GEMCO®

Newsletter Gemco nr. 11

Fusion Cooking

The crisis has settled, most of our customers have weathered the storm and some have taken significant steps to reduce the break-even point of their operations. Interventions have been carried out professionally and foundries can now centre their thoughts on the future again.

Our own measures, announced 12 months ago seem to bear fruit. The focus on Energy, Environment and Efficiency is ever increasing and we have been able to assist various customers in their pursuit to optimize their operations in this respect.

To continue along these lines of logic expertise we are now focusing on the next step. Together with the different suppliers to the industry, such as additive manufacturing companies, tooling-developers, machine-builders and foundries themselves we focus on new integral solutions for further development of our industry. New additives and simulations that enhance properties require new process-operations, machinery and quality-demands. The closed circle approach with valuable input and feedback from the different participating partners is bound to accelerate new developments in a largely conservative industry. It will provide foundries with optimal solutions and it will also minimize the trial-and-error of implementation.

In every respect we strive continuously to offer complete solutions that take all departments within the foundry into account. And it is this fusion of strengths with partnering suppliers in our industry that creates benefits and fosters new developments.

Ir. Bas van Gemert
General Manager

Compact sand-plant by Gemco. Read the full artical about this project on our website.

In this edition:

FOUNDRY

GEMCO®
CAST METAL TECHNOLOGY

Business Strategy Assessment for Russian Aluminium Alloy Wheel Manufacturer

Knight Wendling was asked to assess the business strategy of SKAD. With a current capacity of some 1 million wheels per year SKAD is the second largest aluminium alloy wheel manufacturer in Russia. Today the Russian aluminium alloy wheel market is dominated by the aftermarket business but this is expected to change in favour of OEM production. SKAD's strategic target is to grasp this business opportunity by increasing plant capacity in line with the expected expansion of Russian OEM automotive manufacturing capacities. Additionally, it aims to increase its operational competitiveness, in order to defend its market position against imports from low cost Chinese competitors, whilst developing and increasing export activities to West Europe.

SKAD operates its modern manufacturing plant in Divnogorsk. This is very close to the large aluminium manufacturer RUSAL which has plants in Krasnoyark city, and ensures uninterrupted, competitive supply of the necessary aluminium alloys. Divnogorsk is also home to one of the largest hydroelectric power-plants in the world and this guarantees a reliable power supply. Finally, the region has long been associated with the aluminium and machine construction industries and this allows SKAD to recruit highly trained and very experienced workforce for their operations.

The value Knight Wendling added to the SKAD business development plan was

- evaluation and projection of the OEM aluminium wheel market in Russia
- assessment of operational performance and identification of room for improvement of performance either with or without investments
- benchmarking of performance compared to best practice and West European competition
- development of a road map for increasing capacity in 3 steps following the expected sales volume growth and avoiding bottle necks in the full service supply chain (casting, machining, painting, ...)
- calculation of investment costs for capex planning
- comment and adjust impact of project initiatives in the P&L projection 2010 - 2012.

Meanwhile SKAD has decided to launch the next steps of capacity expansion and Knight Wendling has been engaged to support the process with technical casting experts on site.

European Market Survey on GJL Cast Products suitable for Vertical Moulding Lines

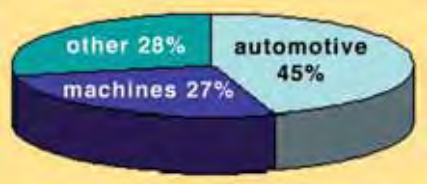
In the autumn of 2009 Knight Wendling executed a market survey project to identify and value cast products suitable for the client's vertical moulding lines (DISA type). The client is one of Europe's leading integrated producers of automotive brake discs and drums and provides a full design and manufacturing service from casting through to finished product. It operates 2 foundries with several vertical moulding lines and also 2 machining facilities in Europe. Currently this enterprise is entirely focussed on brake discs and drums.

