

SPECIFIC ASPECTS OF THE INDUSTRIAL PROPERTY PROTECTION SYSTEM IN METALLURGY

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Abstract

The aim of the article is to point out the interrelation between the economic results of metallurgical companies and the number of patent applications and utility models. With the constant development of the market environment, not only the business conditions in which each enterprise exists are changing, but the protection of industrial rights is also growing considerably. The importance of intellectual property rights for businesses and the economy has become more pronounced in recent years. The most important reason for securing any industrial and legal protection is to ensure the exclusive position of a company on the market in a given territory and hence to assert all the rights that arise from legal protection. The filing of applications for inventions and utility models is related to the development, research and innovation processes of companies. Innovation processes are related to investments, and in this respect, the direct connection between the market performance of metallurgical enterprises and the activity in the field of intellectual property protection is seen. Intellectual property protection enables metallurgical companies to consolidate the exclusive position of their products and technical solutions and thus to obtain a financial bonus resulting from a fixed position on the market.

Keywords: Metallurgy, Industrial property protection system

1. INTRODUCTION

1.1. Intellectual property protection

Intellectual property protection is primarily intended to protect the results of development and innovation processes; it provides owners of intellectual property rights with protection against the abuse by competitors and enables them to consolidate their position on the market [1]. Industrial ownership is a form of ownership that involves intangible assets. Patents are granted for inventions that meet the conditions laid down by law - they are new, they are the result of inventive activities and are industrially usable. Inventions are legally enshrined in Act No. 527/1990 Coll. and the effects for the owner are described in Section 11 of this Act, which states that the owner of the invention has the exclusive right to use the invention, to dispose of it in any way, or to transfer the patent to anybody [2]. The motivation for obtaining a patent may be not only the consolidation of the market position and the resulting financial bonus, but also the licensing grounds. Since the patent owner has the right to dispose of the patent, s/he may, under the license agreement, provide his/her invention to another entity for a fee and thereby obtain additional funds. Metallurgy ranks among one of the 20 industries that recorded the fastest year-on-year increase (8.1 %) of patents between 2005 and 2015 [3].

1.2. Industrial property law in the Czech Republic, the EU and the world

The rapid development of industrial rights protection is linked to the scientific and technological revolution of the 18th and 19th centuries. This development culminated in the adoption of the Paris Convention for the

Protection of Industrial Property in 1883, which is at present the most important legal act in the field of industrial property protection; it represents the basis for other agreements further extending this act [4].

Industrial property law in the Czech Republic - the most important laws stipulating, on the one hand, the legal conditions for the establishment of industrial protection and its way and duration include Act No. 527/1990 Coll., on Inventions and Improvement Proposals, Act No. 478/1992 Coll., on Utility Models, Act No. 207/2000 Coll., on the Protection of Industrial Designs, and Act No. 441/2003 Coll., on Trademarks. The Industrial Property Office acts as a patent and trademark office.

In the context of the establishment of the World Trade Organization, many international treaties have been adopted, including the TRIPS Agreement on Trade-Related Aspects of Intellectual Property Rights [5]. The reason for this agreement was the growing number of IPR-protected products, as well as their violations, which had the effect of slowing down technological progress as there was less and less investment in innovation processes and development. Within the European Union, the European Patent Organisation, the European Patent Office and the Unified Patent Court are among the most important institutions active in the field of patent law.

The legal protection of industrial property has undergone a long-term development aimed at harmonizing the rights in individual countries across the world. The development of industrial rights must respond to dynamic emerging industries such as robotics or biotechnology. The whole process of developing and harmonizing industrial rights is not only aimed at recording new inventions and other industrial rights but as a whole, it seeks to promote technological progress. Basically, the idea consists in a simple approach: why develop something that has been developed somewhere; innovative processes and developments should be aimed to further improve the state of the art. The state of the art means any evidence that your invention is already known, that is, everything that exists in the world. The truth is that many inventions never become real products. Before initiating an innovative process or development, it is necessary to search on the state of the art of the subject of potential development. This is a professional activity which can, however, make it possible not only to get valuable information about the inventions that are already known but thanks to the research activities, can be learned about the competition, the trends in the given area, and especially the information about the future direction and prospects of the whole field.

