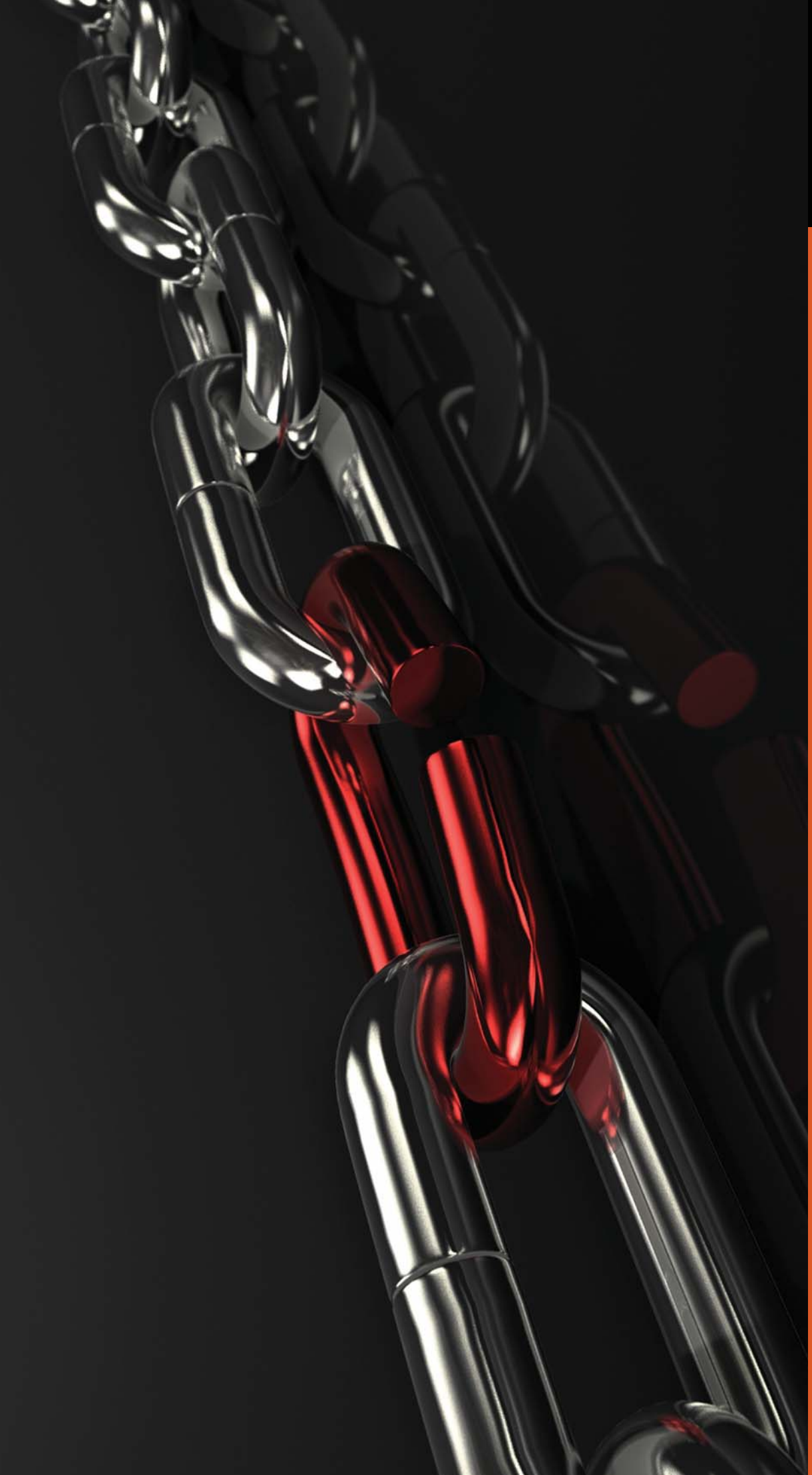

1-2
2011

METALLURGY, FOUNDRY INDUSTRY, AND STEEL CONSTRUCTIONS

Supplement of Czech Business and Trade

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Metallurgy, Foundry Industry, and Steel Constructions

Supplement of
Czech Business and Trade 1-2/2011

CONTENTS

PRESENTATION OF FIRMS:
AGADOS, spol. s r.o.; ArcelorMittal Ostrava a.s.; Český metrologický institut; Lichtgitter CZ spol. s r. o.; MOTOR JIKOV Group a.s.; Slévárna HEUNISCH Brno, s.r.o.; UNITHERM, s.r.o.; Vítkovické slévárny, spol. s r.o.

IN THE NEXT SUPPLEMENT TO CZECH BUSINESS AND TRADE

Even though we can expect a more dynamic economic growth as late as in 2012, many industrial sectors, including machinery and equipment manufacturing industry, are already registering economic regeneration and new orders. The development is even more positive due to the fact that this sector is one of the fields with higher added value. More about Czech machine industry in the next Supplement to Czech Business and Trade.

Cover photo: www.sxc.hu; page 3 photo: www.sxc.hu

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Graphic Design: Art Director: Nina Nováková
Graphic Designer: Jiří Hetfleisch
Production: Anežka Zvěřinová

Address: PP Agency s.r.o., Myslíkova 25, 110 00 Praha 1
Czech Republic, Phone: +420 221 406 622
Fax: +420 224 930 016, e-mail: journal@ppagency.cz
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Dear Readers,

Following the economically uncertain years, it now seems that the metallurgical, foundry, and steel businesses can look to the future with slightly more optimism. For example, the Czech metallurgical industry continues its gradual recovery from the economic crisis, and the year-on-year growth of production in the steel industry reached 25% for the period between January and December 2010. Revenues of the Czech metallurgical businesses grew by 12.32% during this period. This is according to information from The Steel Federation, which associates leading Czech metallurgical companies.

The rapidly increasing prices of metallurgical raw materials remain the main risk factor. The demand is mainly fuelled by engineering companies linked to the automotive industry. The year-on-year growth in the production of steel amounted to 20% for the third quarter of 2010. The number of orders has been increasing as well, even though it has yet to reach the pre-crisis level of 2008. Nevertheless, the largest Czech foundry, ArcellorMittal, has already reached its peak capacity.

The educational system in the Czech Republic is suffering from a long-term problem closely related to the topic at hand: there is a shortage of graduates from technical schools. This does not concern only metallurgy and foundry, but also the automotive, engineering, electrical engineering, and chemical industries. The global recession has only temporarily obscured this problem, while the Czech educational system is trying to resolve it.

Šárka Kratochvílová

Šárka Kratochvílová

Current Development in the Czech Metallurgical Industry

Miroslav Svoboda, Hutnictví železa a.s., e-mail: miroslav.svoboda@hz.cz, www.hz.cz

The impact of the economic crisis on the metallurgical industry was fully felt in 2009. The slower rate of growth and lower demand in the decisive consumer branches, which were already seen in the 4th quarter of 2008, continued with even greater intensity. The volume of new orders declined by nearly 40% on a year-on-year basis. A problem for exporters throughout the whole period under review was the considerable volatility of the Czech crown in relation to the Euro and the Dollar. All these factors taken together resulted in a record 68% year-on-year decline in added value and marked reduction of the overall cost-effectiveness of production. A turn occurred in 2010. While in the 1st quarter of 2010 the volume of new orders grew by +2.2% year-on-year, in the 2nd quarter it rose by 58.7%, nearly reaching the level of the 1st quarter of 2009.

In 2009, the industrial production index (IPI) in the sector declined by 24% year-on-year on an average (total industry -13.1%). In the first half of 2010 the sector resumed its upward trend with IPI in the first quarter rising by 25% and in the second quarter by as much as 42.4%. For comparison, total IPI in that period rose by 7.5% and 12.3% respectively, year-on-year.

A similar trend was shown by final metallurgical production, which in the 1st quarter of 2010 rose by 36.4% year-on-year, of which rolled material by 34.6% and steel tubes by 38.4%. Final production deliveries to the domestic and foreign markets in the 1st half of 2010 rose by 37% on a year-on-year basis.

A survey of traders and buyers revealed that stocks of previous years would be exhausted by the end of 2010 and a marked increase in demand for steel was only to be expected in 2011.

GROWTH EXPECTED

For reasons of high stocks on the part of traders and consumers, the decline in consumption manifested itself much more distinctly in apparent consumption (supplies + imports – exports), where the year-on-year decline in 2009 was 30.8%, than in real consumption (-20.8%). In the following period, i.e. in 2010 and especially 2011, a reverse trend is expected as a result of the replenishment of stocks, and the same growth rate could be achieved in the course of 2012.

Considering the high proportion of Czech exports, the country's export possibilities are closely linked with the economic revival or recession in the world, in particular the European Union. EU industrial production in 2010 is expected to grow by 6.8% (following a 14% decline in 2009), mainly thanks to the revival in engineering, including car production and metalworking.

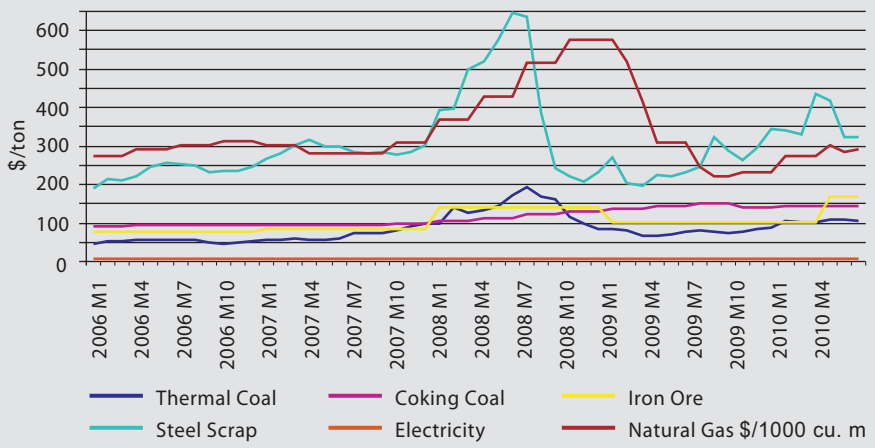
Photo: PhotoCombo

In the building industry, the decline is expected to continue (-1.4%).

SLIGHT REVIVAL ON THE PART OF BUYERS

The situation is quite favourable in the steel-using industries (SWIP), too. In 2009, the year-on-year decline in the sector amounted to 18.9%, but in 2010 a moderate growth of 3.7% is expected. A marked growth was recorded by the automotive industry, mainly owing to the extremely low 2009 level, but also a massive growth in orders from third countries (China, India, Japan, and other states). The situation on the EU internal market continues to be unfavourable. This, together with the expected slower growth in third countries and their lower imports in the 2nd half of the year, will not allow the estimated growth of SWIP in 2010 to exceed 3.7%. This trend is expected to continue with only a very moderate growth being anticipated for 2011 (+3.4%).