The automotive manufacturing industry as a whole has experienced a sharp downturn in the demand for its products as a result of the financial crisis and this has prompted the client to search for alternative components to fill surplus capacity at its plants. Knight Wendling was commissioned to identify and evaluate adequate products suitable for the techno-logy installed.

Based on its foundry industry expertise and its data warehouse, Knight Wendling proposed a selection of products that matched closely with the client's capabilities. The criteria for selection of potential products were:

- products suitable for cost competitive production with the clients equipment
- interesting product segments in view of volumes, series and future potential
- products allowing reasonable margins with best practice performance level
- segments with opportunities for the client to penetrate market entry barriers

Ferrous Castings Segments



Source: KW Analysis based on CAEF statistics

Quick Scan Audit – Benchmarking and Implementation

Modgal Metal Ltd, Rosh Pina, Israel

Modgal Metal Ltd. is the manufacturer of the top-quality and outstanding product line Quikcoup. Over 50 years of experience, expertise and versatility, combined with continuous research and development, enables Modgal to design and produce superior couplings and fittings for use in sprinkler systems (Fire protection installations), HVAC & Industrial applications, waste and cold or hot water supply and treatment piping installations, for the worldwide market. Castings are produced in many different grades of nodular, malleable and grey iron. Modgal Metal Ltd is ISO 9001:2000 certified.
In addition to the coupling and fitting production with the own brand Quikcoup Modgal is producing as well automotive brake parts for passenger car- and truck-OEM's, and TIER 1 suppliers.
Modgal Metal Ltd. is equipped with a vertical Disa moulding line, a medium frequency melting shop, an automatic presspour unit, a Cold Box Core Shop and an automatic finishing cell for the automotive products. Sand and Metal are controlled in separate Laboratories. Castings can be supplied as cast, machined, zinc coated or painted. The complete company occupies an area of about 50,000m^2.

In order to benchmark against international standards Knight Wendling carried out a quick scan of the operations in Modgal Metal Ltd. in Rosh Pina. The quick scan surveyed capacity restrictions, potential in operational efficiency, productivity, internal scrap rates, external reject rates, box yield and shift pattern. The specific energy consumption was also part of the evaluation. Beside these results further potentials for savings were elaborated together with Modgal Metal Ltd.

The final presentation compiled the qualitative view on the foundry, the measured figures for process yield, effective production, scrap rates and productivity. All figures were then compared to benchmark values to establish measurable targets for the potential improvement. An outlook on savings, necessary investments and the influence on the internal costs were estimated and calculated on an expert basis. Modgal Metal Ltd. then invited Knight Wendling to assist in implementing the evaluated recommendations and improvements together with the Modgal Metal management and engineering team.

The survey evaluated the structure of the market for ferrous castings that were dedicated for the moulding technologies used by the client and named specific product types per category. The summary by volumes indicates that the most interesting segment for vertical moulding lines within the key technology industries remains to be the automotive segment.

Knight Wendling determined that there were potentially 6 types of products that should be considered and presented the following data for each type to allow the client to make an informed choice on any further focusing.
- category (with picture examples)
- material specification, piece weights and core intensity
- total European volumes requirement per year
- market price indication

