

## DEVELOPMENT OF EMPLOYMENT IN THE CZECH REPUBLIC IN RELATION TO METALLURGICAL PRODUCTION

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### Abstract

Metallurgy is one of the key areas of the Czech processing industry. It is closely intertwined with the supply and demand, construction, mining, energy and transportation areas/industries. Steelmaking companies employ a large number of people across the whole range of education levels. The production of Czech industries has in general been growing over the past five years. However, this is not the case of the metallurgical industry, which has rather stagnated or even declined in the Czech Republic over the past ten years. In line with the dynamic development of the economy, the job market currently boasts the highest employment rates in Czech history and companies are actively competing for every competent employee. This article analyses the relationship between the development of production in the metallurgical industry and the development of employment in this branch over the last five years. The conclusion then presents the possible future development for both of these monitored parameters.

**Keywords:** Employment rate, metallurgy, production

### 1. INTRODUCTION

Over the past years, Czech industry has grown to previously unseen levels - with not only high productivity, earnings and investments targeting production capacities, but also record-high employment levels [1] which is paradoxically slowing down the growth of the economy, since companies cannot react to higher demand for production due to a lack of employees [2].

The Czech Republic remains one of the most industrious countries in the EU. Processing was and remains the dominant section of the industry, and a core part of this is notably metallurgy - an area with a long-standing tradition especially in the Moravian-Silesian region. 85 % of production in the Czech Republic is concentrated into three dominant companies: Mittal Steel Ostrava, a.s., Třinecké železářny, a.s. and VÍTKOVICE STEEL, a.s. [1]

In view of the influx of cheap but lower-quality steel from abroad (especially from across the ocean), Czech metallurgical companies are facing increasing problems in terms of competitive strength. The situation is further complicated by the situation on the job market. There is a critical lack of human resources in all fields, and the demanding working conditions in metallurgical companies further discourage employees from working there - even in spite of the generally higher salaries.

Competition from foreign companies and a lack of qualified workforce requires new approaches (a fact which holds true not just in the metallurgical industry), notably in the areas of environmental protection, technology, the requirements of Industry 4.0, and human resources. Metallurgy strongly depends on production facilities and technology, and can hence implement more automated procedures than other fields, however still needs to have sufficiently many specialized and non-specialized employees to operate. This article sheds light on how the dependence between Czech metallurgy and human resources developed over time, notably by analyzing metallurgical production and employment in the area over the past five years. [3]

In the introduction, we will provide an overview of the development of Czech metallurgical production compared to metallurgical production on the European level. Next, we will compare metallurgical production and employment in this area in individual years, including commentary. The input data for the analysis were obtained from official reports on the development of the economy in individual years, published by the Ministry of Industry and Trade of the Czech Republic, and from the website of the Czech Statistical Office. For the purposes of this article, metallurgical industry refers to industry categorized under CZ-NACE 24: production of basic metals, metallurgical processing and foundries. [3]

## 2. CURRENT METALLURGICAL PRODUCTION IN THE CZECH REPUBLIC

The analysis of the pan-European situation in metallurgical production revealed that the largest problem faced by regional metallurgy is the transfer of metallurgical plants to Asia as a reaction to the local higher demand for such production - among others a consequence or accompanying phenomenon of the gradual transfer of industrial production from the EU primarily to Asian countries. The development of the branch is significantly affected also by increasingly strict European environmental policies and their implementation into the legal systems of individual member states. In general, metallurgical production in the Czech Republic does not significantly differ from the average production across all of Europe. In terms of unemployment, Czech Republic reports lower numbers than the rest of Europe. [3]

The majority of metallurgical outputs consist of intermediate products and products intended for further processing (about two thirds of production are used for such products). Metallurgical production is used primarily in the engineering, automotive and shipbuilding industries, but also in other fields and areas.

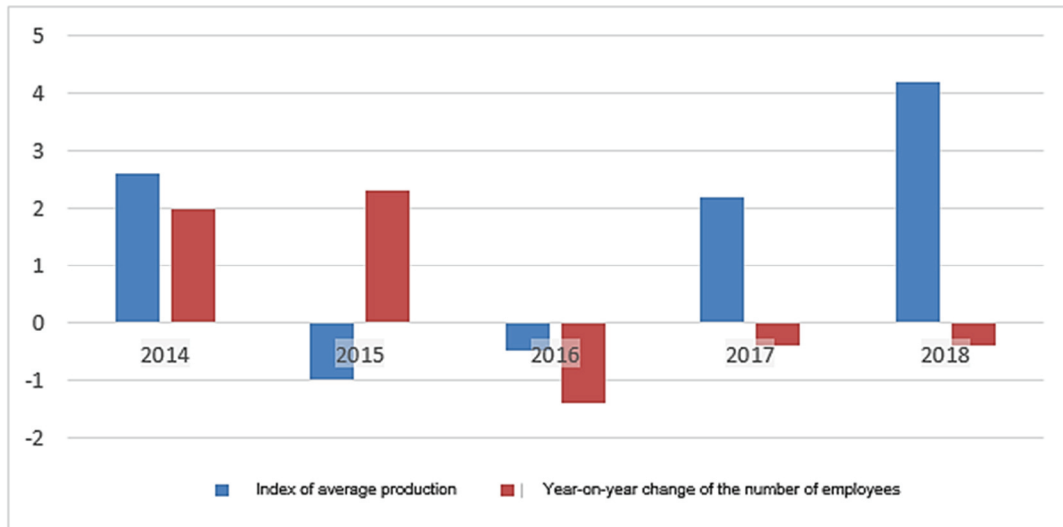
Metallurgical production now faces challenges which will form its future in the upcoming decades - not only in the Czech Republic. First and foremost, we note the aforementioned endeavor of continuously reducing the impact of industry on the environment. Since the end of the nineties, about a billion Czech Crowns have been invested in making the production of steel environmentally friendlier, leading - among others - to a reduction in dust emissions by an incredible 99 %.