Development of raw material and energy prices



The economic slowdown is also responsible for the massive decline in the real consumption of steel products in Europe. While in the whole of 2008 real consumption dropped by 7% year-on-year on an average, the decline in 2009 was nearly 23%. The decline accelerated especially in the 1st half of 2009 in connection with a rapid drop in demand on the part of the main buyers and high stocks in the entire production chain. The estimated growth of real consumption in Europe will be only very moderate in 2010 and in 2011 the real consumption level, too, will be still below the values recorded at the beginning of the millennium.

LINKING UP TO EU MARKETS

In comparison with the old EU member states, the impact of the recession was more strongly felt in the Czech Republic in year-on-year comparisons, mainly due to the size of the Czech domestic market and the rate of involvement of the Czech economy in the international division of labour. This manifested itself by cuts in orders in the manufacturing industry, which in turn caused a decline in steel production.

CUTBACK ON PRICES

The decline in steel production in 2009 was accompanied by a year-on-year decline in the prices of steel products. This was due to cuts in demand in a situation where manufacturers drew on their excessive stocks in the entire steel-using industries complex. The decline in steel product prices was also made possible by the lower prices of raw material inputs. In comparison with 2008, in 2009 world scrap metal prices dropped by 37% year-on-year, with thermal coal prices also declining massively (-44%) and the prices of natural gas falling by 33% and iron ore by 28%. Electricity prices were stagnant.

A different development could be observed in 2010, when rising raw material prices put pressure to bear on steel product prices. In the 1st half, thermal coal prices rose by 40.4% year-on-year, the price of iron ore by 32.7%, and that of scrap metal by 60.6%. Only natural gas prices declined, by 30% year-on-year, in the period under review.

REVENUES ARE GOING UP

In 2009, revenues in current prices in the steel companies under review declined by 38.7% year-on-year. In the 1st half of 2010 the trend was more favourable, with revenues rising by 10.8%, yet staying distinctly below the level of the 1st half of 2008 (by nearly 40%), despite massive growth of the physical amounts of production in 2010. There are two reasons for this situation: the above-mentioned

Metallurgical production since 2007 with estimates until 2012

Production (thous.tonnes)	2007	2008	2009	2010 Estimate	2011 Estimate	2012 Estimate	Change 09/08 (%)	Change 10/09 (%)	Change 11/10 (%)	Change 12/11(%)
Pig iron	5 287.2	4 737.2	3 482.6	4 030	4 730	5 250	-26.5	15.7	17.4	11.0
Raw steel	7 058.9	6 387.2	4 593.6	5 300	6 250	6 950	-28.1	15.4	17.9	11.2
Rolled material	6 122.7	5 800.7	4 300.2	5 010	5 780	6 390	-25.9	16.5	15.4	10.6
Steel tubes	777.2	718.8	469.1	560	650	720	-34.7	19.4	16.1	10.8

year-on-year decline in prices (-10%) and the strengthening of the Czech crown (in relation to the Euro by approximately CZK 2/EUR year-on-year on average) with a much higher proportion of deliveries to foreign markets. The faster growth of revenues in comparison with the growth of consumption from operation was mainly due to the development in the 2nd quarter of the year, when added value grew by 37.6%.

PROFITABILITY HAS ALSO REVERSED ITS TREND

The gradual growth of added value also became projected into profitability indicators. The profit and loss result before tax was CZK +972 million as against CZK -2.4 billion in the comparable period of 2009. Profitability of revenue in the period under review amounted to 2.4% as against -5.9% in the first half of 2009. Own capital profitability indicators showed positive values in comparison with 2009. The successful economic development of most companies in past years also added to the growth of the share of the companies' own capital to the average value of 69% of total assets. While total liabilities, including credits (total credits declined by 42% year-on-year), were growing year-on-year, overall credit indebtedness, too, declined (also by 42%). This can be partly explained by reduced credit availability and lesser need for operating financing. From the point of view of the companies' capability of meeting their short-term liabilities, the situation worsened in terms of year-on-year comparisons, with current liquidity declining by 45% year-on-year. While production showed a revival in comparison with the 1st half of 2009, stocks grew by 20% year-on-year. This, together with the more moderate growth of revenues, resulted in the prolongation of stock rotation by 7%. The shortening of repayment terms and asset rotation periods is valued positively.

DELIVERIES AND ORDERS GROWING

Despite the considerably different economic situation of companies, the development in the 1st half of 2010 can be valued rather positively. Deliveries are growing and so is the volume of orders, although neither has as yet reached the 2008 pre-crisis level. The development is showing a favourable trend especially in Germany, while on the other hand the budgetary problems of the EU southern wing and the austerity measures that have been adopted may slow down the economic revival process in Europe (to a lesser extent also in the CR). Thanks to the previous development, the financial situation of most companies is on a level ensuring their functioning. Companies continue to be in a position to meet their obligations. Their cash-flow is growing, while the repayment periods of their debts are shortening. The shortage of orders in the past period necessitated the closing down of production facilities and making wage cuts, whether by way of shortening the working week or by decreasing the number of workers. Capacity utilisation in the entire technological chain and the productivity of labour continue to be low, despite the year-on-year growth. In spite of this, most of the indicators under review are showing an improvement in comparison with the results from 2009.

EMPLOYMENT REDUCTION

The decline in revenues and orders, which accelerated especially in the first half of 2009, also had an impact on the productivity of labour and necessitated a corresponding reduction in the area of employment. During the 1st half of 2010, the average registered number of workers (excluding agency workers) declined by 10.1% year-on-year and practically remained on that level. Cuts in employment prompted by the lower volume of confirmed orders also resulted in greater wage savings. In the 1st half of 2010, wage payments dropped by 6.5% year-on-year. The result was a year-on-year 4% growth of average earnings, which followed a decline in average earnings in 2009. In the 1st half of 2010, productivity of labour derived from revenues rose by 24.3% year-on-year, which corresponds to the growth of revenues (orders), and is the consequence of labour cuts. In absolute terms, however, productivity is far below the 2008 level.

The level of the productivity of labour also limits the growth of earnings in companies. So, live labour substitution (wage saving) is becoming an important instrument of attaining the price competitiveness of products of comparable quality and use value. Aware of this fact, companies have resorted to major labour cuts, even at the cost of high payoffs.

The chart on p. 7 shows that beginning with 2002, the growth of the productivity of labour exceeded the growth of average earnings, with the greatest difference being achieved in 2004, when, however, the record revenues were due, to a considerable extent, to high year-on-year price rises.

It should be noted that since 2007 the growth of productivity and revenues has

Photo: www.sxc.hu

SELECTED EXHIBITION AND FAIRS

METALFORM Mexico, Monterrey, May 11 – 13, 2011
- *Surface treatment of metals and other materials*

www.komora.cz/veletrhy

ALUMOTIVE Italy, Brescia, May 19 – 21, 2011
- *Foundry trade fair*

www.komora.cz/veletrhy

SCHWEISSEN & SCHNEIDEN
Russia, Moscow, May 23 – 26, 2011
- *International Trade Fair for Joining, Cutting and Surfacing*

sus.messe-essen.de

EUROWELDING Slovakia, Nitra, May 24 – 27, 2011
- *17th international exhibition for welding and welding technologies*

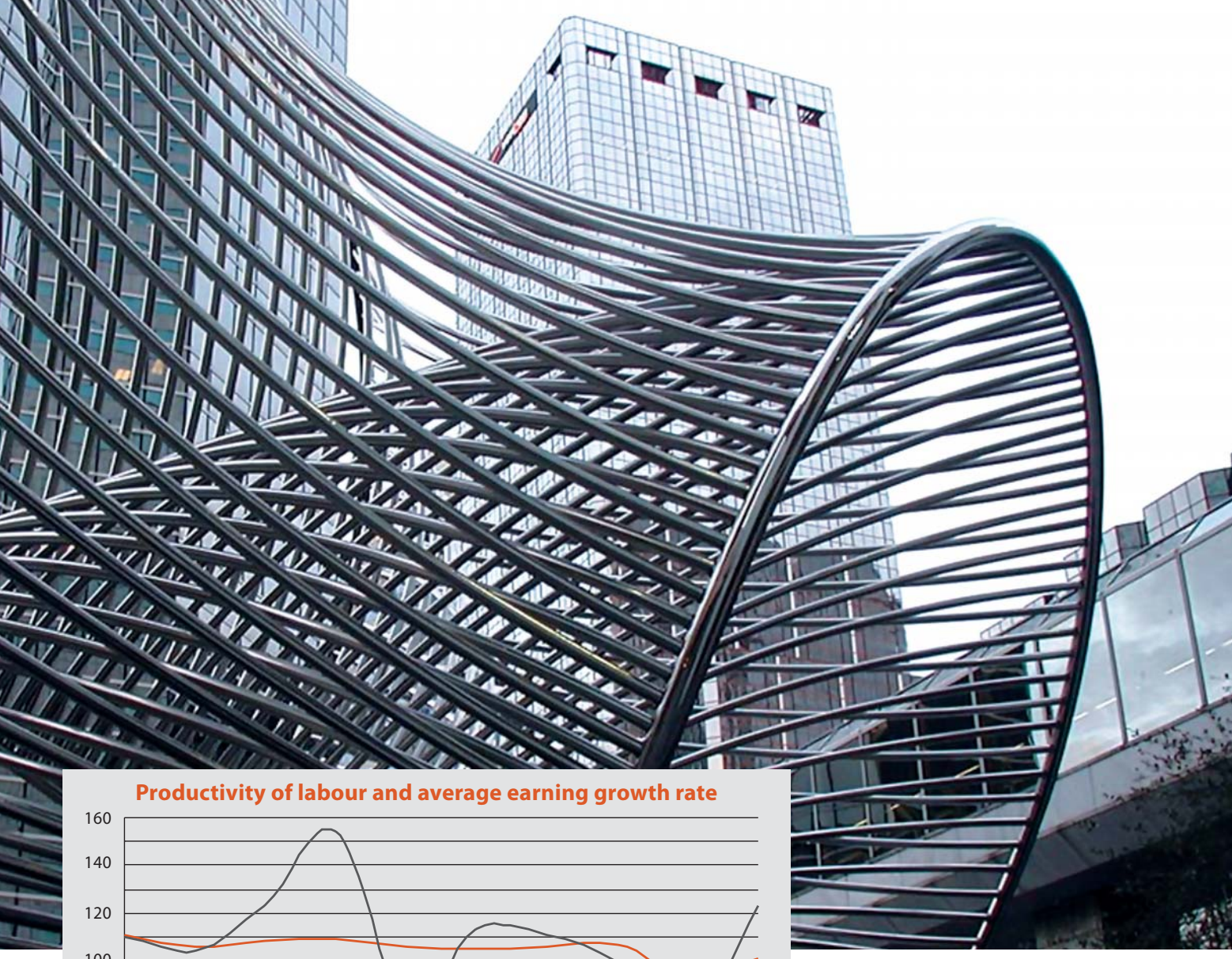
www.agrokomplex.sk

GIFA Germany, Düsseldorf, June 28 – July 2, 2011
- *International foundry trade fair*

