ABSTRACT: The paper mill in Duszniki-Zdrój was established before 1562. Thanks to the profitability of production, over the centuries it was extended and decorated in the style of a manor house. Since 1968, it has been the seat of the Museum of Papermaking. In recent years, awareness of the historical value of the mill has increased. Thanks to the efforts of the museum, in 2011 the mill was granted the status of a Monument of History, and in the following years, efforts were made to include it in the UNESCO list. The concept of serial nomination of the most valuable paper mills in Europe serves to increase the chances of gaining an entry. The Polish museum is the coordinator of this project. So far, agreements have been signed on joint nomination efforts with the paper mills in Velké Losiny in the Czech Republic and Homburg (district Triefenstein) in Germany, and talks are being held with the paper mill in Ambert in France. Currently, in cooperation with Professor Bogusław Szmygin, the museum is working on a comparative analysis of all the preserved paper mills, which will allow to select 2-3 more partners.

KEY WORDS: Paper, paper mills, paper mill in Duszniki-Zdrój, paper mill in Velké Losiny, paper mill in Homburg, UNESCO list

Introduction

For several decades, paper has been one of the most widely used products in the world. According to data for 2017, a total of 410 million tons was produced in all countries, which is 53.9 kg\(^1\) per statistical inhabitant of the world. Mass production means that the majority of the population has access to paper, and the inhabitants of developed countries can use paper almost indefinitely. Unfortunately, it loses its former cultural significance; today more paper is used for packing

\(^1\) Statistical Yearbook of the Republic of Poland, Warsaw 2018, p. 852.
products than for writing and printing\(^2\), as a result of the development of new technologies for recording, storing and transmitting information. The situation was completely different for our ancestors. Paper, produced in Europe for thousands of years, for almost nine centuries was a rare product, available to a limited number of people, and was used primarily for the preservation of knowledge, the transmission of information and the development and dissemination of culture.

1. The outline of the history of papermaking

Similarly to many other products important to our civilization, paper is a Chinese invention and the way it is produced was mastered in 105 AD.\(^3\) Over the course of several centuries, the art of paper making was transferred from China to neighboring countries. The first European paper workshops were established after the year 1000. They were founded by Arabs on the Iberian Peninsula and probably also in Sicily. In the 13th century, Italy made progress in the development of paper production. One of the main Italian innovations was the use of the flail hammer blade, which was moved by water energy, to process the paper raw materials - linen and hemp rags\(^4\). Since then, the places where paper was manufactured have been called paper mills.

In the following centuries, the art of paper making became established in most European countries. In Poland, the first paper mill was set up before 1490 in Wroclaw, then owned by the Kingdom of Bohemia. In 1491 the construction of the first paper mill in the Kingdom of Poland began - in Prądnik Czerwony near Cracow. At the end of the 16th century, at least 56 paper mills were active in the Kingdom of Poland. According to estimated calculations, their production was five and a half sheets per capita per year, which was a high figure in Europe, considering that in some countries by that time paper production had barely begun\(^5\). In total, nearly 300 paper mills operated in Poland in various periods, and Poland was classified as a significant paper producer.

Since the Middle Ages, several thousand paper mills have been built in Europe. The decline of their epoch came only in the 19th century, with the popularization of factories, where the manual technique of drawing sheets was replaced by a paper machine producing a ribbon of paper. To this day, slightly more than 30 mills have survived, remembering the old times, in which the historical paper-making technique is still used.

\(\text{\(^2\) In Poland, the production of paper for packaging purposes in 2017 was 3.5 times higher than for writing and printing. Calculated on the basis of Godlewska K., Jastrzębski M., Zużycie i produkcji papieru i tektury w Polsce w 2017 r. na tle krajów europejskich [Consumption and production of paper and cardboard in Poland in 2017 in comparison to European countries], ”Przegląd Papierniczy” 2018, no. 11, p. 686.}\)

\(\text{\(^3\) The literature on the subject also includes information on paper production in China since the second and first century BC. Papermaking. Dzieje, [in:] Encyklopedia książki, vol. 2 ed. A. Żbikowska-Migoń and M. Skalska-Zlat, Wrocław 2017, p. 353.}\)


\(\text{\(^5\) Ibidem, p. 319-320.}\)
2. The turbulent fate of the Duszniki paper mill