2. INNOVATIVE PROCESS IN ENTERPRISES

As already mentioned, patent protection allows companies to consolidate their market position, and this gives businesses additional financial bonuses. When the patent owner's rights are violated, the owner may request that the violation be forbidden, with subsequent quantification of the damage or unjust enrichment. In many cases, industrial rights violations occur unintentionally. When the development or innovation process is completed without a properly conducted search at the beginning, it is found that the given subject of development violates the rights and that all of the funds invested in the development are lost.

Before launching the innovation process in companies, it is necessary to identify whether development costs are adequate to the commercial potential of the particular solution. At the same time, it is essential to ascertain whether the subject of the innovation process is not already developed and whether it is not protected by an entity, for example by a patent. In 2012, it was estimated that approximately 20 billion EUR were spent within Europe to develop products that have already been developed. A search is made to avoid the waste of development resources. The search process consists of the following stages - analysis of the information request, selection of the information source, search strategy, result output, delivery of the primary document. To find out whether the innovation process should be started, a search on the subject of a potential innovation process is carried out. Searches and surveys are used in research and development activities when defining the innovation process in companies; they represent an instrument for gaining insight into the state of the art and lead to a competitive advantage over other businesses in the industry. The processing of searches belongs

to professional activities that involve work with both technical and legal information. Searches in the field of industrial and legal protection are carried out by means of information systems [6].

The most important databases are set up and managed either directly by institutions dealing with intellectual property, such as the Industrial Property Office (ÚPV) [7], or by companies that provide and administer these databases free of charge, such as Google patents [8], or companies that manage and operate information systems subject to a charge, such as STN international [9]. There are a number of other databases that are interconnected in many cases to get the most relevant data. The Industrial Property Office of the Czech Republic creates and manages a set of online databases containing information on Czech intellectual property. In addition to the patent database, it is a database of industrial designs, a database of trademarks valid in the Czech Republic (ÚPV, WIPO, OHIM) and the database of designations of origin and geographical indications (ÚPV, WIPO). The importance of industrial protection in Europe is evident from the following facts. Based on a study by the European Patent Office and the European Union, it has been established that the protection of intellectual property linked to economic performance directly or indirectly supports 35 % of jobs, almost 39 % of the European Union's GDP and 90 % of foreign trade. In Europe, there are more than 2.3 million European companies owning patents, trademarks and industrial designs; it is four times more likely for large companies to own intellectual property rights than for small companies - 40 % of larger companies have registered rights compared to 9 % of small and medium enterprises. The results show that businesses owning intellectual property rights generate significantly higher earnings per employee than those that do not hold them; they have more employees and pay higher wages. This relationship is particularly strong for small and medium enterprises. The importance of industrial rights in the Czech Republic is also evident in **Tables 1, 2, 3**. In the Czech Republic, we can observe a long-term growth trend in the number of new patents. **Table 1** shows that in 2016, 675 patents were granted to entities from the Czech Republic. It is clear from **Table 2** that in 2016, the Office recorded 6,067 new patents valid in the territory of the Czech Republic filed by foreign entities. An increasing trend can also be observed from year 2008.

Table 1 Patents granted to applicants from the Czech Republic according to the principal International Patent Classification (IPC) sections and the grant year [10]

	2010	2011	2012	2013	2014	2015	2016
In total	294	340	423	435	493	605	675
A Human needs	37	40	59	58	60	72	97
B Industrial technology, transport	69	62	97	96	99	112	138
C Chemistry; metallurgy	79	98	105	87	102	156	138
D Textile; paper	9	10	11	16	22	14	26
E Construction industry	13	25	28	28	33	45	47
F Mechanics; lighting; heating; weapons	33	39	45	43	60	63	84
G Physics	36	54	60	82	92	107	110
H Electricity	18	12	17	24	24	35	34

Table 2 Patents granted (validated) in the Czech Republic to foreign applicants according to the main MPT sections and the year of the award [10]