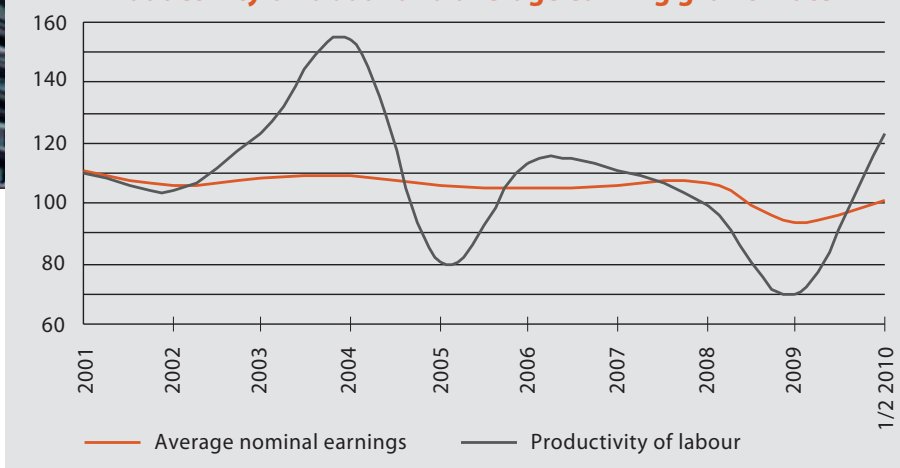
www.komora.cz/veletrhy

METEC Germany, Düsseldorf, June 28 – July 2, 2011
- *International trade fair for metallurgical technology*

www.metec.de



Productivity of labour and average earning growth rate



not been exclusively a matter of labour cuts, but has been increasingly due to rationalisation measures and a changed structure of workers in favour of the higher qualification of the labour force. This manifests itself by greater differentiation between the wage and productivity of labour rates of growth/decline.

In the 1st half of 2010, production and orders grew at a faster rate in comparison with the same period in the previous year. Nevertheless, the pre-crisis level of production, and especially revenues, was not attained, and its attainment cannot be expected in the latter part of the year either. In particular, demand from domestic manufacturers remains low. Most important for further development will be a revival, especially in Europe, to which the decisive proportion of the output is directed. This may be negatively affected by the austerity programmes of other countries, provoked by previous massive investments to stimulate economic growth. From the global point of view, the most important thing for finding outlets for metallurgical materials is the economic development in China and consolidation of the US economy.

OTHER REQUIREMENTS AND FINANCING POSSIBILITIES

The development of the steel industry in Europe and the CR is closely linked with the development of the countries' business environment and their legislation. Countries use important legislative measures in the area of ecology and the environment, where certain laws and regulations that are being adopted may some time in future lead to the loss of competitiveness among European manufacturers. Examples of this are the proposed emission permit trading systems, environmental legislation for the atmosphere, etc. It is unacceptable for environmental legislation not to affect all pollution sources (industry, local, and mobile sources) evenly and to discriminate against industry. The central point for the steel industry in future is to realise specific actions eliminating unfavourable impacts on the environment. These investments (prepared projects) cannot be realised exclusively with the industrial enterprises' own resources; they will need money from the State Environmental Fund created with revenues from permit trading, from the Environment Operational Programme, and from EU structural funds. An indispensable condition of development of the metallurgical industry is also the realisation of research, development, and innovation projects. The use of resources from Operational Programmes and co-financing with support from European funds is a way to sustainable living conditions.

Steel Industry on the Rise Again

Jan Linhart, KPMG Česká republika, www.kpmg.cz

In 2010, the steel industry witnessed a marked growth after two years of massive decline. Despite a certain slowdown in the new trend in the latter half of 2010, steel consumption in 2011 is expected to rise worldwide. In the Czech Republic, too, the steel industry seems to have good prospects, with forecasts of a two-digit steel consumption growth in 2011.

In 2008 and 2009, global recession affected world steel production, which declined by a massive margin. In the situation of falling production in the last quarter of 2008, the output of the branch plummeted to a record low, when the capacity of steel facilities was used at a mere 71.6%. In 2009, world crude steel production dropped by 8%[1] in comparison with the previous year.

The first signs of improvement appeared in the first quarter of 2009, with the World Steel Association (WSA, associating steel and iron manufacturers) anticipating a nearly 11% growth of steel consumption in 2010 and a more than 5% growth in 2011. These expectations are voiced despite a massive decline in steel demand in the last quarter of 2010. While the car industry is showing a certain revival, which is pulling demand forward, a drawback is the exhaustion of the effect of government stimulation packages and the continuing unfavourable situation in the building industry. Following their maximum in April 2010 (82%), the crude steel manufacturing plants' capacity utilisation in September 2010 was at 74%, which corresponds to the August 2009 level. Therefore, despite the revival of the steel industry in EU countries in 2010 and the expected growth in 2011, it must be recalled that steel demand in EU countries will only be at 75% of the year 2007, when the steel industry was at its highest.

As regards the Czech Republic, WSA expects steel consumption in 2011 to grow by nearly 18%, following single-digit growth in 2010. Already now, the Czech steel industry is showing signs of revival, which is coming after a relatively dramatic fall in 2009. On the other hand, it has to be taken into account that in addition to raw material imports, manufacturers are also dependent on the export of their products, as only a part of the output finds outlets in the Czech Republic. An additional complication is the close intertwining of the supplier-customer chain in the branch, which often provokes disputes concerning delivery terms.

DELICATE BALANCE: SUPPLY AND DEMAND

Inadequate stocks and a growing demand for steel products faces manufacturers with a demanding task: getting access to raw materials and ensuring production so as to fulfil their clients' orders in time. In this situation, it is important more than ever before to have a flexible and compliant supplier chain that will support the company and help it meet its growth targets. Together with the gradual revival of steel-using branches, this requirement will be essential for the success of the steel industry itself.

HOW TO MAKE PROFIT: INPUT COSTS AND THEIR IMPACT ON PRICES

Perhaps the greatest problem for steel manufacturers and distributors is the rapidly rising iron ore and coal prices, which as yet has not been reflected in the prices charged to customers. On the contrary, a turn in the price situation occurred in mid-2009, when world steel prices showed a growth, for the first time in 11 months.[2] Since then, the price level has been relatively stable, including the first quarter of 2010. It is to be expected, however, that when manufacturers begin to run out of stocks, already now in short supply, and will have to react to growing input costs, the prices will probably rise.[3] Standing behind the growth of input costs is growing worldwide demand for commodities, investments needed to obtain the required commodities and other factors, such as growing energy prices.

GROWTH PROSPECTS: MERGERS AND ACQUISITIONS

The economic revival, growth of demand and higher productivity of labour in the steel industry will necessarily call for mergers and acquisitions. Most of these transactions are taking place in the Central Asia and Pacific regions, the main acquirer today being China.[4] Its leading position is a reflection of the fact that in the domestic metalworking industry the prevailing force are old, inefficient companies controlled by provincial administrations. The national government therefore supports their consolidation that will help raise efficiency and satisfy China's huge demand for steel products. In 2009, China imported 627.8 million tonnes of iron ore and raised its dependence on imported ore to 63.9 of its needs.[5] Trying to lessen this dependence Chinese companies are seeking acquisitions overseas that will secure for them more reliable raw material supplies.

NEW STRATEGIES FOR A NEW ECONOMY

Steel companies wishing to take the best advantage of today's opportunities and strengthen their position in case the process of revival slows down or stops completely, have several ways of coping with the situation. For example, they can make analyses of their prognostication systems and improve their efficiency. This will enable them to better forecast demand for products or the need for raw materials, and assess what products and what quantities to manufacture, and when and where to make them, without having to maintain high stocks.

The development in the past eighteen months has shown that one thing which is certain to be expected is uncertainty. Suppliers and manufacturers can soften the impacts of high oil prices, sudden exchange rate fluctuations and lay-offs due to economic, political, or environmental legislation changes by creating joint ventures that will bring greater stability to both sides. In the steel industry, business continuity depends primarily on the availability of raw materials. Today, steel manufacturers can once again obtain easier financing for the acquisition of key suppliers and ensure better access to raw material sources. They can also make their raw material consumption, purchase, and replenishing planning more efficient.

[1] *World crude steel output decreases by -8.0% in 2009, World Steel Association News, 22 January 2010.*
[2] *World carbon steel prices increase again in July, Steel Grips, 3 August 2009.*
[3] *Steel prices to Gain on Low Inventories, Costs, Baoshan Says Bloomberg Business Week, 25 March 2010.*
[4] *Race for rare metal – and China is winning, CommodityOnline.com, 17 July 2009.*
[5] *China near-term steel demand high, growth low, China Daily, 25 March 2010.*

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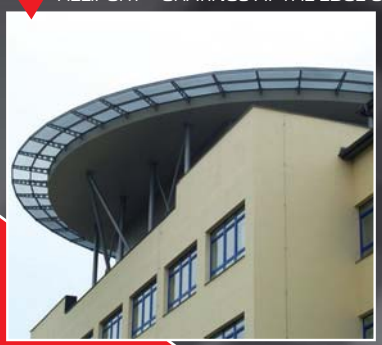
MANUFACTURE OF FLOOR GRATINGS, STAIR TREADS, SPIRAL STAIRCASES AND PERFORATED METAL PLANKS

HELIPORT - GRATINGS AT THE EDGE OF THE LANDING PAD



DETAIL OF PIPE GRATING

GRATES AS BALCONY RAILING

FOOTBRIDGE GRATING

- PRODUCTION ACCORDING TO DIN 24 537 AND DIN 24 531
- DESIGN ACCORDING TO CUSTOMER'S REQUIREMENTS
- MANUFACTURE, DELIVERY
- TECHNICAL CONSULTING

APPLICATION:

- WALKING SURFACES
- STAIRCASES
- STORAGE SYSTEMS
- FACADES AND SUN SHADING SYSTEMS, ARCHITECTURE

Lichtgitter CZ spol. s r.o.
U Lékárny 1
735 35 Horní Suchá
Czech Republic
Phone: +420 596 496 511
Fax: +420 596 496 538
E-mail: obchod@lichtgitter.cz
www.lichtgitter.cz

Steel and Potential Innovations in Production

Steel is the leader among metals – indeed the most widely used metal worldwide. It is modern and highly recyclable. This widely-used material is actually an alloy of iron, carbon, and other alloyable elements. In practice, the name steel denotes alloys the main component of which is iron, which can be transformed into other compounds.

