

## Rush Hour(s)

Globalization of the international market, shifting of growth sectors, supply and demand from foreign markets and the development of new materials are continuing to change the face of the foundry industry worldwide. The ever more competitive market environment calls for measures to improve performance. Customer's current needs and future expectations require organizations to structure accordingly and although an economic recovery has been in the pipeline since 2003, it seems only now to be materializing.

With the economic slowdown behind and positive outlooks ahead, the foundry industry is extremely dynamic at the moment. Brazil, Russia, India and China (BRIC) live up to their economic growth-figures and continue to feed the industry with casting-demands. In Europe, the foundries that are well equipped and that have prepared for this rush hour are now working around the clock to meet customer demands. In the meantime, the BRIC countries have built a number of modern casting facilities that are already competitive in quality with more set to follow.

While we are working on the realization of projects in Thailand, Russia, Spain, Germany and Sweden, among other countries, we must also look forward. Gemco is today creating and developing the tools for tomorrow. There is a growing call for fact-based prognostics, for real-time data. It is increasingly important to measure performance accurately and anticipate how to improve profitability. Our simulation of foundries is a tool that can assist you in detecting the bottleneck(s) within your foundry and how they are related to other process elements in your foundry. Our simulation can help you determine requirements for your investments. It allows you to preview if reality will meet your ideas for an optimal foundry, and it can help reduce your manufacturing expenses.

Of course, June 2007 also marks GIFA in our diaries and you are warmly invited to visit our stand and exchange ideas to go further to the future.

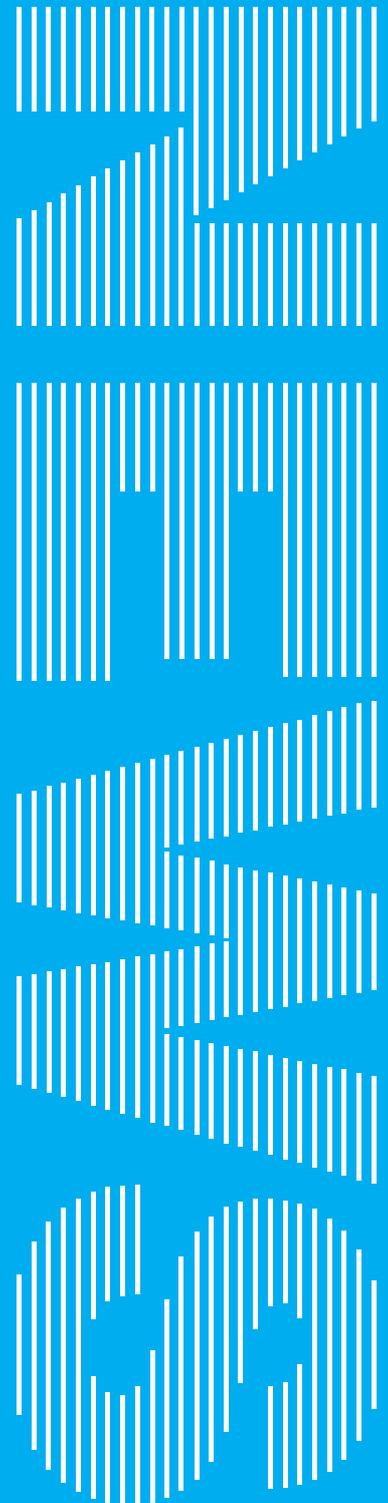
Your sincerely,

**Ir. Bas van Gemert**  
General Manager



### ***In this edition:***

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and more...



