THE VERMION SPINNING MILL IN VERIA

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Summary
Early exploitation of water resources in central Macedonia, Greece, has been crucial to the industrial development of the region [4]. Particularly for the city of Veria, pre-industrial facilities had been in operation since the early 19th century. These facilities foreboded the industrial boom that took place in the area during the 20th century [7]. A representative sample of this industrially mature period is the Vermion water-powered spinning mill, constructed by the coast on the outskirts of Veria in the early 20th century. The cotton mill is regarded as the largest industrial building complex in the area –both in size and production– in which production, administration and residence facilities coexisted. The entire complex spreads on rocky ground and is surrounded by stone walls interrupted by observation towers that form a fortified environment. Typological and morphological features of different origin are combined in the buildings of the complex. More precisely, traits of traditional and ecclesiastical architecture are noted, as well as elements of Continental industrial building architecture. The conclusions of our study derive from a systematic analysis and documentation of historical, architectural and construction principles regarding the Vermion spinning mill.

1. Introduction
Our proposition regarding Vermion’s restoration is based on the conclusions drawn from our dissertation Survey, restoration and reuse of the Vermion spinning mill in Veria written for the Department of Architecture of the Aristotle University of Thessaloniki.

The spinning mill has undergone significant modifications and damages in form and structure since its erection in 1902 until it ceased to operate in 1972. The successive construction phases it went through are revealed by the additions, the changes in the interior arrangement and the modifications of its original form in general, not only due to the modernization of the machinery used, the increase of production and staff, but also to natural damage caused by time and human intervention.

Our proposition aims at presenting the historical analysis and building structure of the industrial complex of the spinning mill.

2. Connection of the spinning mill with the surrounding area
The Vermion spinning mill is located in the region of Agia Triada at the boundaries of Veria city (Fig 1), which is a privileged location as it links the tourist venues of Seli, Koumaria and Tria Pente Pigadia.

The city map has expanded over the last years, yet without approaching the area where the spinning mill is. In the northeast the industrial complex of the mill neighbours the Panorama housing district, while the surrounding area is characterized by sparse residence and recreation facilities. At the boundaries of the walled complex there is the spinning mill P. Pashalidis and Sons S.A. and the hydroelectric facilities of PPC (Public Power Corporation). In the surrounding area, remarkable buildings are preserved, such as Villa Vikella of Dimitrios Vikellas, as well as military facilities.
3. Historical Analysis – Documentation [3]

From the historical analysis of the complex four construction phases have been documented (Fig 2). These correspond in number with the successive changes in the administrative status of the mill. A chronological recording of these phases has been achieved by systematically studying the available photographic material and by in situ observing the building remains. The spinning mill was founded in 1902 by Athanasios Sossidis, Faik Efendis and Ioannis Koulis, who named their company Sossidis Spinning Mills. In 1927, two businessmen, Kanellopoulos and a Turkish individual, constructed a hydroelectric plant and a nearby artificial lake in order to provide water to the factory. The whole of this industrial complex then formed the anonymous company Vermion. Later on, the full ownership of the electric power plant and a considerable part of the land where mills operated passed to Athanasions Sossidis. This business move guaranteed Sossidis an exclusive use of the water resources of the area and the best possible performance for the factory. During this first construction phase, the boundaries of the industrial complex were defined by stony walls that included two observation towers. The complex itself comprised of the main production area, two residence areas for the workers, a machine shop, storehouses and the manager’s residence. Outside the walls, there were two buildings that accommodated about forty families and are now among the oldest examples of organised residential premises for workers in Greece.
When Athanasios Sossidis passed away in 1951 the cotton mill and the power station were sold by his inheritors to the brothers Theodoros, Thomas, Pericles and Konstantinos Lanaras, who at the time were important businessmen from Naousa. The Lanaras brothers only aimed at exploiting the power station, but they were obliged to purchase the entire industrial complex that included the cotton mill. At the end of 1950, the power station and some residential premises for workers were bought by the PPC.