There are more than 1500 different kinds of steel, one-third of which has been developed during the past fifteen years. As the importance of steel grew, the efficiency of its manufacture increased – during the past forty years steel output grew by more than 330%. The principal benefits of steel as a material are its firmness, toughness, elasticity, corrosion and heat resistance, wear resistance and other properties, which are a guarantee that steel is not likely to loose its primacy of use for quite some time.

STEEL MANUFACTURERS

The basic steel production technology is oxygen-converter production, which accounts for approximately two-thirds of total world production. Currently, the world steel powers are China, followed by Japan and the USA. The fourth position is held by Russia, with India, South Korea, Germany, the Ukraine, and Brazil following suit. The Czech Republic is also an important actor in this sector, as ArcelorMittal, the world's largest steel manufacturer, has one of its manufacturing plants in this country.

PRODUCTION INNOVATION

In steel production, specialists recommend manufacturers to focus on innovation, intensification of preparation, and the realisation of research, development and innovation projects. An advantage of the Czech Republic in the area of financing is that it can use resources from EU Operational Programmes and co-finance innovation efforts from European funds.

Experts from the University of Mining in Ostrava, as well as other specialists, recommend the following specific innovations of the oxygen-converter process:

- intensification of forging processes
- combined blasting, dynamic melting control, optimisation of batch materials,
- raising the service life of the refractory materials used
- shortening the time needed for batch materials to stay in the converter, improving the quality of lining, introducing new-wear monitoring technologies and targeted lining repairs.

RECOMMENDATIONS FOR ARC FURNACES

Oxygen converter production is not the only way of steel making. Steel is also made in electric arc furnaces. This method accounts for nearly one-third of world steel production (only 8-10% in the Czech Republic). As regards arc furnaces, specialists recommend the following technology innovations:

- intensification of forging processes
- sophisticated control of smelting processes using different energy sources (oxygen-fuel burners, combustion jets, special admixture agent blowing processes), hybrid and flexible processes, better-quality electrode material, batch material pre-heating
- increasing the service life of refractory materials
- shortening the time needed for the charged materials to stay in the furnace, better-quality lining, new-wear monitoring technologies and targeted lining repairs, optimisation of furnace lid cooling, use of slag foaming.

CASTING AND FORMING

The input raw material used in steel making must be refined. In modern steel making, most of the steel-refining processes are transferred outside to the furnace secondary metallurgy facilities. In secondary metallurgy, the following main improvements are used:

- the reduced or increased pressure effect,
- the refining slag effect,
- use of special refining admixtures,
- optimisation of the character of circulation in metallurgical sets

Continuous steel casting increases the yield of metal, raises productivity of labour and improves the working environment. An important trend in this area is the ever greater approximation of the profiles of conticastings to the resulting shapes of the required products. Another process besides continuous steel casting is die casting, which has become a specific market segment with heavy forgings and special castings of large-size machine parts.

GLOBALISATION AND RESEARCH

In the area of steel manufacture, casting and forming and other uses for steel, growing pressure can be felt for the continuous raising of productivity, quality and production variability in the steel industry. At the same time, conditions are being created for more intensive research and innovation activity. A realistic estimate is that up to CZK 1–1.5 billion can be used in the Czech Republic in the area of research, ecology, and human resources.

Photo: www.sxc.hu, Vítkovické slévárny archives

Vítkovické slévárny – Tradition and Dynamics

Vítkovické slévárny, spol. s r.o. ranks among prominent European foundries due to its broad range of products. The manufacture of castings and rollers is based on tradition, craftsmanship, and long experience, the origin of which is connected to the development of Czech metallurgy.

The history of Vítkovické slévárny, spol. s r. o. dates back to 1828, when metallurgical production began in Vítkovice. However, the manufacture of the first metallurgical rollers and heavy machinery components began in 1910. The foundry therefore commemorated a centenary of roller production in 2010.

We discussed the present events in Vítkovické slévárny, spol. s r.o. with Ladislav Slíva, Head of its "Machine Shop".

What has so far been your biggest order?

From my point of view, this is the order of our largest customer, US Steel Košice. I can also mention the complete service of roller manufacture for the rolling stock of TPT Evraz Vítkovice Steel.

What has changed in the Machine Shop under your management?

Many changes have taken place in my time. The establishment of the position of Programmer and the transition to Unigraphic software programming, which allows five-axis programming, has significantly increased the productivity of labour and the quality of roller shaping. I must mention the most important investment in the last four years – the purchase and installation of the CNC lathe GWD 1300/6000/20, which was supplied and put into operation by the GEORG firm in 2006. This markedly reduced machining time in roller shaping and increased productivity by almost 60%. Another major investment was the modernisation of both eight-tonne ACEC smelting furnaces.

Can you give details of your technologies?

Two-layer work rollers, designed for rolling mills of the preparatory and the final order of hot rolling mills, i.e. hot rolling of metal sheets, are done by centrifugal casting technology. The working layer of rollers is formed by highly chromed cast iron or cast iron with an indeterminately hardened layer. The core and pins of the rollers are made of cast iron with modular graphite or a special alloyed casting with flake graphite. The high quality of the cast and hot worked rollers is further redoubled by mechanical treatment on the latest machine tools. The rollers have high utility properties and their performance is fully comparable to those of our rivals.

What are the criteria of the quality of rollers?

The foundry has its own Research and Development section which develops new materials and innovates the usually supplied materials to achieve permanently higher utility properties. The main criteria of roller quality, according to which customers choose suppliers, are the rolled kilometres or tonnes of rolled metal sheets before the roller is put out of operation, and the price of the roller per one rolled tonne. The rollers have diameters of between 500 and 1 050 millimetres, and a weight of up to 37 tonnes, and are manufactured from fast-cutting and highly chromed steel which increases performance up to three-fold.

What other products does your company offer in addition to rollers?

Besides rollers, we produce shaped castings of steel and non-ferrous metals. The manufacture of complicated shapes of castings of grey and nodular cast iron and carbon up to high-alloy steel are designed especially for engineering, metallurgy, and the shipping and mining industries. Typical are castings of fittings, flywheels, moving wheels, cooling plates, casings, and toothed wheels from 50 to 5 000 kilograms in gross weight (grey cast iron castings up to a maximum weight of 8 000 kg).

The annual production of the foundry exceeds 12 200 tonnes of castings. Vítkovické slévárny, spol. s r.o. is an important player on the Czech and international markets. The foundry supplies castings to Russia, Poland, Hungary, Germany, Serbia, Taiwan, Slovenia, Turkey, Finland, China, and Spain.

The high standard of production is mainly due to the technology of the centrifugal casting of rollers, and the use of the Furan technology in the shaping of castings, which allow the company's successful competition with other foundries in the quality of production. The quality of production is managed in accordance with the relevant ISO standards (EN ISO 9001:2000, RW TÜW certificate). The company production has been awarded a number of internationally recognised product certificates. The production programme also includes foundry models.

DO YOU KNOW THAT ...

... since 1989, when the production of centrifugally cast rollers commenced according to the Gontermann Peipers licence, a total of 8 726 pieces have been manufactured?

... the volume of the production of centrifugally cast rollers has reached 63 775 tons since 1998?

... a total of 8 050 tonnes of statically cast rollers have been manufactured since 2000?

.....a total of 979 rollers have been worked on the Waldrich Siegen grinder?

Steelmakers Must Invest in Ecology and New Technologies

Pavel Vlček, Ministry of Industry and Trade, e-mail: pavel.vlcek@mpo.cz, www.mpo.cz

In 2009, crude steel production in the Czech Republic dropped by nearly one-third. A turn only occurred at the end of the year, when in the last quarter the volume of steel output rose by 11% year-on-year. In the 2nd quarter of 2010, crude steel production continued its growth.

According to Jiří Cienciala, President of the Branch Association of the Steel Industry, the way to a more massive revival of the Czech steel industry is investing in research and development, in new technologies and ecology. "The entire branch already has in the pipeline ecologically-oriented projects for the next few years worth more than eight billion crowns," Jiří Cienciala says. The European steel industry, including Czech steel-making, is among the most environmentally friendly industries already now, he added. European steel production accounts for 16% of global steel output. With its 12% share of greenhouse gas emissions, the EU, together with Japan, globally boasts the cleanest level of steel production.

LARGE-SCALE MODERNISATION

The technological equipment of enterprises in the branch has undergone massive modernisation and ecologisation over the past 15 years, when much attention was also placed on the construction of new emission and waste trapping and processing devices and modernisation of old ones. A key area in which the Czech steel industry has competition advantages in comparison with manufacturers in cheaper countries is modern technologies with research and development. In the framework of programmes controlled by the Ministry of Industry and Trade alone, the steel industry is responsible for projects worth CZK 80-100 million a year.

FINANCING FROM EU FUNDS

A very important role for raising the competitiveness of Czech manufacturers on the global market is played by the possibility of having projects co-financed with resources from EU funds, for example the EU Structural Funds and Operational Programmes, or the EU Research Fund for Coal and Steel. Besides the industrial enterprises' own resources, the planned projects aimed at eliminating unfavourable impacts on the environment will require drawing resources from the State Environmental Fund, the emission permit trading system, the Environment Operational Programme and European Structural Funds.

SIMPLIFIED RULES

"It is our aim to maintain simple legislation, reduce the number of new regulations, eliminate duplication and contradictory measures and eliminate excessive reporting. We'll work in order to prevent EU regulations from reducing the competitiveness of industry in relation to the rest of the world, and domestic regulations from going beyond European legislation," Martin Kocourek, Minister of Industry and Trade, added on the subject. Another key requirement is to harmonise ideas with the Ministry of the Environment, he said.