Hall 15 - Stand C21

# Consulting Projects in brief



## Relinquish an integrated die casting toolshop

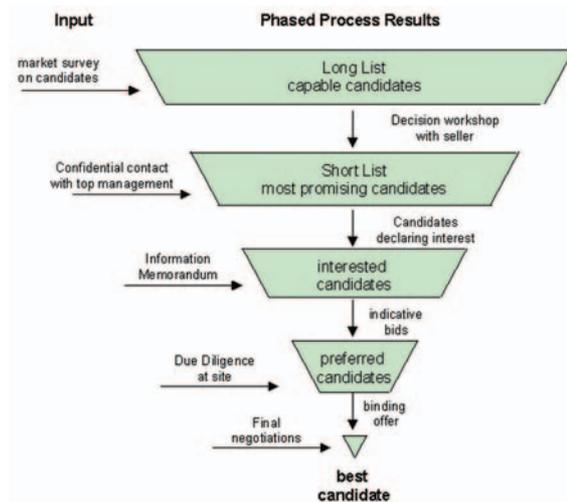
Knight Wendling supported Hydro Aluminium Mandl&Berger GmbH, Linz, Austria in the process of outsourcing/separating its integrated toolshop operations. The aluminium foundry Mandl&Berger is part of Hydro Aluminium Casting Business Unit (part of Norsk Hydro) operating other casting plants in Dillingen/Germany, Győr/Hungary, Charlottenberg/Sweden and in Ramos Arizpe/Mexico and supplies engine components to the automotive industry.

The adjoining toolshop was an integrated part of the foundry operations in Linz and in charge of the design and manufacture of patterns and tools, including core boxes and dies for gravity die-casting, mainly destined to internal use. The toolshop, however, also supplied external partner companies. In addition, the toolshop was also responsible for the on-site maintenance of tools. With a staff of some 70 employees, consisting of a team of highly capable engineers and toolmakers, equipped with competitive tooling machines, the toolshop realized a turnover of almost 8 million Euro for tool production and maintenance services. Notwithstanding the good result and circumstance, Corporate Headquarters decided to concentrate financial and development resources on the core business, which is the manufacture of castings not the design and manufacture of tools for castings.

Eligible buyers – casu quo new owners- were expected to meet the high standard of required competence in toolshop operations with an emphasis on moulds and dies for aluminium castings, as well as be in agreement with the current owner's business objectives of the transaction: continuous and reliable supply of moulds and dies for the corporation as well as maintenance of the adjoining plant; increase mutual competitiveness and maximize each competence; develop additional business potential for the toolshop.

Internal preparation of the concept for separation of the integrated toolshop from the foundry was started, taking into account physical, organizational, financial, personnel and all other concerning aspects. A future cooperation model was drafted in a business cooperation contract, to be negotiated with the potential new owner.

Identification of potential candidates produced a long-list of some 140 companies, eventually to be reduced to a short-list of 22 preferred candidates. At this stage, non-committal contacts at top management level could be initiated, in order to explore the level of possible interest. Information providing the necessary insight of the toolshop operations had been prepared and made available, for potential and serious buyers only, in order to assess the value of the toolshop and make indicative offers. At all times, utmost attention was given to fair and equal treatment of the candidates.



Knight Wendling's strategic and operational expertise in the cast metal industry, including similar consulting projects, offered substantial support in preparing the separation concept and all subsequent actions to be taken in the process. Also, Knight Wendling's extensive expertise and network in the global casting industry, on top management level, allowed for confidential, discreet yet efficient communication between the parties. Ultimate target of this business transaction was to maximize the common interest for a continuous optimal cooperation for all parties involved. Mission accomplished!

## COMPONENTA

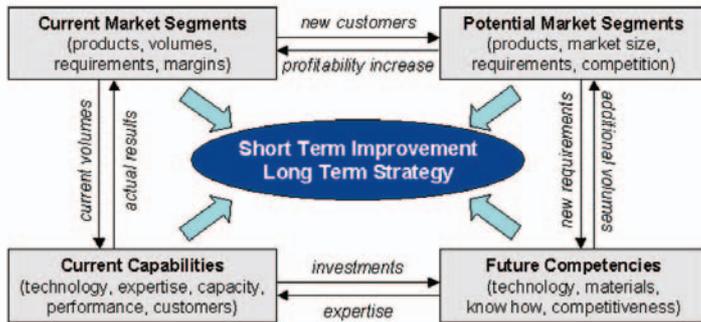
In April 2006 Knight Wendling GmbH [Düsseldorf, Germany] was mandated by Componenta, Finland to assist on Due Diligence with consulting services for Döktas Iron and Aluminium Foundries in Turkey.