The third construction phase begun in 1966, when the ownership of the cotton mill passed to Pantelis Paschalidis, and lasted until 1972. During this period the building premises and machinery of the mill were modernized, while another building was added to the main production area and a new two storey building was constructed in order to shelter modern mechanical equipment and administration rooms (Fig 3).
The Vermion spinning mill begun to deteriorate in 1972 after a fire broke out in the main production area, thus signifying the beginning of the fourth construction phase. Since then, the remaining buildings of the complex have been used as a repository. The fourth construction phase (Fig 4) was the one during which the most important alterations in the complex occurred, in terms of construction material and typological and morphological structure.

4. Operation of the spinning mill
As far as the procedure of yarn production is concerned, the raw material was purchased in large quantities from ginning houses and local independent cotton producers and was transferred on carriages into the industrial complex, where it was temporarily stored in the repositories. The transportation of raw cotton from the factory’s entrance to the back was made on special wagons with a capacity of 650-750 kilos moving on a trail system.
At the back section of the building an elevator was installed, which lifted cotton to the factory’s first floor. In there, raw cotton was processed in the ‘scutcher’, the only one functioning in a confined area due to health-related reasons; to protect workers from inhaling the dust and the fibres floating in the air by its operation, since it was for opening, cleansing and mixing raw cotton. Then the cotton proceeded to the carders where the first thick wick was formed [1]. The wick was temporarily wound around vertical cylinders, about one meter tall. From the cylinders, in the third phase of processing, the wick passed to the bolts, which made it thinner. The next stage of the spinning process included roving, which converted the wick into a primary form of yarn that would take its final form through its fast spinning on the work-benches. After that, the yarn was wreathed round wooden cone or cylinder-shaped spools called bobbins, and was transferred to the area of the spinning wheels to form hanks. What followed was the packaging of the hanks and their preservation for a while in a room with relative humidity in order to achieve the desired endurance of the product. Later on, the packages were stored in the loft, where the environment was dry and the conditions appropriate for the preservation of the final product. Water canals in the floor of the factory adjusted the humidity levels in each room, which varied at each stage of production, a quite significant detail in ensuring the good quality of the yarn.

The position of the machinery in the space of the factory was directly associated with the cotton spinning process. Machinery was placed in rows, in the centre of the production area, in such a way that circulation aisles formed on either side of it. The spinning wheels, although initially placed in the main production area, were later transferred to the building that was added to the complex during the third construction phase, which communicated with the main production area. Finally, the work-benches, where the production process completed, were positioned near the central entrance of the factory.

Almost until 1950, the factory’s machinery (Fig 5) had been exclusively functioning with water power. Water entered the back of the factory premises via a metallic pipe of 80cm in diameter, setting in motion the water turbine. Then, a big belt rotated the central horizontal shaft, which with smaller belts, shafts and pulleys set the other machines in motion. Later on, the 220Hp water turbine was replaced by an electric motor. After 1945, independent electric motors were installed in some machines allowing for their placement in self-contained rooms. In 1952, at the end of the second construction phase, the existing mechanical equipment of the factory was destroyed.

5. Architecture analysis – documentation [3]

The Vermion spinning mill is a representative sample of the industrial era in the district of Central Macedonia. Its form, structure, construction details and preserved machinery reflect the historical frame and the socio-economic conditions in which the complex developed. Its historical and architectural dimensions combined set it as one of the most noteworthy building complexes in the area.
5.1 Typological - morphological characteristics

The Vermion spinning mill is a building complex of considerable dimensions and is situated within a walled area of 37,000 m$^2$. It comprises nine buildings founded on a sloping rocky ground, the maximum level difference among them being 23 meters. Due to the ground’s important inclination the rooms of the complex were constructed in eight levels. Crude stone supporting walls, almost 50 cm thick, made the creation of these levels possible. The complex has a southeast exposure to benefit from the climate conditions (Fig 6). The architectural survey of the complex was achieved by in situ measurements, which revealed that the total surface area is 4,330 cm$^2$. In the building of the main production area the dimensions of the floor is 16 m x 76 m and the full height, up to the horizontal beams of the roof reaches 9.5 m.

The typological and morphological characteristics of the building bulk are preserved and contribute to the best possible reading of their architecture. The organisation of each room is directly associated with its function and every one of them stands out for its simplicity and distinctness, while the main production area is distinguished by its symmetry and geometry.