	2010	2011	2012	2013	2014	2015	2016
In total	4,310	4,689	4,906	4,778	4,738	4,971	6,067
A Human needs	887	915	1,020	1,036	1,042	1,118	1,395
B Industrial technology, transport	1,026	1,196	1,143	1,174	1,157	1,057	1,308
C Chemistry; metallurgy	1,176	1,228	1,237	1,191	1,203	1,277	1,478
D Textile; paper	119	132	143	124	121	128	140
E Construction industry	246	221	266	229	225	307	371
F Mechanics; lighting; heating; weapons	358	423	400	387	402	499	610
G Physics	193	212	300	297	258	235	312
H Electricity	305	362	396	340	329	349	452

Table 3 Patents granted, applications for inventions and utility models in the field of metallurgy [10]

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
In total	98	121	128	130	128	127	166	155	140	191
A Patents granted nationally and EP	93	87	97	115	96	80	110	131	120	174
Domestic	5	4	5	11	6	12	16	27	18	10
Foreign	30	18	11	14	9	4	9	8	9	3
PCT out of this number	27	14	11	9	7	4	7	6	7	2
EP validated	58	65	81	90	81	64	85	96	93	161
B National applications for inventions	3	19	20	9	12	22	30	11	12	8
Domestic	2	15	18	8	8	20	29	11	11	8
Foreign	1	4	2	1	4	2	1	0	1	0
PCT out of this number	1	3	1	0	4	1	1	0	1	0
C Utility model applications	2	15	11	6	20	25	26	13	8	9
Domestic	2	14	11	6	20	25	25	12	6	9
Foreign	0	1	0	0	0	0	1	1	2	0

Table 3 shows the trend of registered inventions, utility models and validated patents within the Czech Republic, whether domestic or foreign subjects in the field of metallurgy. It is needed to identify the trend of intellectual property activities on a broader scale in connection with the economic results of the companies

operating in the field of metallurgy. The innovative process in the field of metallurgy lasts approximately 24 months, and investments are made in innovative processes especially in the case of sound economic performance of companies.

In 2008, the Czech Statistical Office and the Ministry of Industry and Trade identified sales of metallurgical and foundry companies in the Czech Republic at the level of 240.14 billion, followed by a sharp year-on-year decline to the level of 144.55 billion in 2009. If the innovation process was launched in 2008, at the time of a favourable economic situation, if the innovation process took the 24 months, the direct link between the sales of metallurgical firms and the number of patent applications filed is confirmed. In 2010, 18 patent applications were filed by domestic entities in the field of metallurgy, and another year saw a sharp drop to the level of 8 applications filed by domestic entities. This interdependence can also be seen in the years to come.

In the framework of the analysis conducted by the team of authors a direct proportion was found between the number of patent applications and utility models and the economic performance of companies operating in the metallurgical field. For a more detailed analysis, a metallurgical product was selected, specifically the filed inventions and patents concerning the new iron and aluminium alloys. Based on the analysis, it has been found that since 2012, the number of applications for new iron and aluminium alloys has increased rapidly (**Figure 1**).

