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Optimization during operation

Wescast is a foundry group and largest global manufacturer of cast exhaust manifolds and turbocharger housings for passenger cars and light trucks. With a European market share of 38 %, Wescast is a key player in this industry. Gemco Engineers does the full range of foundry projects and services, ranging from turn-key complete new foundry facilities to foundry modernizations, engineering and project management

When Gemco Engineers B.V., Eindhoven, The Netherlands, engineered and built the Wescast Hungary Autopari Zrt foundry in Oroszlány, Hungary, in 2000/2001, the facility with greensand molding line and a capacity of 73,000 metric tons per year was destined to produce larger series of compacted graphite iron castings (CGI) and SiMo metal castings. However, under (often) changing market demands, Wescast' customers also need to be served with smaller series and – very subject to trend – customers also ask for special steels/alloys. Wescast's focus on continuous improvement includes researching new materials in order to achieve higher standards in product quality.

At present the portion of special alloys is increasing in overall production and is being produced on a secondary line for smaller series. However, it is expected that in the future the demand for special steels will further increase up to 40 – 50%.

The changing market conditions plus evolving and challenging new heat materials' requirements for turbo housings imply that Wescast take the required measures so to optimize its production facilities and to reinforce its strong reputation. Wescast asked Gemco not only because they built the foundry and would therefore be very familiar with the plant and because of its broad experience in the field of material traceability and handling but also, and maybe foremost, because Gemco approached the subject with a very open mind and presented new ideas for this line.



Installation works in a small area in which a gentle shakeout, conveyors and the new screening system are to be positioned next to the installation of a new drum (Photos: Gemco)

Due to the increasing level of special alloys being produced in the foundry there is a growing necessity for optimization of separation of the different return metals – in order to avoid contamination – and its traceability. Also, since the secondary line was not originally designed for higher production speeds and capacity – it was originally designed as a sample line – it is now subject to review the line's shake-out, the casting cooling system, the shot-blaster and de-gating, tramp- and return material handling, all in order to fulfill the sought after increased speed and capacity on that line.

After Gemco – always in close cooperation with Wescast – defined and evaluated the solution for the after-cast



Foundry and machining facility of Wescast, Oroszlány, Hungary, as built in 2001. The production facility manufactures exhaust manifolds, turbocharger housings and integrated turbo-manifolds



Illustration of the required detailed engineering in order to perform installation in an operational foundry within designated area



Positioning of the gentle shake out equipment

Process, the “separation of tramps and return”, resulted in:

- » Two sand flows (one for special steels and one for iron)
- » Two casting flows with gentle shake-out, sand screening and casting cooling/shotblasting (iron and steel)
- » Two specific tramp metal separating systems (iron and steel)
- » separate steel return handling, incl. traceability of returns in scrap storage

The optimization works are performed in a live environment. The realization is done in phases. Project “Gemco 1” of this transition has been completed, encompassing: new shakeout, sand- and tramp-transport, and a new separation system.

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