Surveys of the steel enterprises themselves and figures from the European Union are an indication of a positive development, especially in certain ranges, and the results for April to July 2010, too, augur well for the economy and its revival.

Photo: www.sxc.hu

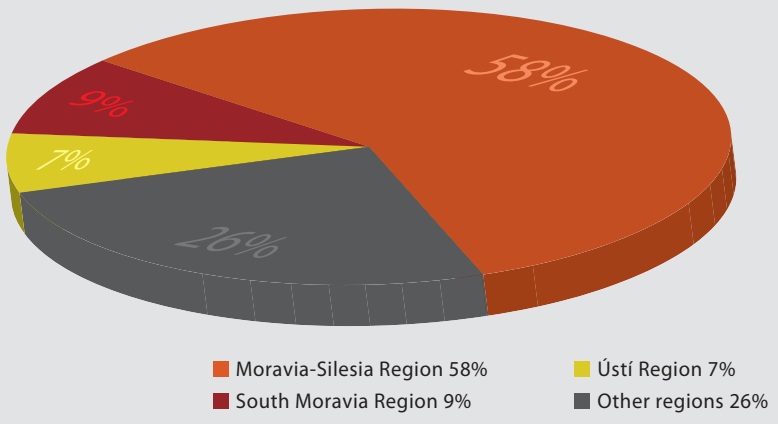
Prospects of the Foundry Industry and Metallurgy in the Czech Republic

Jiří Braňka, National Observatory of Employment and Training, National Education Fund, e-mail: branka@nvf.cz, www.budoucnostprofesi.cz

Metallurgy and the foundry industry were among the economic pillars of the former socialist Czechoslovakia. In the course of the country's transformation, however, they lost most of their original facilities and workplaces. From the production and employment points of view, they are a branch strongly concentrated in the Moravia-Silesia Region. For example in 2009, the region accounted for 58% of jobs in the sector nation-wide.

In the past, the main problem of the sector was its low productivity of labour combined with inadequate technological standards. In 2001, the productivity of labour in Czech enterprises was approximately 20% of the EU average. The arrival of foreign investors in the branch triggered off important changes, which in six years led to a rapid growth in production (by 75%). Simultaneously, restructuring and technological investments made it possible to decrease the number of jobs by more than one-fifth. The sector's development was pushed forward by high demand of the customer segments in the entire EU – metal-working, engineering, automotive industry, construction, etc. In spite of this, the share of the branch in overall manufacturing industry output between 1998 and 2008 dropped from 8.8% to 6.5%.

Regional structure of the branch
(according to the number of employees, 2010)



Source: Selective manpower survey, 2nd quarter 2010 (Czech Statistical Office, the author's calculations).

After six years of continuous growth (2003-2008), in 2009 Czech metallurgical and foundry industry production plummeted by more than one-quarter. In terms of the volume of production the branch returned to the 2004 level as a result of the economic crisis. The marked recovery in 2010 (e.g. the Ferrous Metallurgy Union forecasts up to 15-20% growth[1)] of commodity output year-on-year) will wipe off only a part of the sector's loss, and it will take at least two years to raise the volume of output to the 2008 level, the highest to be recorded so far. Today, the branch is profiting from the renewed demand of customer segments; long-term prospects in the Czech Republic, however, will also depend on the specific conditions for doing business (especially legislation, the situation on the labour market and availability of skilled workers) and the competitiveness of enterprises in the Czech Republic in comparison with other countries (also with regard to technological standards and productivity of labour).

CONDITIONS FOR DOING BUSINESS

The conditions for doing business will pose a great challenge in the next few years. The Moravia-Silesia Region, where the major part of production facilities is located, is suffering from long-term exposure to heavy air pollution, and companies such as ArcelorMittal, Třinecké železárny, and Vítkovice Steel are under pressure to invest in costly equipment to decrease emissions. The continuous stiffening of environmental legislation, however, will affect all EU member states. A certain problem on the labour market is the availability of skilled workers for metallurgical and foundry production, as young people are increasingly shunning this profession. In recent years, however, regional authorities and companies have been taking steps to attract more trainees.

COMPETITIVENESS OF THE BRANCH

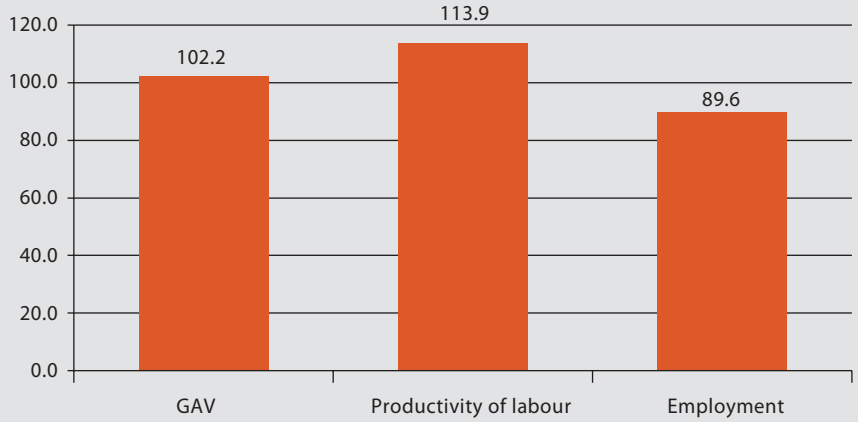
The competitiveness potential of the branch can be measured by its innovative activity, technological standards, research and development promotion, and the qualification structure. Czech metallurgical and metal-casting enterprises will have to invest more in the next few years to maintain their lead over their rivals in cheaper countries. In view of the expected development of input prices, this will involve, for example, projects focusing on higher material and energy efficiency and technologically more demanding products requiring higher skills.

EXPECTATIONS IN THE BRANCH

The development in customer branches is rather uncertain. Metallurgy and the foundry industry in the Czech Republic will continue

to benefit from the concentration of customers in the vicinity of the main production localities (e.g. the North Moravia – West/North-West Slovakia automotive cluster). On the other hand, the production capacity of the car industry and engineering in Western Europe is often judged as excessive, as the growth potential of the West European markets is very small. On the other hand, the developing economies of Eastern Europe and Asia are offering great opportunities. Czech metallurgy and metal-casting, however, are not as yet in a position to take full advantage of it. Construction is recovering from the crisis only very slowly and the restoration of investment confidence in this branch may take more than a year – especially in a situation of uncertainty as regards the further development of the European economy and concern provoked by the situation in the area of public financing in several eurozone countries. Demand in the construction sector, however, has had good prospects on a long-term basis, and in Central and Eastern Europe this sector still has a great potential.

Projection of gross added value (GAV), productivity of labour, and employment in the branch (2010-2020)



Source: Projection NVF NOZV, 2009. Note: 100 = value of the year 2010

In the next few years, metallurgy and the foundry industry will be facing new conditions that will strongly influence their long-term prospects in the Czech Republic. As industrial and building production will continue to be among the pillars of the country's economic growth, it is to be expected that the importance of metallurgy and metal-casting in the structure of the Czech manufacturing industry will decline only slowly. Production in the branch will continue to grow slightly despite the declining number of employees. This will be made possible by higher productivity of labour, so that Czech metallurgy and metal-casting will continue on their way to getting ever closer to the advanced West European countries.

[1] *"Prediction of the development of the steel industry", Ferrous Metallurgy Union*

Association of Foundries Helping Exporters and Investors for 20 Years

Josef Hlavinka, Association of Foundries of the Czech Republic, e-mail: dir@svazslevaren.cz, www.svazslevaren.cz

Association of Foundries at the Swisstech Fair

Foundry production has a long tradition in the Czech Republic. During its existence, this sector has experienced both good and bad years, both ups and downs, and it had to cope with them one way or another. In recent years, the greatest fall in production was recorded in the period from the end of 2008 until 2009, when it stopped at its historic minimum. The first half of 2010, however, was already considered a period of stabilisation and moderate revival, which could be felt in the first half of the year. In the second half of the year, the volume of production began to grow slowly. The conference of the Foundry Association held during the 2010 FOND-EX Fair reviewed the current development of the sector, which at the beginning of 2010 bounced off the bottom.

The Association of Foundries of the Czech Republic brings together foundries, pattern shops, trading companies, research and design organisations, and foundry schools. It is an employer and professional organisation. While the foundry business has become an export-oriented sector, it can be seen that new investors coming to the Czech Republic, too, are looking for local good-quality castings for their final products. The Association seeks out and mediates information for both domestic and foreign casting and pattern users, which it has been doing for twenty years.

TURN FOR THE BETTER IN 2010

Current figures for 2010 have shown a 10% to 15% year-on-year growth of Czech foundry production, with an up to 20% growth of grey cast iron production. After a 25% decline in 2009, the situation in the foundry industry has become stabilised, and a number of foundries have orders for several months in advance. The industry benefited from the car scrap scheme, but the revival can be felt not only in the car industry. Demand for castings is growing again also in engineering. The Foundry Association expects the 2010 output figures to have grown by 8% to 10%, with an approximately five-per cent expected growth in the following years. The industry might return to its 2007 and 2008 record levels in five or six years.

THE CRISIS ALSO HAD ITS PROS

Currently, Czech foundries are not only battling for orders, but have to deal with the customers' frequent bad payment morale, growing raw material prices and the price pressure from buyers. They also fear a possible increase in the price of energy, one of the foundries' key cost items. On the other hand, the crisis has also had some pros, making the production process in some foundries more efficient. The need to adjust to demand has resulted in the launching of new types of production, for example for the electric drive manufacturing sector or biomass processing. Czech foundries are also seeking new outlets, through participation in consortia for comprehensive infrastructure deliveries, for example to Romania and Bulgaria. Special types of castings have found outlets overseas (Brazil, South Africa). Nevertheless, the main foreign outlets for Czech foundries are still in Europe, especially in Germany.

Association of Foundries at the FOND-EX Fair

Photo: Association of Foundries archives

ArcelorMittal Ostrava to Strengthen its Position Thanks to New Investment Projects

Věra Breiová, ArcelorMittal Ostrava a.s., www.arcelormittal.com/ostrava

ArcelorMittal will build a new steel plant in Ostrava worth EUR 200 million, i.e. approximately CZK 5 billion. Thanks to this investment, AMO will become one of the key steel companies in the biggest steel group worldwide. The new steel plant with basic oxygen furnaces will have numerous advantages over competitors.

"This investment project has already been approved. The construction of the new steel plant is a key investment for the future of AMO," says Augustine Kochuparampil, CEO of ArcelorMittal Ostrava. "Thanks to the new steel plant, AMO will become one of the most cost-competitive metallurgical plants of ArcelorMittal in the whole of Europe," adds Gonzalo Urquijo, member of the GMB of ArcelorMittal.