The main production area, in particular, resembles in form European industrial buildings of the 19th century and its elevated gabled roof (Fig 3) indicates a typological characteristic of ecclesiastical architecture and is reminiscent of those used in basilica architecture. The building’s elongated form is stressed by two rows of openings, the one over the other, which are framed by carved stones. This exemplifies an effort to imitate the Grecian style of architecture. Another element supporting this argument is the pediment at the east side of the building.

![Fig 6: Section, main view and floor plan of the Vermion spinning mill. Illustration of the complex during the first construction phase (left) and drawings of architectural survey (right).](Survey drawings. Margie Anastasia and Matskani Anna)
5.2 Materials and structure

In constructing the Vermion spinning mill, already sophisticated European materials were used and advanced techniques were adopted. The dominant construction materials in the building are tufa and pine wood coming from the local area, due to easier transfer and economy reasons.

The load-bearing masonry walls are founded on rocky subsoil composed of limestone. In the main production area the 80 cm thick (maximum thickness) circumferential masonry is built of semi-carved tufa rocks of 24 x 45 x 35 cm bound together by lime mortar. The rocks were placed at each side of the masonry walls and the intermediate section was filled by rubble [6]. The structure was reinforced by chainages protected externally by a layer of solid bricks. Chainages were placed at the floor level, under the window ledges, at the middle of their height and at the beginning of their arches. Aiming at reinforcing the masonry, horizontal metal tension rods with an S-shaped tip were integrated into the walls, at lintel height. The masonry walls in the upper floor are 10 cm thinner compared to the walls of the ground floor, so as to minimize its weight and rest it on the formed alcove. The majority of the masonry is externally uncoated and internally coated with lime mortar. In some parts the masonry is replaced by natural rock.

Fig 7: Section (detail) – Load-bearing masonry (exterior) – Drawing illustrating the initial form of the exterior masonry of the main production area.
(Survey drawings. Margie Anastasia and Matskani Anna)
For the same space, in the second and third construction phases, tufa from the local area was used, as well as contemporary materials such as perforated bricks and reinforced concrete. On the floor that was added during the third construction phase, built to shelter administrative offices, the masonry walls are 30 cm thick and built with perforated bricks of 10 cm x 22 cm x 8 cm. The main body of this addition is made of reinforced concrete.

The majority of the floors surviving today, for the most part, are not the original. The ground floor is layered with cement, while during the first construction phase it was covered by compressed earth. Excluding the part that shelters the ground floor, the flooring of the first level is also covered by the same material. This section used to have a wooden floor whose supporting beams were based on the subjacent masonry. Where the production procedure used to start and in the packaging area the solid bricks of the floor survive until today. Concerning lighting, at the two-storey administration area, where direct illumination of the ground floor was not possible, square glass bricks sized 10 cm x 10 cm or round glass bricks of 10 cm in diameter used to be set on the surface of the first floor to indirectly illuminate the ground floor (Fig 8).

Initially, a centrally lifted gabled roof sheltered the main production area. The timber framed walls of the elevated part of the roof were interrupted by a row of successive squared openings and enclosed a wooden floored storehouse. After the fire in 1972 (4th construction phase), the roof was destroyed and then replaced by a gabled one of metallic frame covered with metallic panels. In the supplementary areas of the same building one finds various roof styles such as shed, gabled and hip roofs of wooden frame. French style ceramic tiles produced by the pottery factory Allatini in Thessaloniki were used to cover these roofs. A part of the roof in the yarn packaging and drying sections is covered by French style and origin glass tiles, whereas other rooms have a flat roof made of reinforced concrete or a slightly inclined roof of the same material. In most cases, the roof tops also contribute to the lighting of the spaces under them (Fig 9). This is accomplished through skylights and the elevated part of the roof or, finally, the usage of French style glass tiles.

Fig 8: Details from the building structure. (Margie Anastasia and Matskani Anna)

Fig 9: Roof parts from various sections of the spinning mill. (Margie Anastasia and Matskani Anna)
The 1 m x 2 m openings on the ground floor end in a semicircle arch and are similar in form to those in the first floor, which are 1.90 m x 2.90 m and used to have metallic protective railings. The window openings used to have metallic frames which formed a canabas opening in some parts. In the administrative section of the mill the 1.25 m x 2.5 m window openings are metallic and also form a canabas opening in some parts. The doors on the ground floor, some of which survive today, were double and metallic. On the first floor the opening of the main entrance has been widened and the original door, the form of which is unknown, has been replaced by a metallic sliding one. Finally, the door through which the raw material entered the main production area was also a sliding one.