One of the preserved historical paper mills is located in Duszniki-Zdrój near Kłodzko in Lower Silesia region. Its origins date back to the period when the Land of Kłodzko, as a separate county, belonged to the Kingdom of Bohemia. Today, it is impossible to determine the date of construction of the paper mill in Duszniki. The earliest event known from its history, recorded in 1562, concerned the purchase of a part of shares in the mill by Nicolaus Kretschmer. The Kretschmer family owned the paper mill until 1706. The second representative of this family, Gregor, in 1607 received from Emperor Rudolf II Habsburg a coat of arms, and before 1612 also a hereditary title of nobility, which among papermakers was a rare ennoblement. The fact that after the flood in 1601 he rebuilt and extended the mill in the form of a manor house proves the noble aspirations of the papermaker. The Kretschmer family significantly expanded their market. While in the first decades of their activity they supplied paper to local customers, at the end of the 16th century they had customers in Wrocław. After 1619, Duszniki paper appeared in Moravia, and in 1644 it even reached Warsaw, where it was used, among others, in the office of the Polish king Władysław IV. In 1706, Anton Heller bought the paper mill. The second of the Hellers, Anton Benedikt, introduced an innovative system of processing rags into paper pulp by means of a device called Hollander beater. The innovation allowed to significantly increase production and improve the quality of paper produced in Duszniki. In 1742 Silesia and Kłodzko land were annexed into Prussia, and the papermakers of Duszniki became subjects of the Prussian king. Soon Heller submitted samples of his products to royal officials, and their high quality resulted in granting him the title of court papermaker of the King of Prussia in 1750. During the reign of Heller’s son-in-law Joseph Ossendorf, wall paintings were created inside the mill together with the most famous biblical scene of temptation of Joseph by Potiphar’s wife. Another owner of the company was Antonia Josepha Ossendorf nee Heller, to whom the mill owes the still preserved decorative form of the façade with window rosettes and half rosettes and pilasters. In the 19th century the paper mill lost its importance due to the popularization of machine production technology. The last papermaker in Duszniki, Karl Wiehr, in 1939 sold the deteriorating mill to the town of Duszniki, which planned to use it as a museum.

After World War II, the Kłodzko Land became a part of Poland. The outdated mill was nationalised, but at first the concept of its use was lacking. An important decision for the paper mill was to ensure its legal protection in 1956 by entering it in the register of monuments. In 1966, the mill was handed over to the state paper industry, and its manager was Michał Kowalski, who developed a concept for the functioning of the Museum of Papermaking. The new facility was opened for visitors on 28 July 1968. In 1971, the production of handmade paper was reconstructed, which soon became a significant tourist attraction. During the adaptation of the mill for museum purposes, mysterious paintings were discovered in the attic. They became a big problem for the management of the museum, because at that time there was a lack of funds to protect them. It was not until the mid-1980s that a subsidy for the conservation of the polychrome was granted, and it was made revealed to visitors in 1988. It was supposed that one of the paintings refers to the biblical history of the temptation of Joseph by Potiphar’s wife, but it was not possible to establish a connection between the scene and the mill.
In the years 1992-1998 the museum was subordinate to the Ministry of Industry and Trade. At that time the building was being renovated and the exhibitions were replaced. Museum employees undertook scientific research on the history of papermaking, and over time the institution became the most important research center in Poland dealing with this subject. The good period was interrupted by a flood in 1998, which brought great losses to the mill. In addition, at the beginning of 1999, the museum was taken over by the Lower Silesian Voivodeship. Already in the 21st century the roof and rafter framing were renovated and new rooms of the paper mill were made available to tourists. An important achievement in the field of fire protection of the building was the launch of the internal and external water mist extinguishing system in 2016.

3. Historical research on the paper factory in Duszniki

The interest in the history of the Duszniki mill should be dated at least from the 1880s, when information on the history of the mill was published in a comprehensive study by Friedrich Albert Zimmermann Beyträge zur Beschreibung von Schlesien. German-language studies on the mill’s past were also published in the 19th and early 20th centuries. The great interest of Polish historians in the paper mill was noted over half a century ago, and the most important Polish studies on the paper mill from that period are the historical-architectural analysis of Marian Kutzner and the publication of Wanda Tomaszewska. For the following decades, the findings of German historians from the turn of the 19th and 20th centuries and Polish researchers from the 1960s were used.

Research into the history of the mill was intensified in 2007 with the creation of the magazine "Rocznik Muzeum Papiernictwa" ("The Yearbook of the Museum of Papermaking"). In the first four volumes a dictionary of Silesian paper mills by Rainer Sachs and Dorota Błaszczyk was published, which contains information about the paper mills in Duszniki. Another important study printed in Rocznik, prepared by Dr. Grzegorz Grajewski, concerned the fate of the mill in the first three decades of the 20th century.