Another challenge is, unfortunately, the unfair and sometimes even illegal competition from numerous countries outside of Europe, whose companies take advantage of state-subsidized exports, loans, an absence of collective negotiations and lax or unenforced environmental norms and regulations. Under these conditions, such companies can offer steel for significantly lower prices than the actual production costs in the Czech Republic. [4]

The third and increasingly more significant challenge is a lack of qualified persons. The economy is growing, and with it also the demand for steel. However, steelmaking (like other branches of the Czech economy) is facing a desperate lack of qualified workforce - especially people with technical education. It is also affected by a lack of non-specialized workforce, since work in the area is generally rather demanding and especially young people from generation Y and the millennial generation exhibit increasingly bad working attitudes in combination with higher requirements on employers than generation X. That is why metallurgical companies have, together with the government and regional/local administrative bodies, have tried for several years to introduce solutions which will make working in metallurgy more enticing (many in collaboration with schools and universities).

## 3. DEVELOPMENT OF PRODUCTION AND EMPLOYMENT

The following **Figure 1** shows the year-on-year change of metallurgical production and number of employees in the field (in percentage points), as well as the year-on-year change of the average recorded number of employees.



**Figure 1** Year-on-year development of production and number of employees (in %)

### 3.1. Year-on-year analysis of the development of the monitored parameters

#### 2014

In 2014, industrial production started growing again after two years of recession. The achieved results in industry were among the most decisive factors contributing to the growth of the domestic economy as a whole. Increased production and more orders for industrial companies led to the necessity to expand production and recruit new employees. In metallurgy, this meant that production grew by 2.6 % and the number of employees jumped to 40,169 (a 2 % increase). [5] In this year, the increasing production was also reflected in an increase of the number of employees - a trend that appeared in other areas across the Czech Republic as well.

#### 2015

The performance of Czech industry in 2015 followed up on the growth that was restored in the preceding year - in particular, growth continued with a year-on-year increase of 4.4 %, as mentioned in the respective report of the Ministry of Industry and Trade of the Czech Republic. However, production dropped notably in the field of metallurgical production (notably, production of basic metals, metallurgical processing and foundries) by 1 %. The beneficial economical situation for industry in 2015 was also reflected on the job market. Higher production, earnings, and job volumes for industrial companies led to the necessity of expanding production and recruiting new employees. Employment levels (in organizations with 50 or more employees) were high, reflected by a growth of 2.3 % in the metallurgical industry. [6] This means that while production was already dropping, the number of employees grew. This was also related to reduced earnings and increasing average monthly salaries in this area.

#### 2016

In 2016, industrial production continued to grow for a third year in a row, but the development was rather uneven throughout the year. In metallurgy, the previous year's trend also continued and production kept dropping, this time by 0.5 %. Revenue from the production of basic metals, metallurgical processing of metals and foundries dropped by 7.9 % year-on-year in 2016. In the same year, the volume of new orders dropped by 3.4 % (following a decrease of 5.5 % in 2015), out of which domestic orders dropped by 7.1 % (following a drop of 4.2 % in 2015) while foreign orders increased by 0.7 % (contrary to a drop of 7 % recorded in 2015); this is in spite of foreign demand being impacted by the expansion of Chinese production (especially of steel), an expansion that the EU and USA attempted to control via tariffs. Employment in this year dropped by 1.4 %, while salaries continued to increase. [7]

## 2017

Thanks in part to the positive economic environment and notably the optimistic outlooks of companies and households, the performance of the Czech economy continued to improve in 2017. The dynamic growth of the economy was prominently visible on the job market, which exhibited symptoms of overheating and whose numbers were below the natural unemployment level. In 2017, the production of raw steel in the Czech Republic dropped year-on-year by about 14 %??? To 4.56 million tons. This drop of production was caused by planned redevelopment and technical stoppages at two largest production plants - ArcelorMittal Ostrava, a.s. and Třineckých železárnách, a.s. In spite of this fact, production grew by 2.2 % and revenue by 11.4 %. The number of employees kept dropping, this time by 0.4 %, and the average salary reached 30 thousand (Czech Crowns). [8]