The preparation of the project has been running for several years because the present steel production technology is obsolete. "The existing technology of tandem furnaces will be put out of operation and we will build a brand-new hall with basic oxygen furnaces," says Kochuparampil. According to him, AMO will have three big advantages after the new steel plant has been completed.

BEST POSITION

"Firstly, we are situated in a growing market. Secondly, we have the best team in the world possessing the required technical skills and knowledge, and thanks to this technology we will be able to produce any steel grade and will be highly cost competitive. I am sure that we will acquire a special position within the Group, a prominent one, I should say." The investment will make the Company more environmentally friendly and will further improve the working conditions for the employees.

Gonzalo Urquijo has also confirmed that ArcelorMittal Ostrava has a huge competitive advantage. "It uses raw materials from the CIS, notably iron ore, which is purchased for a very attractive price. Further, it produces coke and has a captive power plant, which is a big advantage. It possesses an excellent team of managers and specialists, too. And we must not forget that ArcelorMittal Ostrava is very flexible," says Urquijo. The new steel plant is not the only planned modernisation and investment project. All the planned projects show that there is no danger that ArcelorMittal would transfer production from Ostrava somewhere else.

The planned construction of a new steel plant is certainly a confirmation that the Company intends to remain in business here as long as necessary. "Our mother Group has a strategy for ArcelorMittal Ostrava and the strategy is for more than 5 or 10 years. Just have a look at what the Group has already done in this area. It has invested billions of crowns to become 100 % owner," adds Augustine Kochuparampil, the CEO. According to him, it is in the Group's interest for the business in Ostrava to continue, of course on condition that all legislative requirements are met.

ENVIRONMENT IS ONE OF THE PRIORITIES

Environmental investment projects are vital for ArcelorMittal Ostrava. Since the privatisation in 2003, AMO has made investments of more than CZK 8 billion, of which more than CZK 2.5 billion was spent on environmental projects.

"The most important and the most expensive environmental investment project is the de-dusting of Sinter Plant North. When we launched the project, the planned deadline for completion was the end of 2011. Good news for the local region is that this priority project, the cost of which is approximately CZK 1 billion, will be completed in Q3 of this year, i.e. several months ahead of the initial schedule," says the CEO with satisfaction. "Besides this we plan other environmental projects. Therefore, we have set a 5-year plan and our goal is to follow it. We are aware of the fact that if we want to do business in Ostrava, we have to comply with all the environmental regulations," adds Augustine Kochuparampil. In this respect, he says, the approval of the new steel plant project is really vital.

"For this year, we plan investment projects worth CZK 1.8 billion. These will be the key projects of modernisation and reduction of our environmental footprint," Kochuparampil adds. According to him, this will lay the basis for the long-term prosperity of ArcelorMittal Ostrava.

SOME FACTS ABOUT THE COMPANY

ArcelorMittal Ostrava a.s. is the biggest steelmaker in the Czech Republic and part of the world's largest steel group, ArcelorMittal. Its yearly capacity is 3 million tonnes of steel. It exports approximately 54% of its output to more than 48 countries all over the world. The Company has about six thousand employees; the total headcount including the subsidiaries is nearly 9 000. The sole shareholder is ArcelorMittal Holdings A.G.

Photo: AMO archives

ArcelorMittal Tubular Products Ostrava

ArcelorMittal Tubular Products Ostrava is the largest producer of tubes in the Czech Republic.

The production programme consists of seamless tubes of diameters from 21.3 mm to 273.1 mm and spirally welded pipes of diameters from 323.9 mm to 820 mm.

Tubes and pipes are manufactured in compliance with ISO, EN, API, DIN, ASTM, NF, BS, GOST, CSN and other standards.

The seamless production is focused on standard seamless tubes, boiler and gas pipes, and on oil pipes used for oil and gas exploration. The standard, boiler and gas pipes are distributed mostly in Europe including the domestic market. Boiler, and gas pipes are used in projects in energy and machinery sectors.

The most significant customers for oil pipes and line pipes are ADCO Abu Dhaci, AGIBA, Shell, Agip, KOC Kuwait, Sonatrach Algeria, or ONGC India. In Europe, AMTPO participated in the projects of OMV, RAG, Gas de France, MOL, Nis Naftagas etc.

Spirally welded pipes are supplied mostly for gas and water lines, the last important supplies were carried out for RWE, Wiener Wasserwerke Austria, and MOLCHEM Hungary or recently for big gas lines in Poland - PGNiG/Gas System. AMTPO participates also in important long-term construction projects for Deutsche Bahn or for pilot underground for construction of skyscrapers in Holland.

ArcelorMittal Tubular Products Ostrava, a.s.
Vratimovská 689/117
707 02 Ostrava - Kunčice
Phone:+420 595 681 111
www.arcelormittal.com/ostrava/AMP.html

ArcelorMittal Tubular Products Karviná

ArcelorMittal Tubular Products Karviná's main business is the manufacturing and sales of length-welded thin-walled sections and tubes and of thin-walled open sections.

Their products go to the engineering and construction industries for the most part, providing the advantage of low weight and good medium carrying ability.

The company's production is accommodated in two main facilities at present: the tube mill producing standard welded tubes hot-stretched reduced with o.d. 17.2-114.3 mm, and the section mill producing hollow structural sections from 10x10 mm up to 100x100 mm. To maintain continuous and independent production, they own and run a number of other facilities providing energy, transport, and maintenance.

The important part of their production portfolio are precision tubes cold-drawn and as-welded, produced according to EN 10305-2, EN 10305-3 and EN10305-5. These products find wide application in the automotive industry (seat frames, IP beams, steering columns, shock absorbers, bushings.) and in the mechanical area, like furniture and radiator business. The company possesses certificates according to ISO 9001, ISO 14001, ISO TS 16949 and OHSAS. Tubes and Profiles made by them are manufactured in compliance with EN standards BS OHSAS 18001.

ArcelorMittal Tubular Products Karviná, a.s.
Rudé armády 471
733 23 Karviná - Hranice
Phone: +420 596 391 111
www.jakl.cz

ArcelorMittal Distribution Solutions Czech Republic

ArcelorMittal Distribution Solutions Czech Republic is a reliable producer of Safety barriers, Strips, Sheets, Profiles, and Mine Supports.

You can meet their products every day. They are specialised in the production of high-quality and safety products. The company has been owner to all certificates necessary for production. AMDS meets all conditions according to OHSAS 18001, QMS 9001, EMS 14001.

AMDS has been the biggest producer of Safety barriers (black or galvanised) in the Czech Republic since 1968.

The production capacity is more than 60kt per year. The volume of capacity of Cutting lines is more than 300 kt per year and

Slitting production capacity is more than 200kt per year. They are one of the biggest producers of Mine Supports, with production capacity above 140kt per year.

AMDS participates in the innovation of safety barriers and looks for new challenges. They would like to supply you with their production programme, which they think might interest you. Their products compete successfully in most European countries and they are confident that you will find them interesting for you either.

The company can also offer additional services of steel-selling of non-prime material.

ArcelorMittal Distribution Solutions Czech Republic, s.r.o.
Vratimovská 689
707 02 Ostrava - Kunčice
Phone: +420 595 682 101
www.arcelormittal.com/ostrava

ArcelorMittal Frýdek-Místek

ArcelorMittal Frýdek-Místek can produce what no one else in the country can. The company is one of the 13 producers in the world which can manufacture grain-oriented electrical steel. It is a high-added value product which is used for transformer core production. Thanks to investments in 2008 and 2009 into environmentally friendly technologies, they increased production capacity and portfolio quality.

ArcelorMittal Frýdek-Místek is a significant producer of cold-rolled steel. Their portfolio involves deep-drawing and electrical steel, but also galvanised grounding strip and wire. This enables them to meet requirements of their customers construction, automotive and even electrotechnical industry. ArcelorMittal Frýdek-Místek is also investing into new products development. Since 2005 the company has spent more than 1.5 billion CZK on new products development, the environment and health and safety .

The products of ArcelorMittal Frýdek-Místek and its subsidiary

ArcelorMittal Technotron are backed up by long-time know-how. The close cooperation with customers, understanding their needs or timely delivery is what makes them different from other competitors.

ArcelorMittal Frýdek-Místek, a.s.
Křižíkova 1377
738 01 Frýdek-Místek
Phone: +420 558 482 402
www.arcelormittal.com/frydek-mistek

ArcelorMittal

What do Foundry Workers and Metallurgy Students Want?

V. Plichta, www.technik.ihned.cz

Frequently discussed issues in expert foundry industry circles are the requirements placed on people coming to work in this sector and the criteria they should meet, not only with regard to current needs, but also the more demanding future tasks.

MANUAL SKILLS ON THE DECLINE

The world foundry industry has undergone massive modernisation in the past few decades, mainly thanks to intensive automation and mechanisation. This development, however, has been accompanied by certain negative phenomena: the role of the ordinary foundryman, apprenticed in the branch, has been considerably reduced, and this process is continuing, with artisan skills and manual production of complicated pieces declining dramatically. This also applies to new foundries currently built in developing countries, where the new facilities are already fitted with modern equipment, but where basic foundry skills and knowledge have no tradition.

A positive feature, on the other hand, is that the role of technicians with secondary school and university education has greatly increased. This is a guarantee that the new technologies and the entire production process will meet expectations. The task this group of workers will have to accomplish is to monitor and control the installed parameters of the technical equipment, from smelting aggregates to forming machines to finishing operations. More difficult technical problems are being tackled with the suppliers of advanced technologies and equipment.

As today's foundries operate in a market environment, secondary school and technical university graduates are required to also have some managerial and marketing skills.

METAL CASTING – A SEPARATE SECTOR

Metal casting, which has its roots in metallurgy, has become a separate branch of industry. It is considered an independent technical discipline also in countries where metal casting is formally incorporated in general metallurgy or materials sciences at universities (e.g. in the USA or the UK).

Photo: www.sxc.hu, PhotoCombo

THE ADVENT OF COMPUTER TECHNOLOGY, QUALITY MANAGEMENT...

A great change in both foundry practice and tuition was the arrival of computers, in particular computer simulation in the 1970s. The emergence of this technology is even referred to as the "second industrial revolution in metal casting". An important stage opened in the development of the foundry industry as an applied science when modern quality control concepts and modern managerial methods found their way into the industry, such as "lean production", which was practically applied to the "foundries of the year 2000" concept.