In 2016, The Museum of Papermaking initiated cooperation with the Polish National Committee of ICOMOS, whose aim was to develop a management plan for the Monument to...
History. During his visit to the museum, the then president of ICOMOS, Professor Bogusław Szmygin, pointed to the artistic details of the mill - the decorative façade and polychrome, extremely rare in buildings once used for production purposes. Evaluating the current state of research concerning the mill, he concluded that the available analyses do not provide answers to a number of questions necessary to determine the value of the monument. This opinion prompted the museum to initiate new architectural and stylistic research on the mill, which was carried out over the next two years by a team led by Prof. Rafał Eysymont. In 2017, the museum commissioned an expert on Silesian art, Prof. Andrzej Koziół, to conduct a historical and stylistic analysis of the polychrome, which resulted in the determination of the period when the paintings were made, their funder and probable creator. An important result of the research was the reading of the message of individual scenes, including the most interesting and so far most mysterious scene of temptation of Joseph by Potiphar’s wife, as a reference to the fate of the funder of the paintings – the papermaker Joseph Ossendorf. Further analyses concerned the owners of the mill and were carried out by Rainer Sachs, a specialist in archival research. Their effect was to organize the list of papermakers and to determine the achievements and social position of each of them. The results of the research were used in 2018 to develop two publications: a popular scientific book The Paper Mill in Duszniki-Zdrój and a scientific Monograph of the Paper Mill thanks to which today the paper mill in Duszniki is an object with a well-documented history.

4. Increased awareness of the value of the mill

As a result of scientific research and growing interest in the historic building on the part of tourists, in the last decade there was a significant increase in the awareness of the historical value of the mill. The attractiveness of the paper mill resulted in its inclusion by the Polish Tourist Organization on the list of the country’s greatest tourist attractions in 2009. The Museum was included in the publication "The best tourist products of Poland 2003-2012", developed 3 years later, containing certified tourist products of the decade. In recent years, the annual number of visitors to the paper mill has reached the level of about 65 thousand, which makes the facility one of the top three museums in terms of the number of visitors in Lower Silesia.

In 2008, the museum started to work on preparing an application to include the paper mill in the list of Monuments of History. The culmination of 3 years of efforts was the issuing of a decree by the President of the Republic of Poland on 20 September 2011 recognizing the paper mill. 

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15 Szymczyk M., Sachs R., Eysymont R., Balchan J., Monografia młyna papierniczego…
mill as the Monument of History\textsuperscript{17}.

In 2013, the Minister of Culture and National Heritage entered the Museum of Papermaking in the State Register of Museums, which gathers museums of the greatest importance for the national culture. According to the Ministry, "the exceptional character of the profile of the museum, its extraordinary seat, high level of management (...) places this museum institution among the most important ones for the Polish cultural heritage"\textsuperscript{18}.

The inclusion of the paper mill in the UNESCO list of paper mills among the most valuable objects for Polish culture raised questions about the importance of the mill in the international context. Initial analysis of the value of the object carried out inside the museum showed that it stands out from other paper mills in terms of its aesthetics and state of preservation. This encouraged the management of the museum to make efforts to include the mill in the UNESCO World Heritage List. Among the objects connected with papermaking, this prestigious list includes a cardboard and pulp factory and a workers' housing estate in Verli, Finland, dating back to the end of the 19th century. However, the Finnish factory, dating back to the industrial period, used machine production techniques\textsuperscript{19} from the beginning of its existence, thus significantly differed from the mills based on manual paper production.

5. The concept of inscribing the paper mills on the UNESCO list

The inclusion of the paper mill in Duszniki among the most valuable objects for Polish culture gave rise to questions about the significance of the mill in the international context. Initial analysis of the value of the object carried out inside the museum showed that it stands out from other paper mills in terms of its aesthetics and state of preservation. This encouraged the management of the museum to make efforts to include the mill in the UNESCO World Heritage List.