## 2018

The development of the Czech economy in 2018 showed that the economy reached its limit. Especially the situation on the job market exhibited significant characteristics of overheating, showcased by record-low unemployment levels. The total employment level already exceeded 75 % and as such reached its highest value in the whole history of the Czech Republic. Revenues in industry as a whole, as well as in the processing industry, grew by 3.5 % year-on-year. Production in the metallurgical industry grew by 4.2 % while the number of employees dropped further by 0.4 % [9]. The main barrier preventing further growth in industry was and remains the job market, which is at this point virtually depleted. This led to the gradual reduction of employees in the metallurgical industry, among others. [10]

### 3.2. Expected future development

In the upcoming years, one can expect metallurgical production to rather gradually drop or stagnate, since industrial production is expected to stop growing due to a lack of employees accompanied by the continuous growth of salaries and prices for other inputs. The role of Industry 4.0 is growing, which focuses on replacing human labor by automated systems. This trend will then also impact the job market, since there will be less jobs for non-specialized workers. [10]

As was mentioned above, the number of employees can be expected to continue dropping. There are several risks for the development of industry in 2019 - aside from the continuing protectionist measures and the final form of Brexit, the development of the European car industry will also play an important role. One further recent worry for industry is the growth of American import tariffs for certain products made of steel and aluminum. [11]

## 4. RESULTS

In 2014, metallurgical production continued to grow as the world as well as Czech economies recovered. Even though this production then dropped year-on-year, the primary growth exceeded the follow-up minor drops (by 1 and 0.5 %), as demonstrated by the subsequent growth in 2017 and 2018 in spite of the two most important companies in the area underwent planned stoppages. Production could thus continue also growing in the near future, but is hampered by problems related to employment levels.

The number of employees grew in 2014 hand-in-hand with the increased production, since companies needed to expand their production capacities and hence had to hire new employees. This trend grew also in 2015, when the number of employees grew by 2.3 %. However, since then the situation has changed and in all following years the number of employees dropped, while the number of employees grew in other fields in the Czech Republic. In particular, the metallurgical industry has an opposite state than what one would expect - while the production is growing, employment levels drop - and this is likely caused by previously unused production capacities. However, these "hidden" capacities also have a limit, and due to the fact that some

employees leave and are not replaced it will not be possible to reach the same production capacity. One prominent phenomenon in this respect is that employees search for less physical demanding jobs, and due to the large amount of offers on the market such employees can easily find such less demanding work. Production and revenue in the metallurgical field continue to gradually rise, as do the average salaries. [11]

## 5. RECOMMENDATIONS

The metallurgical industry could continue reporting a growth in revenues, primarily thanks to the growth of production in the engineering and automotive industries. The main problem for metallurgical companies is still the job market; they are forced to search for ways to secure and keep high-quality employees. That is why HR management will play a more important role for such companies than ever before.

With HR management, internal education of employees will play an increasingly important role, mainly due to the lack of graduates in relevant fields from high schools and universities (this situation is not expected to change at least in several years). The number of qualified employees in this field is on a decline in the long term, and this goes hand in hand with greater costs for companies which are forced to train employees on their own due to the difficult situation on the job market. Some companies react to this by founding their own educational institutions where they can educate their future employees directly in their plants. [12]

As far as HR management is concerned, interest in both non-financial and financial benefits is on the rise. Companies are currently competing with each other in which will offer better and more interesting benefits for their employees. The latest types of benefits include, for instance, an American-style salary system (meaning that salaries are paid every week) and so-called Bridge days, i.e., days located between state holidays and weekends (in particular, the employer grants an extra, "free" leave to all employees on such days) [13]. Other areas related to HR management that should not be neglected include the styles and forms of evaluation, management styles, and the company culture and environment.

In order to ensure that metallurgy becomes a lucrative area for young people, it must also make use of the results of state-of-the-art research and development, invest in the most modern technologies, radical innovation, quality and innovation for the metallurgical production portfolio [14]. The future of steelmaking lies in products with higher values and of greater sophistication, since these are areas where Europe can compete with Asia.

## 6. CONCLUSION

Metallurgy remains a well-justified area, notably due to its interconnectedness with the processing industry and construction work and in view of the intensity of consumption of basic metallurgical products. The main consumers of steel lie in the engineering sector, including notably the automotive industry, followed by the construction sector.

This article focused on the development of production and employment in the Czech metallurgical industry over the past five years. At the beginning, the development of production went hand in hand with employee numbers, but in the past three years we saw the number of employees drop in spite of a growth in production. This article provides some food for thought and recommendations concerning production and the lack of employees in the area. Without a qualified workforce, companies need to face disproportionate costs for training new employees - and this will likely not help expand production capacities. Companies may consider improving their working conditions, introducing new benefits and improving their company culture as a whole.

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