Together with a Turkish, Istanbul based, business partner and financial advisor, Knight Wendling managed the deal for Componenta to a final closing in October 2006 at a transaction value of 89 million Euro for the majority of 55% of shares and votes with Koç Holding, Turkey as the seller.

## Intermet Europe, Strategic Business Development Analysis

A combined team of operational and strategic consultants from Knight Wendling and Gemco Engineers performed an Operational Analysis for Intermet Europe. Intermet's European foundries are located in Neunkirchen and Ueckermünde in Germany and in Porto, Portugal. The group produces large series of nodular iron castings for the automotive industry and is part of a large international casting group with headquarters in the USA.

The objective of this analysis was to determine appropriate measures for strategic and operational enhancement of the companies' business. Possibilities for improvement had to be evaluated in view of both operational improvement within short term, as well as long term strategic orientation regarding market segments served, operational equipment and capacities.



The project encompassed 2 scopes that were carried out in parallel:

- Operational performance analysis along the manufacturing process from the melt shop all the way through to the finishing area. Each section was submitted to an assessment of capabilities, productivity, capacity utilization, state of equipment, possible bottlenecks, business processes, quality aspects, operative results and benchmarks.
- Analysis of current and potential castings market segments in the automotive industry including size, development, requirements, price levels and competition.

Subsequently, together with the client, their management team and their shop experts, the areas for improvement were selected.

Operational improvement and investment projects that could be realized within the short term consist of automation in the finishing area and output increase by scrap reduction through process improvements. On a long-term strategic level, possible manufacturing investment opportunities for entering additional profitable product segments were evaluated. Criteria were the best available technology and capabilities required to maintain the current business scope, taking into consideration the existing plant layout.

The improvement targets including required investments were then integrated in the company's Business Plan for the next 5 years.

# DUE DILIGENCE

Restructuring, reorganization, investments, disinvestments, mergers and acquisitions are all part of the dynamics in business today. Each and every one of these actions/interventions requires a thorough investigation, analysis and evaluation of all facts in order to take the right decision at the right price.

Due Diligence is a process by which a buyer or investor investigates the records, performance and all possible factors that affect the valuation of the target. Due diligence is often one of the final stages in a buying [capital investment] process and there is more to it than just the financials. Areas of investigation extend to: corporate matters; financial and accounting; technology and IP; equipment and capacity; product; operations; sales; human resources and personnel. Due Diligence allows the buyer/investor to ensure that the information that has been given, concerning any of the categories, is true and accurate. On the other hand, sellers could also perform a due diligence analysis on the buyer. The seriousness of a potential acquirer is just as important in the whole process. Items that may be considered in this respect are the buyer's ability to purchase, as well as other items that would affect the purchased entity or the seller after the sale has been completed.

As a consulting and engineering specialist in the cast metal industry, Knight Wendling has assisted many investors in the process of Mergers & Acquisitions, investments and disinvestments. Within these activities, Knight Wendling has conducted a number of due diligence audits and investigations.

# EXPANSION PROJECT



Atlantis Foundries (Pty) Ltd., located a few kilometres outside Cape Town in South Africa, is a wholly owned subsidiary of DaimlerChrysler AG. Being part of the DaimlerChrysler “Mercedes Benz Trucks Unit” it is incorporated into the Mannheim Foundry Product Unit.