Among the objects connected with papermaking, this prestigious list includes the cardboard and pulp factory and the workers' settlement in Verli, Finland, which dates back to the end of the 19th century. However, the Finnish factory, dating from the industrial period, used machine production techniques from the beginning of its existence\textsuperscript{19} and therefore differed significantly from the mills based on manual paper production. Among the paper mills preserved in Europe, only the paper mills from Velké Losiny in the Czech Republic attempted to be included in the UNESCO list. Between 2002 and 2004, an application for a nomination was prepared, but according to the assessment of ICOMOS submitted to the UNESCO World Committee, the paper mill in Velké Losiny should not be considered according to the proposal of the Czech Republic, but a possibility of preparing a wider range of nominations should be considered, including not only the paper mill in Velké Losiny, but also a series of other objects related to the

\textsuperscript{17} Regulation of the President of the Republic of Poland of 20 September 2011 on the recognition of "Duszniki-Zdrój - paper mill" as a Monument of History, „Dziennik Ustaw” 2011, no 217, item 1282.


The Czech experience indicated that the preparation of a nomination for one paper mill would not be approved by ICOMOS. Therefore, the next step of the Museum of Papermaking was to cooperate with the paper mill management in Velké Losiny in order to prepare a common application. Since the Czech paper mill was already on the UNESCO information list, the museum intended to register the mill in Duszniki on the Polish information list. In 2013, in cooperation with Grzegorz Grajewski, head of the Lower Silesian branch of the National Heritage Institute, the application was prepared for the Polish information list, with the assumption that the application should provide for a cross-border serial registration of mills from Poland and the Czech Republic. On 24 February 2014 the Museum of Papermaking sent the application along with the documentation of the mill to the National Heritage Institute. The Committee for World Cultural Heritage in Poland, evaluating the application, concluded that the paper mill has a chance of being included in the UNESCO list as a serial entry. Therefore, he pointed out the need to recognize the position of the Czech Republic on cooperation in the preparation of cross-border serial registration of mills from Duszniki and Velké Losiny.

Following the Committee’s request, the National Heritage Institute turned to the Narodni Památkowy Ustav (its counterpart in the Czech Republic) regarding possible joint efforts to include the Polish and Czech mill in the UNESCO list. However, the Czech side, despite not seeing any contraindications to such a nomination, stated that it was currently carrying out other tasks. At the same time, it presented a suggestion to consider preparing an entry in accordance with the recommendation of ICOMOS, wider than the two mills. The Museum also intensified its cooperation with the Czech partner and on 15 April 2015 a letter of intent was signed in the paper mill in Duszniki concerning the cooperation between the Polish and Czech institutions in the field of efforts to include both paper mills in the UNESCO list.

In January 2016, the Marshal’s Office of the Lower Silesian Voivodship organized a meeting in Wrocław with the participation of representatives of several departments and directors of both mills: Maciej Szymczyk, Petr Fouček and the head of the European Grouping for Territorial Cooperation NOVUM - Bartosz Bartniczak. The result of the meeting was involvement in the EGTC NOVUM project. It was the EGTC that obtained funding from the Ministry of Foreign Affairs for a conference devoted to the preparation of a joint nomination of Polish and Czech paper mills. It was organized on 6-7 October 2016 in Duszniki-Zdrój under the title "On the

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21 Archive of the Company Museum of Papermaking (hereinafter referred to as AZMP), Letter from the Museum to the NID of 24.02.2014 on the application for inclusion in the information list of the paper mill, ref. no. DN.061, 2014, Vol. II, p. 64.
22 AZMP, Resolution No. 16 of the Committee for World Cultural Heritage in Poland of 23 October 2014, ref. no. DN.062, 2015, p. 46.
23 AZMP, Letter of NHI Director to Museum Director of 10.08.2015, sign. DN.062, 2015, p. 49-51.
path of common heritage". The project was attended by representatives of the authorities of the Lower Silesian Voivodship, the representatives of National Heritage Institute and the Czech Narodn Pamatkowy Ustav (National Monuments Institute), scientists and journalists. During the conference, Anna Fortuna-Marek, representing ICOMOS, presented, among others, an analysis of the paper mill's value as a starting point for the development of a management plan. The conference participants had the opportunity to see and compare the two paper mills.

An important event crowning the efforts of the museum to put the paper mill on the information list was the resolution of the Committee for World Cultural Heritage in Poland, adopted on 30 November 2016, containing a positive recommendation for a serial application with the initial two objects: the Polish paper mill in Duszniki Zdrój and the Czech mill in Velké Losiny. The resolution also included a recommendation to perform a broad comparative analysis in order to possibly extend the application to other facilities.

Following the Committee’s recommendations, the Museum summarized the knowledge about the paper mills still in existence in Europe, in order to identify the sites for which the nomination could be extended. After analyzing the history and characteristics of the individual mills, attention was drawn to the paper mill in Homburg (now a district of the city of Triefenstein in the district of Main Spessart) in Bavaria. The paper mill, with its construction typical of paper mills, is an excellent testimony to the architecture of this type of buildings. However, it is distinguished by the fact that it was originally built in another place, and at the beginning of the 19th century it was dismantled and moved to Homburg.