Automotive	GJL	GJS
horizontal moulding	14%	34%
vertical moulding	22%	30%

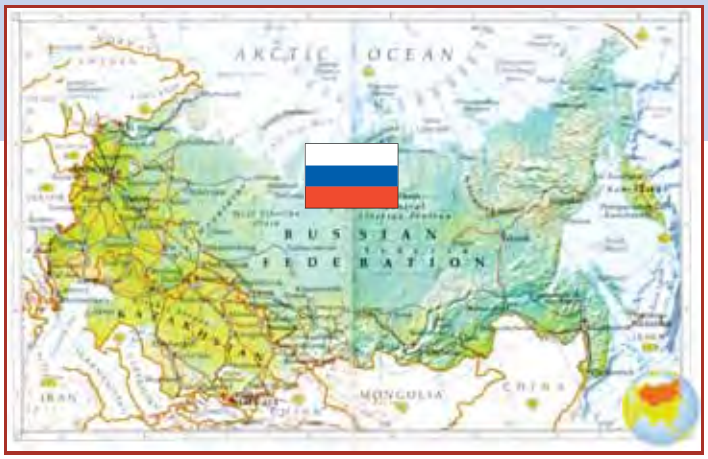
Source: KW Team Analysis

The client selected two products for execution and then Knight Wendling technology experts assessed the manufacturing facilities and developed recommendations for what needed to be done to ensure best competitive performance and what investments were related to these recommendations.

Machine Construction	GJL	GJS	GS
hand moulding	37%		7%
horizontal moulding	28%	21%	
vertical moulding	4%	3%	

Source: KW Team Analysis

On Assignment for IFC



In August 2009, a project consortium of GEMCO Engineers BV and Knight Wendling GmbH has been awarded a consultancy contract of the International Finance Corporation (IFC; member of The World Bank Group) titled 'Foundry Industry in Russia: Benchmarking and Development of a Reference Guide'.

This prestigious assignment forms part of the Russia Cleaner Production Program which IFC currently undertakes in the Russian industry. The Program aims to stimulate investment in and uptake of cleaner production technologies and management processes in the Russian industry and to raise awareness among policy makers and financial institutions. Focus is being put on those sectors deemed to be most interesting for IFC cleaner production investments; including the Russian foundry sector. The project is actively supported by the Russian government and other main stakeholders in the Russian foundry industry.

GEMCO/Knight Wendling have been awarded this contract thanks to its profound knowledge of the Russian foundry industry, built-up through a large number of recently carried out foundry consultancy and engineering projects for various Russian ferrous and non-ferrous foundries, its permanent presence with a local office in Moscow and of course its experience with similar assignments in various other countries.

Photo: courtesy of Foundry-Planet.com

Presentation of the project; from IFC the project is headed by Ms. Yana Gorbatenko and Ms. Kristina Turilova. From Gemco/Knight Wendling the project is headed by Alphons Wijnen, Georg Winkler and Ms. Marina Bogdanova

Dr. Klaus Schmitz-Cohnen, CEO of Knight Wendling GmbH

The assignment has three main objectives:

1. develop a Resource Efficiency Reference Guide for the Russian ferrous foundry sector
2. conduct benchmarking of the Russian ferrous foundry sector
3. conduct stakeholders consultations to ensure data collection and viability of results

Within the development of the Resource Efficiency Reference Guide; the GEMCO/Knight Wendling project team has been preparing a Diagnostics Guide, a Best Practice Guide and a Compendium on references of Key Performance Indicators (KPI's). In consultation with IFC, a total of 7 groups of KPI's have been defined. For the benchmarking campaign, meanwhile close to 200 Russian ferrous foundries have been approached and first results will come available in May 2010. The complete project runs until June 2010 and will be concluded with the presentation of the Resource Efficiency Reference Guide during a seminar for the Russian foundry industry.

For further information, please contact Alphons Wijnen, Area Director Central & Eastern Europe, telephone +31 40 2643607, e-mail a.wijnen@gemco.nl

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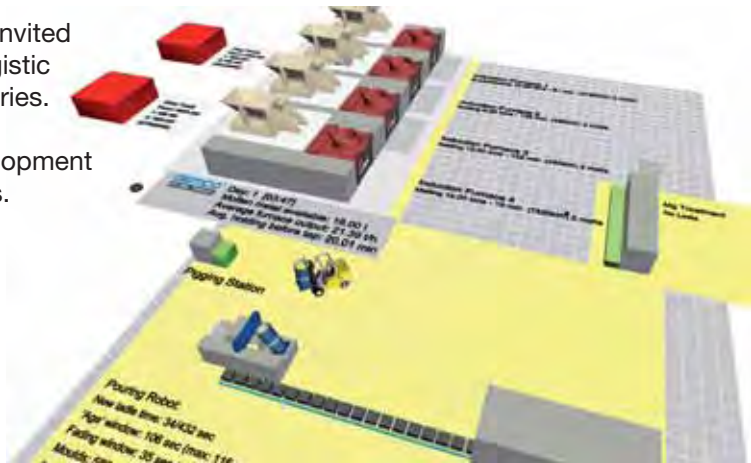
Dirk Wijnker
Project engineer