...BROUGHT ABOUT THE UNDERESTIMATION OF FOUNDRY SCIENCE BASICS

This resulted in an apparent paradox: the influence of the new technologies was so strong that many people, including technical specialists, began to ask whether it had any sense to have schools teaching specific foundry skills, whether it was not an unnecessary luxury at a time, when foundry processes could be simulated and forecast thanks to computers, when the entire production process can be programmed and controlled with the help of CAD, CAM, TQM, Kaizen, etc. Views even became widespread that technical management of foundries should be sufficient and that technicians with foundry work specialisation were not much needed in modern foundries. Another accepted idea was that school leavers seeking employment in foundries had no need to understand much about metallurgy and the basics of natural science, and instead should focus on informatics and process management, company economics and marketing, and organisation of production.

SURVEY WHICH SILENCED DOUBTERS

A survey was conducted in Germany a few years ago among school leavers and practical workers to investigate what people working in foundries and metallurgy students needed and required, what they missed and what, on the contrary, was of

secondary importance. The result was surprising: out of ten highly valued subjects ("very important"), eight were the same in all groups. They concerned branches which are arranged here in order of priority:

- Metallurgy
- Construction and use of castings
- Forming mixtures and forming processes
- Production technique and foundry equipment
- Economic management and control
- Natural science basics
- Data processing and informatics
- Organisation and management.

Surprisingly, the survey has revealed that the use of computers for production optimisation and management and for quality control, which are without any doubt essential for foundry technologies, figured relatively weakly in the evaluation of the fields of study, and that this area did not appear among the respondents' preferred subjects. This means that those who expected subjects such as "Data processing, Informatics" or "Process simulation and management", to get high ratings necessarily had to come to the conclusion that the established sciences still hold their value. That is why conventional subjects such as natural science basics, metallurgy and materials science, forming processes and forming mixtures, casting construction, and production technologies are valued so highly.

The purposeful use of computer simulation, for example in mould filling processes, melt solidification, transformation of metal structure in casting and other processes, requires profound primary and accurate knowledge of those processes.

FUNDAMENTALS STILL IMPORT

In Germany, and to some extent also elsewhere in Europe, the publication of the survey results caused a change in the views as to what knowledge metallurgy students and workers should achieve during their studies and in practical work. This shows that acquiring skills in automation, materials science, and IT must be accompanied by knowledge in conventional fundamental foundry areas, such as metallurgy, mould designing, casting construction, etc. The components of this essential basis are closely intertwined. Knowledge in metallurgy cannot be promoted without good natural science basics.

This does not mean that the marketing view should be discarded. In market economy conditions, foundries and their workers are required to know how their castings will serve in practice, how they will be used by the customers. This is connected with what is called simultaneous engineering: it is not enough to have good pattern casting skills, it is also necessary to know how to solve the casting users' potential problems – here, casting is part of a broader issue – optimum approach to the customer.

REASONABLY WITH "LEAN MANAGEMENT"

When applying advanced company management methods, it is desirable to keep a cool head. Very often, critical remarks can be heard with respect to "lean management", which in many cases eliminated the technical part of metal casting process management. Prof. Gerhard Engels of Clausthal University of Technology says:

"The application of lean management may result in a situation where a foundry company occupying a leading position in a particular area will for some time maintain its leading position even with a small number of foundry technicians during "idle operation". The warning is that if those who do not work on the problems of tomorrow already now will have problems in future."

LINKS WITH ENGINEERING

This specialist points to another weak point in the current foundry education system, which the survey did not raise: neglect of the close relationship between the foundry industry and engineering. In both sectors, the materials science and product construction are so closely linked together that they practically blend. Therefore, this linkage should be taken into account in the curricula of secondary and higher-level technical schools with foundry and engineering specialisation.

International Award for Czech Steel Construction Specialists

Marek Janda, Czech Constructional Steelwork Association, e-mail: janda@caok.cz, www.caok.cz

The construction of Střížkov Station on the prolonged C line of the Prague Metro has won an important international award in the area of steel structures. It emerged as one of the winning projects entered for the European Steel Design Awards competition, organised every other year by the European Convention for Constructional Steelwork (ECCS) based in Brussels. The structure was entered for competition by the Czech Constructional Steelwork Association, a regular ECCS member.

The main mission of the competition is promoting steel structures. The principal criterion in assessing the projects is the contribution they make to the steel construction sector, disregarding their size, origin, quantity of the steel used and other such factors. Other winning structures for the year 2009, apart from the Střížkov Station, were for example the Concert Hall in Copenhagen, the European Court of Justice in Luxembourg, Terminal 2E at Charles de Gaulle airport in Paris, the Letzigrund Stadium in Zurich, the Wimbledon Centre Court and Swedbank Stadium in Malmö.

UNIQUE METRO STATION

The Střížkov Metro Station is unique in its concept within the entire Prague underground railway system. At this place the C line comes closest to the surface, its architecture and general design making it part of the surrounding area. The open space of the Prosek housing estate is dominated by a glazed hall, which brings daylight into the station, while sending out glowing light into darkness at night. The most difficult task as regards the project design of the steel structure was to put to life the architect's vision while observing the requirements of static analysis and feasibility. The basic dimensions of the roof are 160x42 m at 20 m maximum height of the construction above ground. The load-bearing structure consists of two main arcs, which cross at both ends of the station, the result of which is a shape reminding of a whale. The arcs are linked by three connecting elements on which the whole roofing structure is suspended.

In previous years, several Czech structures received awards at the European Steel Design competition, including Sazka Arena (now O2 Arena) in Prague, the Mariánský Bridge at Ústí nad Labem, the pedestrian foot bridge over the D8 motorway, called Cat's Eyes, and the building of Jihomoravská plynárenská company in Brno.

STŘÍŽKOV METRO STATION:

Investor: *Dopravní podnik hlavního města Prahy a.s.*

Architect: *Ing.arch. Patrik Kotas – Atelier designu a architektury*

Chief Engineer: *Metroprojekt Praha, a.s.*

Steel Construction Project: *Excon a.s.*

Steelwork Contractors:
Metrostav a.s., divize 7 (general contractor)
Excon Steel a.s.
Vítkovice Power Engineering a.s.

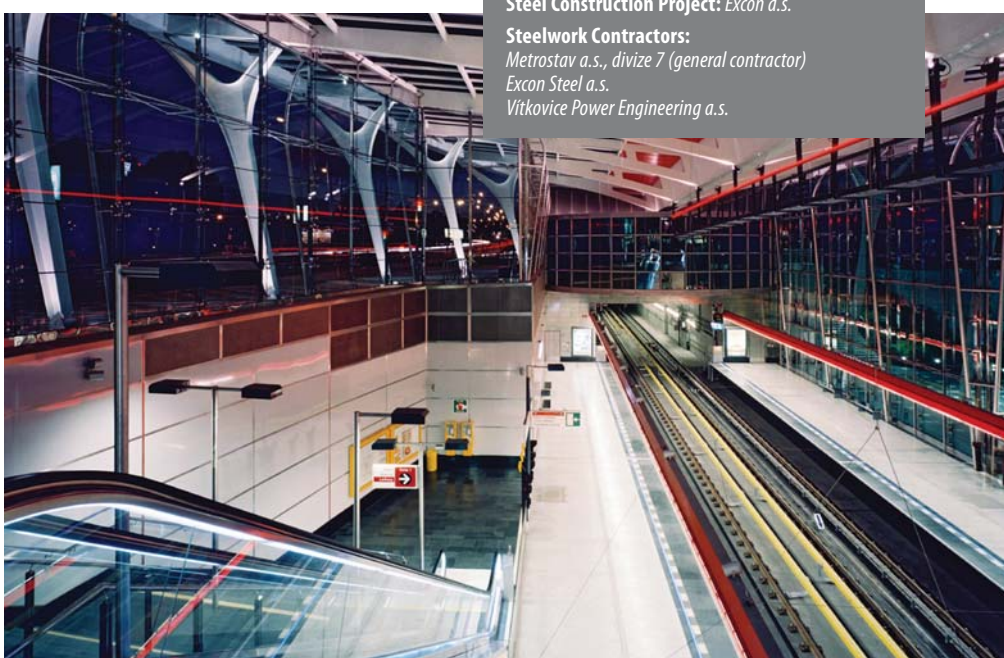


Photo: CCSA archives

Poll of Successful Companies Operating in Metallurgy, the Foundry Industry, and Steel Constructions

Slévárna Heunisch Brno, s. r. o.

www.heunisch-guss.com
Turnover: approx. EUR 17.77 million
Number of employees: 230
Export: 78% of total revenues

Slévárna Heunisch Brno, s.r.o. is a modern foundry and one of the largest grey cast iron foundries in the Czech Republic. Its current annual production capacity is 30 000 tonnes of castings, but the foundry is making preparations to increase its capacity to 70 000 tonnes. Its products are intended primarily for the tractor industry and for farming, textile, and other machines. The core of its production programme is motor and engine castings (crank cases, cylinder heads), gearbox housing castings (gear cases and distributor housing, flywheels), clutch housing castings, axle castings (axle cases, portals). Other items include compressor, pump and cover castings.

Its main customers are the companies ZF Passau, ZF Seyr, AGCO FENDT, John Deere, SEW, Claas, GKN Waltersheid, DANA, Zetor Tractors, and Lombardini.

What has been your greatest pride recently?

It cost us tremendous effort to overcome the crisis, but now we are once again standing on our own feet. The interruption of production only lasted a short time. Productivity of labour has increased, although the financial resources were very limited. Before the crisis we massively modernised and nearly completely renewed our technical equipment, so that now we can use the most advanced production technologies.

How are you coping with the consequences of the crisis? Are you feeling it?

We are still feeling the consequences of the crisis - the volume of orders we have is showing a great decline. The customers are raising their demands and their quality requirements are growing. Also, the delivery terms are very strict in comparison with the time before the crisis. The result is that we must react to their requirements much more flexibly and shorten our delivery terms.

Unitherm, s.r.o.

www.unitherm.cz
Turnover: approx. EUR 10 million
Number of employees: 108
Export: Europe, the USA

Unitherm, s.r.o. was founded in 1991 and within a very short time became an important player in the aluminium casting and heat engineering areas.

The foundry uses two technologies – sand mould casting and die casting, depending on the customer's requirements, the quantity, complexity of the casting and, last but not least, the quality.

The foundry has introduced and is using the ČSN EN ISO 9001:2009 quality management system and the ČSN EN ISO 14001:2005 environmental management system. At the same time it is certified by the Swiss company SVTI and the customers' internal auditors.