With regard to the rest of the buildings in the industrial complex, the same construction methods and materials were adopted and utilized as the ones in constructing the main building bulk. The circumferential masonry is made of tufa rocks bound together with lime mortar, and it is lime mortar coated at some parts. An exception to this is the building situated in the far eastern side of the complex, since its walls are utterly timber framed. The same stands for the internal walls. Lastly, the flooring of both the ground floor spaces and the rest of the stories are wooden, while the roofs of the buildings mentioned above are wooden-framed and covered with French style ceramic tiles. The window openings are also wooden and of different types and eras.

Fig 10: Supplementary buildings of the Vermion spinning mill.
(Margie Anastasia and Matskani Anna)

5.3 Building Pathology
The industrial complex has undergone damages and deterioration caused not only due to the ageing of the construction materials and natural factors, but also to destructive human interventions. High humidity levels due to the constructions’ proximity to the river Tripotamos root serious ramifications to every one of its building volumes.

However, the absence of cracks and any divergence in verticality divulge a relatively good condition of the foundations and the absence of ground subsidence.

The load-bearing walls are in good condition. However, some parts have been removed in order to widen the door openings or create additions. Owing to the upward and downward moisture flux, microorganism and grass growth, coating detachment, decortications of the binding mortar and stone corrosion have been observed.

In most of the spaces, the floors have been covered with cement mortar, yet the wooden floors in the floor above the ground one are ill-maintained and are considered to be hazardous. Furthermore, the reinforced concrete ceiling, which was formerly wooden, presents problems due to moisture and oxidation. Moreover, the wooden roofs present static adequacy failures and have collapsed in some rooms, while the ceiling in the main production area has been replaced by a metallic one. The original metallic casings of the openings have not survived until today, while many of them have been sealed with cement mortar or cement blocks.
Apart from the partial subtractions and collapses that occurred in the spinning mill complex, there are buildings that have been entirely destroyed due to natural causes and/or human intervention. The tower that used to be at the northeast entrance of the main production area was brought down once characterized as dangerous because of considerable cracking, and the southern building of the complex partially collapsed during heavy snowing, which was the primary factor of serious damages to the greatest part of the roofing.

Most pathology issues of the industrial complex aggravated by the fire in 1972.

6. Suggestion for restoration and reuse

The systematic analysis and documentation of the Vermion spinning mill contributes in comprehending the historic architectural complex and aims at balancing its aesthetic and historical principles, taking into account its structural design. The use of the complex for other purposes guarantees the constant care of it in the future and, in combination with the compatibility control, it allows for its proper function and financial independency. Restoring and sanitizing the industrial complex suggest the inclusion in it of new uses, compatible with the remaining shells, which would at the same time respect the remaining construction, its history and the surviving machinery [5]. The suggestion for reuse ought to contribute in maintaining and projecting the industrial aesthetics, as this is expressed through the typological and morphological structure of the complex.

We propose the preservation of the construction materials of the complex, the removal of interventions which insult and convulse its character, along with the reconstruction of the removed or collapsed parts [2]. However, all the changes should be distinguishable, revocable and compatible with the original morphological and constructional character of the buildings.

Conclusions

The role of the Vermion spinning mill has been crucial for the history of the city of Veria, since it posed as the principal water-powered industrial facility of the city and as one of the largest in Macedonia, Greece. It is an industrial complex gathering innovations, such as the combination of
multiple usages in the same space as well as material diversity and typological combinations. Valuable information arises from the multiple approach of not only the construction of similar buildings, but also from their function.

The complex is a pure jewellery of the industrial heritage of Veria, and maintains the values which make it a monument, those of authenticity, innovation, quality and symbolism. Nonetheless, this complex has not been acknowledged as listed and its damages augment rapidly since it remains unexploited by the river banks.

The Vermion spinning mill may become an essential subject of research for industrial archaeology, and its recognition as industrial monument could protect both the architectural work of the complex itself and its surrounding environment. However, multidisciplinary collaboration and continuous study are prerequisites for the completion of such a research, on the grounds that new data is possible to be revealed during restoration works.

References