In cooperation with BDG (Bundesverband der Deutschen Gießerei-Industrie) the VDMA (Verband Deutscher Maschinen- und Anlagenbau) organized a congress on **Energy-Efficiency in Foundries** on March 11 and 12 in Frankfurt, Germany.
Dirk Wijnker, project engineer at Gemco was invited to speak about the tools we use, such as "logistic simulation" when planning new to build foundries.

We will keep you informed on the futher development of our tools in future editions and publications.



BEHRINGER NEW FOUNDRY NEAR COMPLETION

Several new technologies have been incorporated such as energy-recuperation of cooling water and exhaust gasses.

"Behringer Maschinenfabrik und Eisengiesserei GmbH", one of the world's leading saw manufacturers, successfully completed first melt and first pour in the new Greenfield Foundry for Iron Castings up to 2 tons.

In 2008, Behringer decided to build a new state of the art foundry to replace their existing facility. Prior to the realization of the project Gemco, together with Behringer, established the production requirements based on which Gemco designed the foundry.

The construction of the new project started late 2008. In May the project team moved into the temporary site office building to organize the installation of equipment that arrived. Towards the end of 2009, the 5,800m^2 building was completed.

In close cooperation with Behringer and other contractors the foundry now is a state of the art production facility that is able to produce grey and ductile castings in furan with a production capacity of 6,000 tons. The new facility enables Behringer to produce world-class castings in a very efficient manner.

Behringer new foundry facility with offices in front

First Melt

Pouring Line

Overview production with Pouring Line in front

Overview No-bake Moulding Line with roll-over

Mould-cooling Line

Dedicated steel foundry for railway components

MFA-Materiel Ferroviaire d'Arbérats- is an independent branch of the Spanish company JEZ Sistemas Ferroviarios S.L. The Basque company is a renowned manufacturer of railway crossings and sidings. The history of the company dates back to 1926 when JEZ, Talleres y Fundiciones was established in Bilbao by its three founding partners, Ceferino Jemein, José Mª and Enrique Errazti and Cipriano de Zenitagoya, as a company involved in construction in metal. In 1952 the company moved to Llodio, still in the vicinity of Bilbao. In 1994, a joint venture with the VAE Group resulted in the new firm JEZ Sistemas Ferroviarios. The combination of a (national) market-leader and maybe the most important multinational manufacturer in this field makes JEZ a significant player in the crossings and sidings market. The company is active in over 35 different countries for important projects and clients such as the French railways and metro systems (SNCF, RATP), London and Santiago subways, just to name a few.

MFA plant: Meltdeck

MFA plant: First Pour

In order to respond to a growing worldwide demand for railway materials JEZ chose to expand its production facilities with the erection of a new to build plant on the French side of the Atlantic Pyrenees, in Arbérats, France. The location in France will also allow the company to even better serve the highly potential French market. GEMCO Engineers was asked to perform a concept study, followed by a foundry design and turn-key implementation of all the equipment.

The new state of the art facility covers 7,000m² and specializes in the production of railway crossings with a length of over 6 meters. For these products of special lenghts/ size a dedicated modern and highly automated moulding line was developed.

Patterns which are stored in a high-bay storage rack are transferred by means of an automated pattern manipulator to the moulding line where they are prepared for the moulding process and joined together with the flask halves. From here the moulds are automatically transported through the different stations of the line: mixer / sand filling, mould hardening, stripping, inspection, after-curing, flood coating, drying, core setting inspection, mould closing and pouring cup setting.