The Atlantis Foundries **EX**pansion project came into being as a result of new product development within the parent company and was part of a wider ranging strategy. In Mannheim, Germany production of the newly developed product required an entirely new manufacturing line to be installed in the foundry. As a consequence, the existing and well-running Mannheim casting equipment became available for relocation to Atlantis Foundries. This restructuring of group assets offered enhancement of both foundry operations in terms of process optimization and production capacity. In fact, if realized, capacity at Atlantis Foundries would rise from 45 000t/yr to 85 000 t/yr.



Atlantis Foundries, South Africa

First and foremost an evaluation of available equipment in the Mannheim foundry was needed. This was carried out by Gemco in 2004 and marked the starting point for the construction of a master plan. Gemco continued with an accurate assessment of Atlantis Foundries’ existing layout, the equipment in place, the foundry’s current operations and the foundry’s physical organization. To optimize and actually expand existing facilities within an already limited space required creative thinking. A detailed Engineering Concept, incorporating data collected through equipment evaluation made it possible to identify and determine the possibilities of integration of the Mannheim equipment into the Atlantis foundry. It soon became apparent that in order to comply with the foundry’s future production plans a blend of existing, relocated and new equipment was needed in a substantially modified configuration. The Engineering Concept was used as a tool to determine reconfiguration requirements and the final result provided



Relocation crew on the top of Mannheim Foundry, Germany

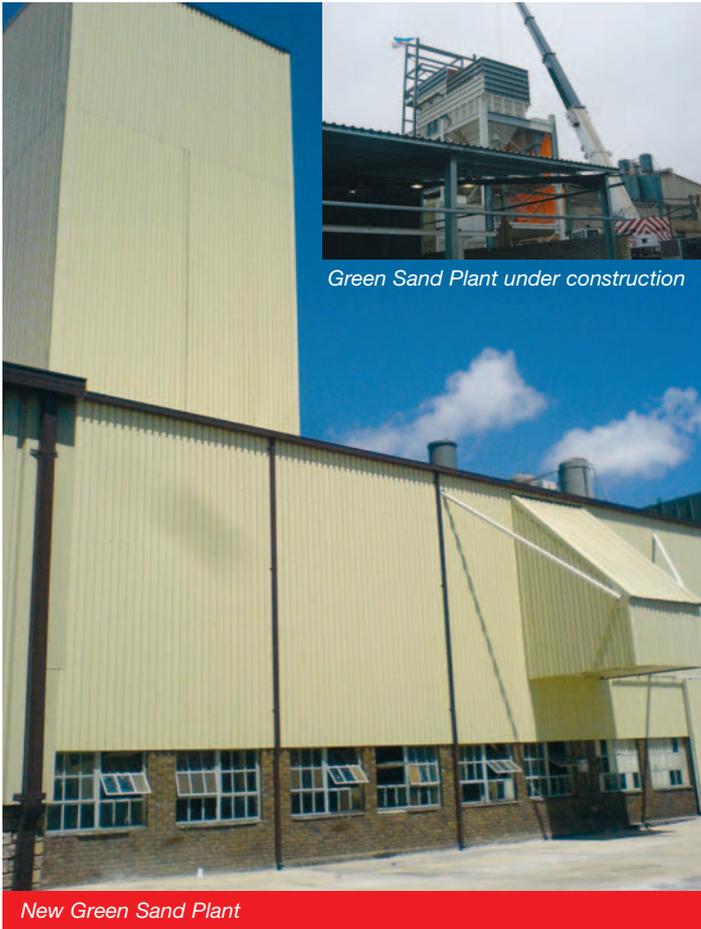


Preparation, civil works for moulding line



Moulding Line, installed

**Theuns Wessels**, project manager from Atlantis Foundries: “with Gemco’s concept engineering and resulting master plan in hand we could first evaluate and outline those parts of the project that were within our own range of experience and do-able either by ourselves or with familiar (local) suppliers, such as building and utilities, upgrading of the melting department and the installation of the sand dryer. We then decided to subcontract all overseas activities, deliveries coming from overseas as well as all other activities that required specific foundry know-how. After given the green light, we assigned Gemco as main supplier for our project.”