At the turn of November and December 2017, the second conference on paper mills was held in Duszniki-Zdrój, with the participation of the third partner, Johannes Follmer - a representative of the paper mill in Homburg. During the meeting, a letter of intent was signed concerning cooperation between the paper mills in Duszniki, Velké Losiny and Homburg. At the end of the conference, a meeting of representatives of paper mills was held with the participation of Professor Bogusław Szmygin - President of the Polish National Committee of ICOMOS, which resulted in establishing further activities of the group. The Museum of Papermaking was chosen as the coordinator of the task. In order to prepare as complete a nomination as possible, it was decided to identify further potential partners, initially determining that the nomination should include 5-6 paper mills.

In May 2018, a third international conference was held in Velké Losiny attended by representatives of paper mills from Poland, the Czech Republic and Germany, who confirmed their intention to continue their cooperation.

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25 Current documentation of the Museum of Papermaking. Resolution No. 33 of the Committee for World Cultural Heritage in Poland of 30.11.2016 on the proposal to include the paper mill in Duszniki-Zdrój, portfolio DN.062.16.2017 in the Polish Information List.


27 Current documentation of the Museum of Papermaking. Minutes of the meeting (1 December 2017, Hotel Impresja in Duszniki-Zdrój).
In addition, the need to expand the group to include other mills was identified and further research into the history of individual mills was considered appropriate. Shortly afterwards, cooperation was established with the Richard de Bas paper mill in Ambert in France, one of the oldest paper mills in Europe. In 2019, thanks to the acquisition of funds from the budget of the Lower Silesian Voivodeship, together with the scientific community under the guidance of Professor Bogusław Szmygin, with the participation of Professor Rafał Eysymont, the Museum of Papermaking began to develop the first stage of comparative analysis of European paper mills, which will be part of a common nomination. The study will be used to select other potential partners for serial registration of historical paper mills on the UNESCO list.

Summary

The project, whose original aim was to include a paper mill in the UNESCO list, in the following years transformed into an international initiative of cooperation between museums managing paper mills in Poland, the Czech Republic, Germany and France. As a result of the comparative work currently carried out by the team under the direction of Professor Bogusław Szmygin, all former European paper mills can be compared, the concept may be extended by a further 2-3 mills. The project to include the most valuable European paper mills in the UNESCO list has significantly changed the position of the Museum of Papermaking in Duszniki, which, by coordinating joint activities, has a decisive influence on the entire concept of nomination. The extent of the project requires a huge organizational commitment, which makes it necessary for the Ministry of Culture and National Heritage to support the museum. This could be achieved by co-running of the museum in Duszniki by the Ministry of Culture and National Heritage and the Local Government of the Lower Silesia Voivodeship. The co-management formula would allow for a significant increase in the organizational capacity of the museum and would contribute to a more efficient implementation of tasks related to the preparation of a serial international nomination under the leadership of Poland.

The most important result of the nomination efforts achieved so far from the point of view of the paper mill is the increase in awareness of the historical value of the facility. This is facilitated by scientific research conducted in recent years, thanks to which the mill is now one of the best known relics of the old papermaking industry in Europe. Knowledge of the exceptional value of the object requires taking special care of the mill. In 2016, the entire complex of paper mill buildings was fitted with a water mist fire extinguishing system. Currently, the state administration is designing the construction of a relief canal, which will provide flood protection for the mill.

The need to preserve the historical paper mill in good condition for future generations requires appropriate expenditure on renovation works. It is to be hoped that also in this area, successes will soon come soon, allowing the necessary repairs to be carried out and enabling the rational use of the facility for museum purposes.

Fig. 1 Paper mill in Duszniki-Zdrój, photo: Mariusz Młynarczyk (MKiDN)

Fig. 2 A painting with a biblical scene of temptation of Joseph by Potiphar's wife, photo: Krzysztof Jankowski
Fig. 3 A window rosette, photo: Krzysztof Jankowski

Fig. 4 Using paper according to the old technique in educational classes, photo: Tomasz Szewczyk
Fig. 5 Signing a cooperation agreement between representatives of paper mills from Poland, the Czech Republic and Germany, photo: Krzysztof Jankowski

Fig. 6 Paper mill in Velké Losiny, photo: Krzysztof Jankowski
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