Stripping, closing and drying are fully automated processes, where the other processes run manual or semi-automatic.

Prepared moulds are positioned on the semi automatic pouring and cooling line. Here the full moulds (each weighing up to 15 tons) are indexed to the pouring positions, where they can be tilted to an angle during the pouring cycle. After pouring the moulds are transferred into the cooling tunnel, from where the are transported to the shake out.

After shake out, the product transfer is automated by the use of strong manipulators. These powerful units handle the raw castings through the degating, heat treatment, shot blasting and rough grinding processes. Automated transfer cars transport the castings into the finishing and machining area.

Project started with concept engineering in 2007. Permitting obligations were fulfilled early 2008 where in summer the groundbreaking took place. January 2009 the equipment installation started. In June the first pour was executed, followed by the start of production.

Gemco-designed dedicated semi-automated pouring line and cooling tunnel

Manipulator handling of castings

Overview moulding line

Heat Treatment with automatic loading and quenching device

Smart & Simple

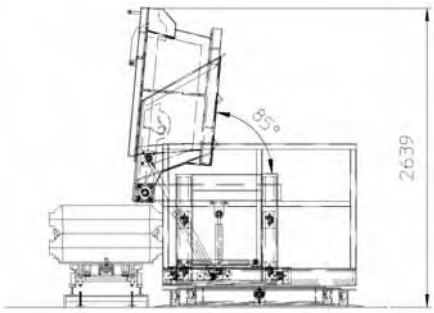
Gemco provides for flexible pouring

In the current climate where order-volumes are decreasing, foundries are compelled to anticipate better changing market demands that often result in the need for smaller series. A critical point, under these circumstances, is the metal flow. In particular foundries that are organized (configured) to produce long series and cast with inflexible pouring units find themselves limited in their options to respond to the changing conditions since, not only volumes but also metal specifications may be revised.

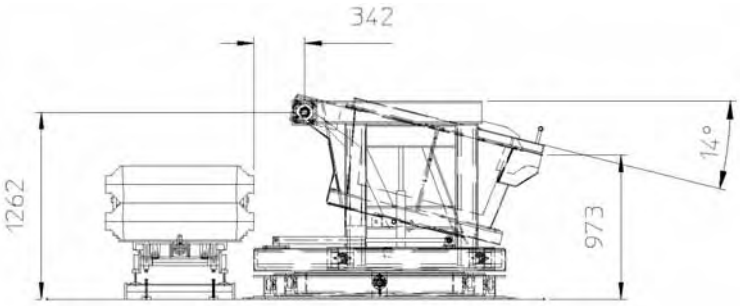
For some time now, Gemco has been consulted by foundries that are searching for specific solutions which will provide more flexibility in their pouring processes.

For a Dutch client, Gemco is now supplying a pouring installation for a double index moulding line. This includes a 1200 kg Lip tilting ladle that is mounted on a 3-axis transfer system and allows for maximum flexibility in pouring position. The system is equipped with a quick indexing system, moving the whole unit between 2 adjacent pouring positions, enabling the pouring of 2 moulds during the standstill time of the double indexing line.

For a US client, Gemco will perform the supply and set-up of a pouring installation for a continuous moving moulding line.
This system handles a 2700 kg Lip tilting ladle mounted on a moving carriage which synchronizes with the moulding line speed.



This system is provided with an automated ladle exchange system to remove the empty ladles from the pouring unit onto the ladle refilling system. This includes (semi-) automated pigging, alloys and additives dosing, filling and deslagging operations.



Fairs & Congresses *Consult our website and see where to find us!*

IFEX, India: Bas van Gemert and Dr. Klaus Schmitz-Cohnen

EUROGUSS, Germany: Dr. Klaus Schmitz-Cohnen and Cees Noortman

Looking forward to see you at:

Metal + Metallurgy China 2010
Beijing
May 11-14 / 2010
Stand no. G02

Metallurgy Litmash
Moscow
May 24-27 / 2010
Stand no. 7-5 B19

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