What has been your greatest pride recently?
We are certainly proud of the fact that, as confirmed by the feedback from our customers, our price offers are competitive, even in comparison with China. We have an excellent relationship with our customers, both in Europe and the USA. As we are a commercial foundry, we make products for different segments of industry, and have recently set foot also in the food and energy industries.

How are you coping with the consequences of the crisis? Are you feeling it?
I could answer with what I said in reply to your previous question: yes, our foundry did feel the impact of the crisis, and we are proud that we managed to cope with its consequences. We survived 2009 without having to reduce our staff. In 2010, the volume of our output increased and in terms of turnover, we returned to 2008 figures.

CHEMOTEX Děčín a. s.

www.chemotex.cz
Turnover: approx. EUR 10 million
Number of employees: 46
Export: 60% of production – markets include Poland, Germany, Slovakia, the Ukraine, Serbia, and the Netherlands

Chemotex Děčín a. s. manufactures industrial and auxiliary chemical products, at this time mainly surfactants and detergents, chemicals for the engineering, construction, textile and paper industries, functional liquids, corrosion inhibitors, and many other special agents. It thus follows up the long tradition. The company offer includes more than 200 kinds of products. Chemotex has a team of highly experienced experts who carry out research and development and are ready to help enterprises with the application of company products. They can formulate new products according to consumers' requirements and modify the existing range of products according to consumers' requirements in harmony with the latest knowledge of development.

What has been your pride lately?
In the present turbulent markets, it is difficult to point out any product or order. The company is expanding its portfolio of clients and products even at this difficult time, which is a success. Chemotex products worth special mention are phenol sulphonic acid and a number of surfactants – sulphosuccinates.

How are you coping with the consequences of the crisis? Are you feeling it?
Czech companies are feeling the impacts of the crisis as foreign companies do, and Chemotex is no exception. The only possibility is to take up the "challenge", pull together to form a strong team and use it for continued expansion.

MOTOR JIKOV Group a. s.

www.motorjikov.cz
Turnover: approx. EUR 50 million
Number of employees: 830
Export: 50% of the company's turnover, our biggest markets are in Germany, Italy, the United Kingdom, and the USA

Motor Jikov Group a.s is a holding company combining the firms of Motor Jikov Fostron a.s. - manufacturing dies for aluminium pressure casting and single-purpose machines, Motor Jikov Slévárna a.s. - aluminium and zinc pressure casting and gray and ductile cast iron castings manufacture and Motor Jikov Strojírenská a.s. - focused on the machining and assembly of final products.

Due to the wide-ranging programmes of the individual enterprises, Motor Jikov Group a.s. can offer its customers comprehensive solutions to engineering projects.

What has been your greatest pride recently?
Our pride is especially the fact that we have survived the complicated period and that now we are prepared to continue developing our firm and expand to world markets. We are carrying on the great tradition of our enterprise going back 112 years.

How are you coping with the consequences of the crisis? Do you feel it?
The world crisis has had a strong impact on us. In 2009, our revenues fell by 40%. As a result, we had to take very important measures to reduce our costs, both as regards labour costs and overhead expenses. In this way we managed to surmount the worst period, and when looking back at the economic results of Motor Jikov Group a.s. now, we can see that the productivity and profitability indicators are higher than they were before the crisis. Thanks to the optimisation measures we have applied, we managed to raise the added value level. The crisis forced us to go back to evaluating our processes, costs and operations management, and this has had a positive impact on our firm.

MOTOR JIKOV

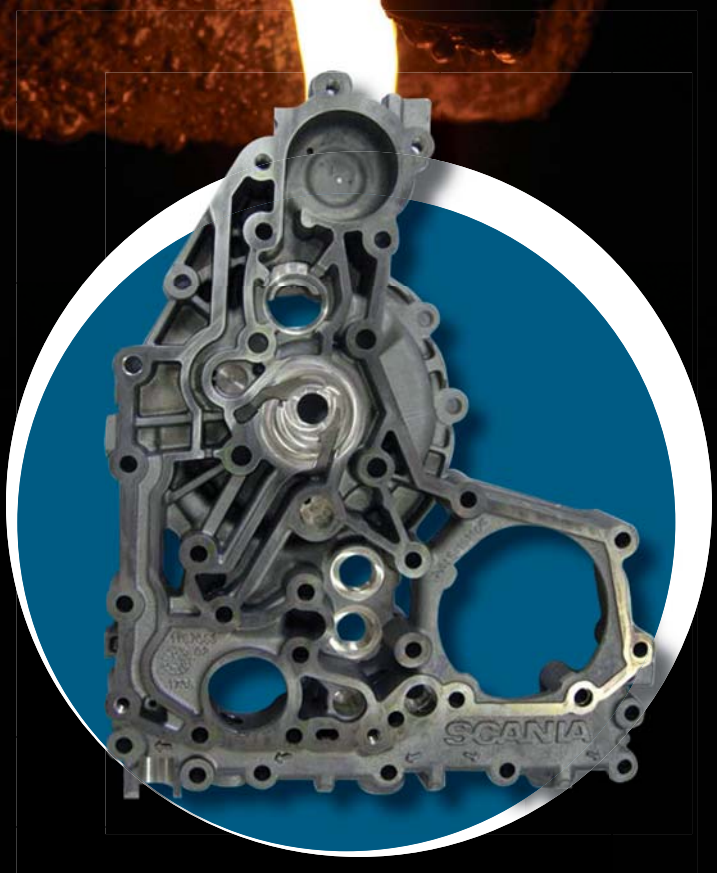
MOTOR JIKOV Group a.s. is the parent company of a group of enterprises of mainly engineering and foundry character.

The group of four enterprises led by MOTOR JIKOV Group a.s. has 720 employees, which in 2010 had a turnover of EUR 50 million. The companies are greatly responsible for the flow of foreign investment into the region, with a great proportion of its output going for export. The principal branches of its business are the manufacture of car and lorry accessories and components, aluminium and zinc alloy die castings, grey and nodular cast iron castings, special machine tools, assembly equipment, CNG filling equipment, metal injection moulds, riveting equipment and cutting and cleaning machines. In 2007, the name of all the companies was unified by placing the words MOTOR JIKOV before each company's name.

In 2010, two of our companies, Motor Jikov Slévárna litiny a.s. (Iron Foundry) and Motor Jikov Tlaková slévárna a.s. (Die Casting Foundry), were merged to form a common firm, Motor Jikov Slévárny a.s.

The Die Casting Division specialises in aluminium and zinc alloy die casting and is one of the technically and technologically best equipped foundries in the Czech Republic. It specialises mainly in making more demanding castings using modern Bühler, Müller Weingarten, and French technologies. Quality standards in the die casting plant are subject to the use of EN ISO/TS 16949:2002, EN ISO 9001:2000 and EN ISO 14001:2004 standards.
Its most important customers include the firms Brose, Briggs & Stratton Corporation, Magna-Donnelly, PAL International, Valeo, Honeywell, Arvin Meritor and Haldex.

The Iron Foundry Division specialises in making grey and nodular cast iron castings, linking up with the more than a century-long grey iron casting tradition in České Budějovice, in premises where castings were made as far back as 1899. The foundry has been modernised several times, both as regards construction and technology. A modern frameless forming line DISAMATIC with a forming frame 538 by 650 mm was installed there in 2004. Two-thirds of its output is for export, mainly to Italy and Germany. Its largest customers are the companies Electrolux, Bondioli, Bonfiglioli&Ocap, its main domestic clients being Elektroporcelán Louny, MOTOCO and Agrostroj Pelhřimov. The company is certified according to EN ISO 9001:2000 standards.



MOTOR JIKOV Group a.s.
Kněžskodvorská 2277/26
370 04 České Budějovice, Czech Republic
Phone: +420 389 016 111, Fax: +420 389 016 330
e-mail: motorjikov@mjgroup.cz
www.motorjikov.cz

MOTOR JIKOV

Advantage Thanks to Knowledge

HEUNISCH GUSS

Serial production of difficult grey iron castings, quality according to EN, DIN, and CSN. Unit weight 0.3 kg to 2 500 kg per casting. Complicated core sets produced by a Cold Box Amin procedure. Cores based on water glass hardened by CO2. Core injection machines with capacity from 12 up to 150 litres.

PRODUCTS:

engine blocks
cylinder heads
gear boxes
clutch boxes
compressor bodies
axle housings

Characteristics of foundries of Heunisch group:

GIESSEREI HEUNISCH GMBH/BAD WINDSHEIM/GERMANY

- Dimensions of forming line frame: 1 300 x 1 060 x 420/420 mm 800 x 650 x 300/300 mm, 470 x 420 x 200/200 mm
- Unit weight from 0.3 kg up to 600 kg per casting
- Cast materials: EN GJL 200, 250, 300, EN GJS 400, 500, 600
- Yearly production capacity of about 75 000 tons

SLÉVÁRNA HEUNISCH BRNO, S.R.O./BRNO/CZECH REPUBLIC

- Dimensions of forming line frame: 1 400 x 850 x 400/400 mm
- Unit weight from 30 kg up to 400 kg per casting
- Cast materials: EN GJL 200, 250, 300
- Yearly production capacity of about 30 000 tonnes

GIESSEREI HEUNISCH GMBH/STEINACH/GERMANY

- Manual forming
- Unit weight up to 2 500 kg per casting
- Cast materials: EN GJL 200, 250, 300, EN GJS 400, 500, 600
- Yearly production capacity of about 6 000 tonnes

SLÉVÁRNA HEUNISCH, A.S./KRÁSNÁ U AŠE/CZECH REPUBLIC

- Gravitational and low-pressure chill casting of aluminum
- Unit weight from 0.1 up to 20 kg per casting
- Cast materials: – AlSi (Silumines) of various types
- Yearly production capacity of about 3 000 tons

REFERENCES:

ZF Passau ■ ZF Steyr ■ Dana ■ GKN Walterscheid ■ SEW Eurodrive
John Deere ■ AGCO – Fendt ■ Zetor ■ CLAAS ■ Kaeser ■ Bitzer ■ Bock
Frascold ■ Scania ■ Siemens ■ Caterpillar ■ MAN ■ Lombardini
Modine ■ Behr ■ Rexroth ■ Bosch ■ Ixetic ■ Sipos

HEUNISCH Foundry Brno, Ltd. Zaoralova 11, 628 00 Brno, Czech Republic
Phone: +420 532 196 520, Fax: +420 532 196 521, E-mail: info@heunisch-brno.cz
www.heunisch-guss.com