*Green Sand Plant under construction*

*New Green Sand Plant*



*Secondary Cooling, blend of relocated and new equipment in the new configuration*



*Bas van Gemert and Theuns Wessels during the official opening.*

**Theuns Wessels:** *“The first pour, in January of this year, marked the end of a hectic one and a half year and we can now fully concentrate on production again. Gemco provided good support with the execution of the master plan and actual realization of the project. Their overall involvement and collaboration also in those parts of the project that were within our own scope of activities, such as civil works, enabled us to ensure continuation of production”*

not only the optimum configuration and layout of the facility but also the phasing of the complete project and required investment.

The project engineering and project management services that Gemco provided encompassed the overall control and co-ordination of all tasks within the project, including the relocation of the Mannheim equipment, time schedule, project budget and quality. In addition, Gemco was also responsible for the supply, installation and commissioning of the supplementary equipment for the Mannheim moulding line and coeshop as well as turn-key supply of the sand plant, all of which originated from European sources.

The realization of the **Atlantis Foundries EX**pansion project took a total period of 21 months. Whilst in Mannheim the dismantling works and preparation for relocation were well under way, the Atlantis facility was subject to a massive physical rearrangement of departments. The new lay-out required that, with the exception of the existing moulding and melting facilities, every other department, including maintenance, toolshop and storage, needed to be relocated. The operation required flexible yet efficient organization in order to not obstruct the ongoing production. The relocation works, scheduled in such a way as to make maximum use of breaks, off-times and holidays, were subdivided into consecutive phases. The extra floorspace

required for the additional moulding line and capacity doubling inside the existing building was created by moving all manual fettling activities from the foundry building and by streamlining the complete foundry layout. The main aspects of streamlining were shortening the distance between consecutive process elements, minimisation of internal transport and elimination of a number of buffer stocks.

An example of the application of Gemco’s vast foundry engineering expertise is seen in the reconstruction of the secondary cooling system that was relocated from the Mannheim Foundry. Unlike a one-on-one relocation, Gemco redesigned the system to achieve optimal integration in the AF layout. With the new system major maintenance and process bottlenecks were resolved. The construction and installation of relocated components in combination with newly developed machines and an up-to-date control system with SCADA Interface required particular foundry expertise to establish proper integration in the new setting. The result will be better machine uptimes, maintenance and process control.

# TECHNOLOGY

**NOVACAST**  
TECHNOLOGIES

## Expansion of Hästveda Foundry

**Camito**, a fully owned subsidiary of the **NovaCast Technologies Group** (Sweden), developed and patented a method for jointly pouring grey or ductile iron with tooling steel for the production of dies for the automotive industry, called the Camito method. In the development of every new passenger car the highly time-consuming tooling phase is often a major bottleneck. The Camito method significantly reduces the number of manual activities in the manufacturing of tools. The method significantly shortens the production lead times of the tools, thus accelerating the introduction of new models

In order to increase the Camito-manufacturing capacity and further development of the process, NovaCast acquired the **Hästveda Foundry**. Hästveda's extensive experience in heavy castings ideally allows the foundry to be converted into a Camito dedicated facility. The investment decisions were based on a thorough concept-study conducted by GEMCO. A new, independent Camito Foundry will be added to the existing Hästveda foundry. It will also host the Camito Technology Center, a research, development and training centre where prospective certified Camito subcontractors are instructed and trained to work the Camito method.

 **CAMITO**

a novacast technologies company

For the realization of this project, NovaCast again selected Gemco as their foundry- engineering, equipment selection, site management and overall project management partner. The new foundry starts production in the early winter of 2007.

A Strong Partner and Supplier Certification strategy is a key factor in the Camito expansion plan; Certified suppliers for the production of the tools and partners for continuous development of the technology. In line with that strategy, **NovaCast** and GEMCO signed a cooperation and partner agreement for further development of the design and certification process of Camito Foundries.



