simulation and modelling and the installation of shot monitoring systems on high-pressure die-casting machines, developing sand foundry component coating software, developing a simple melt quality tester for the aluminium foundries, and fine-tuning a CSIR-developed integrated production monitoring system (SmartFactory) to suit their needs,” says Hope.

“There were also interventions that involved assistance with getting their waste foundry sand declassified as hazardous waste.”

A survey to measure results

A year after the start of the support to the industry, the DST requested that an independent survey be conducted to assess evidence of the impact of the intervention and the current state of the programme. This survey, conducted by the NFTN and the South African Institute of Foundrymen, also provided the DST with a recommendation on whether the programme should continue, and in what format.

All 23 of the foundries responded positively to the continuation of the TAP programme and nine of these foundries were able to report improved process efficiency and productivity as a benefit derived from it. The survey concluded that the TAP programme was a valuable exercise that achieved much more than was expected. It improved the relations between public and private sector and increased the capacity of those foundries which made the most of the opportunity offered to them.

In addition, the survey concluded that it was crucial to realise that this was only the beginning of a very important initiative, that if the momentum was lost, much more than only the beginning of improved productivity, quality and efficiency within the foundries supported would be lost.

“The programme has succeeded in stimulating foundry decision-makers to work towards improved productivity and competitiveness for localisation and exports,” says Hope.

– Pete Lewis

John Bryson, Director of KEW Foundries, on participating in the TAP programme:

“KEW Foundries is proud to be a part of this (TAP) programme. Besides the financial implications, the pooling of technology and expertise is something that has been lacking within the foundry industry in South Africa for as long as I can remember.

“Since the launch of the programme, the company has managed to address various short-term challenges relating to the casting of larger diameter solid shoe wheels, thereby minimising the necessity for the smaller half-rim assemblies, which will ultimately reduce machining times and associated costs.

“As part of the Technology Localisation Programme, KEW Foundries is supplying castings, material for testing, technical specifications, foundry process knowledge, as well as other technical input and time. We are also highlighting the positive nature of this initiative and encouraging participation by more and more industry members.”

1 From a KEW Foundries media release, January 2012

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Thermal image, taken at one of the participating foundries, shows areas of heat loss on an aluminium casting furnace.