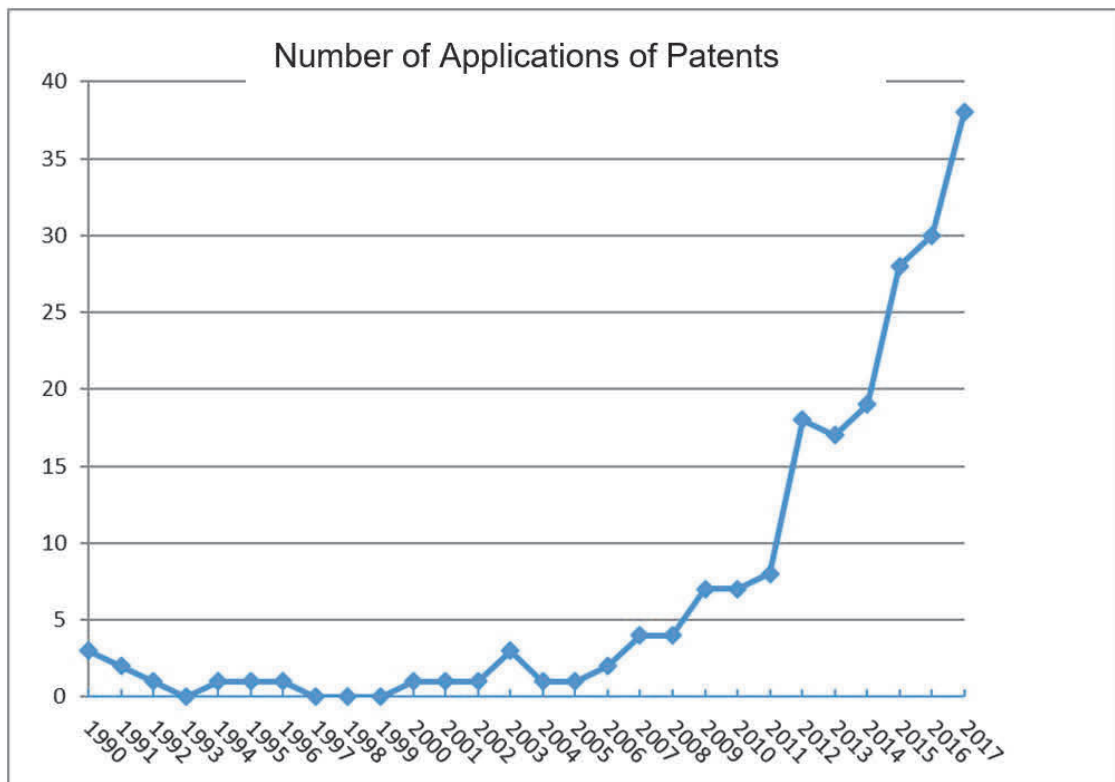


Figure 1 Number of Applications of Patents [10]

For metallurgical companies, this very information can be essential to expand the portfolio of its products. Given the high cost of developing a new alloy, it would be appropriate to identify patent applications or patents for the new alloy, and on the basis of an estimate of the commercial success and usability of these alloys, metallurgical companies could verify the production of the alloys listed in the records, their applicability for prospective clients and, in case of positive feedback from their customers, contact the patent or patent application owner and start negotiating production licensing. In the case of new patented materials, their specific compositions are stated in the applications and patent documents, since the expert has to be able to construct the subject of the invention according to the file. The mere testing by the metallurgical company as

described in the documents cannot be considered as a violation of the patent rights of the industrial property owner, provided that the particular verified sample is not commercially stated anywhere. Obviously, we can think of a variant that after testing the alloys listed in the records, the metallurgical company can invent its improvement of the particular alloy and to file an application for itself. Assessing how to proceed depends on the management of the given company, its financial health and economic performance. The search also revealed that most of the alloy applications came from Russia, Taiwan and China. Another aspect is the appreciation of those patents that have commercial success. Through professional search, we can identify those protection items that are globally protected and whose maintenance fees are constantly reimbursed. The patent is valid for 20 years during which the applicant must pay maintenance fees at regular or irregular intervals. Maintenance fees increase over time, and in the case of globally protected alloys (in the field of metallurgy), patent objects need to have such commercial success to generate profits for the given owner and at the same time create the necessary funds to cover maintenance charges that are not negligible at all. This means that, for example, a company operating in the Czech Republic could identify a patent that expires in two years, prepare for the production of this commercially successful alloy over the next two years, and on the day after the patent expiry date, it could start producing and commercializing the alloy without the consequences resulting from infringement of industrial rights. The analysis further revealed the aspect of the ever-increasing number of alloys applied over time. It can be explained by the fact that the innovation process is continuous and economically justifiable. An example of good practice, though not in the field of metallurgy, is the successful Linet Company, which started to manufacture its products on the basis of a 25-year-old patent.

3. CONCLUSION

In the field of metallurgical analysis, the direct correlation between the number of applications for inventions and utility models and the economic result of companies operating in the metallurgical field was found. In the context of the closer study and the inclusion of other factors, further interconnectedness can be found for a particular product to socio-economic factors that have a significant effect on the activity of intellectual property enterprises. One of the other secondary results of this analysis can be seen in the interconnectedness of product-specific searches and the estimation of the development of potentially commercially successful products. Professional search activities in the field of metallurgy can be used in the decision-making process of companies whether they will enter into particular innovation processes based on an estimate of the future commercial potential of specific metallurgical products. The evaluation process itself cannot generally be determined, as many factors have to be taken into account. Search activity is a professional activity and must include complex elements of a particular company.

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