*Hans Svensson,  
CEO NovaCast  
Technologies*



Conventional pressing/cutting-tools for the automotive industry are made of special tool-steel sections that are mounted on a cast-iron base, a highly labour intensive and time consuming activity. With the patented Camito process the tool steel section can be casted together with the cast-iron base in 1 cast, thus reducing the lead-time.

The picture shows a test pressing tool manufactured according the Camito process. It shows that the actual pressing part is a single piece that is directly cast onto the cast-iron base, rather than a conventional tool assembled from multiple sections.

## RESEARCH Metal – Foam Interface Phenomena Observed During the Filling of Lost Foam Moulds with Aluminium Alloys

On the occasion of the CastExpo '06 in the USA, Mark Ainsworth published a technical paper on "Real-time X-ray Study of the filling Profile in Al Alloy Lost Foam Castings". It would be the first in a series of technical papers that summarize research on the interaction of cast Al Alloy with the polystyrene foam pattern and the resulting profile of the metal front. Since then technical papers have been presented at the World Foundry Congress at Harrogate, Paderborn Lost Foam Symposium, and Alusyl in Moscow. Research has been aimed at investigating the factors that determine the quality of the final product during the casting of Al alloys using the Lost Foam process. Research has been carried out on the counter-gravity filling of vertically oriented plates, imaged with real-time X-ray equipment. Experiments showed that when applying high filling velocities the advancing metal front developed finger-like protrusions. When the velocity with which the mould was filled was decreased, the nonuniformity of the metal front was also decreased, reducing the entrapment of the degradation products of the polystyrene pattern. Extensive research provided a better understanding of the extent of the viscosity differences between liquid AL and pattern decomposition products. The magnitude of these differences was found to have a significant effect on metal front stability during mould filling. Observations and predictions now need to be confirmed through a further set of experiments.

# Engineering Projects in brief



## Simbirskaya Litejnaya Kompanija chooses GEMCO for the construction of a new foundry

Towards the end of March this year, Gemco signed a contract with Simbirskaya Litejnaya Kompanija (SLK) to carry out the Engineering and Project Management services for the construction of a new high-duty cast iron, plain carbon steel and aluminum casting facility. The project will be realized on land available at the customer's present manufacturing facility in Ulyanovsk, Russian Federation. The project kick-off has taken place and the intention is to have first pour in May 2008 already.

Simbirskaya Litejnaya Kompanija has chosen Gemco to supervise the realization of this major investment project on the basis of a detailed Technical-Economic Basis that includes conceptual engineering and feasibility analysis. This Technical-Economic Basis was prepared in close cooperation between Gemco and SLK. The activities within the Gemco head office in Eindhoven were intensively supported and facilitated by the Gemco office in Moscow. A careful technological and financial evaluation of most suitable manufacturing technology for SLK's specific production program was made. In addition, the supporting design department, although focusing primarily on the necessary manufacturing and quality requirements, incorporated 'state of the art' solutions in order to maximize manufacturing efficiency.

Gemco is proud to count Simbirskaya Litejnaya Kompanija to its rapidly growing number of Russian clients and strives to deliver a world-class foundry encompassing modern techniques as a new example of its competence in this field.



Signing of the agreement, from left to right: Jan van Wijk, Alphons Wijnen and Mr. Ilya Taranov



From left to right: Mr. Alfik Valeev, Cees Noortman, Alphons Wijnen (Gemco), and Mr. Ilya Taranov

**Asia Pearlite Casting Industries Co.**, is a subsidiary of the Iranian SHAYAN Industrial Group which is one of the largest companies involved in manufacturing automobile accessories for the Iranian automotive industry. The company focuses on three product categories: clutch assembly, parts for body and engine and various dies and fixtures. Iran's automobile industry has in recent years become one of the country's biggest sectors outside of oil. Iran may well have the largest car industry in the Middle East and Central Asia.

For Asia Pearlite Industries, Gemco conducted a market study as well as an extensive concept-engineering report that included a feasibility report. Based on this report the company decided for the realization of a Greenfield foundry in Iran. Gemco has been awarded the engineering, equipment supply, site management and overall project-management of the project. Casting production in the new foundry is scheduled for spring 2008.



Project team Asia Pearlite, from left to right: Mr. M. Ouraei, A. Kharrazi and B. Beydokhti.



Excavation works in February 2007

## Koenig & Bauer AG, "Spreading the News"

The Koenig & Bauer Group is one of the largest press manufacturers worldwide and has the broadest press range in the industry. The parent company is Koenig & Bauer AG (KBA) with facilities in Würzburg, Radebeul, Frankenthal and Trennfeld (all in Germany). Koenig & Bauer is the world's first and oldest press manufacturer and has been based in Würzburg since 1817. The 2,000 employees at the Würzburg headquarters manufacture newspaper and directory presses.

Within the scope of possible investment projects at the Würzburg facility, Gemco was asked to establish a concept engineering that, amongst other included an evaluation of the existing facilities and equipment as well as identification of the possibilities to increase casting capacity within the existing facilities. Furthermore, in cooperation with the German Foundry Association (Deutsche Gießerei-verband, DGV) the effect on the castings cost per ton could be established. All aspects of financing, infrastructure and human resources were taken into consideration.



Some of KBA-product range today, Illustration - Rotogravure Printing Unit and -Proofing Presses



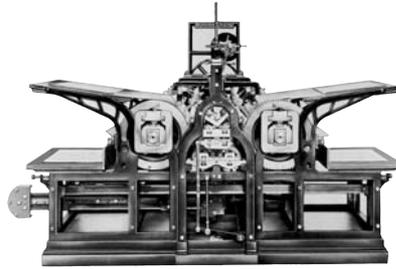
Friedrich Koenig  
1774 – 1833



Andreas Bauer  
1783 - 1860

### 1817 Würzburg

Friedrich Koenig and Andreas Bauer establish Schnellpressenfabrik Koenig & Bauer in a secularised monastery in Oberzell near Würzburg, taking on the mammoth task of setting up an industrial production line 25 years before the industrial age reached German



### 1814 Würzburg

A double version of Koenig's cylinder printing press prints 'The Times' - the first newspaper in history to be printed on a steam-driven machine.



## Electro Scientific Office

Under the authority of the Ministry of Education in Syria, Gemco supplied and supervised the installation and commissioning of equipment, including training and technical support for 6 foundry schools.



**Gemco Engineers B.V.**  
Engineers & Contractors  
Science Park Eindhoven  
P.O. Box 1713  
5602 BS Eindhoven  
The Netherlands  
Tel. : +31 40 264 36 43  
Fax : +31 40 264 36 40  
e-mail: eng@gemco.nl

**Gemco Foundry Technology de México, S.A. de C.V.**  
13 Sur 1901 Col. Santiago  
Puebla, México  
Tel: + 52 (222) 212 7221  
Fax: + 52 (222) 403 3545  
E-mail: gemco@gemtel.com.mx

**GEMCO International BV**  
ul. Dostoevskogo 21  
103030 MOSCOW  
Russian Federation  
Tel: + 7 495 755 5713  
Fax: + 7 495 755 6974  
E-mail:  
e.zalevskaya@gemco-international.ru

**Knight Wendling GmbH\***  
Cast Metals  
Consultants & Engineers  
Kieshecker Weg 240  
D-40468 Düsseldorf, Germany  
Tel.: +49 (0)211-77 00 6-0  
Fax: +49 (0)211-77 00 6-77  
e-mail: info@knightwendling.de

\*a Gemco company

[www.gemco.nl](http://www.gemco.nl)

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