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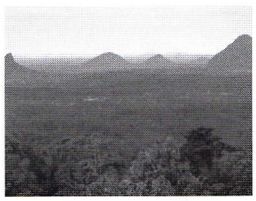

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EUROPEAN INDUSTRIAL AND ENGINEERING HERITAGE AS AN ILLUSTRATION OF CURRENT CHALLENGES IN DEFINING HERITAGE AND ITS USES

PIERRE LACONTE
President, Foundation for the Urban Environment

Figure 1. Surplus land used for water-based recreation as part of the Internationale Bauausstellung (IBA) See Project, 2009. The lake will be filled by 2015, with the water rising to the level of the buildings shown at the left. (Pierre Laconte)

Nowhere is the need for adaptive reuse more evident than in the case of industrial and engineering sites, which are in very large supply as a result of industrial delocalization and accelerated technical obsolescence. This paper intends to show through examples how industrial and engineering heritage has been saved and reused in a contemporary context, while allowing future generations to retain the heritage associated with the sites. Case studies include the conversion of industrial wastelands in Germany into lakes or parks, the saving of a derelict heavy industry complex for education purposes in Czech Republic, and the handling of industrial heritage as part of an urban renewal program in Brussels. This paper cites as examples a number of Europa Nostra's annual heritage awards following the action of Europa Nostra's Industrial and Engineering Heritage Committee (IEHC). One of the Grand Prix was given to a Brussels Art Deco brewery reconverted into an art and cultural complex, while in addition endeavoring to reuse an earlier set of machines from the nineteenth century for educational purposes. Other examples include electricity and gas plants, historic flood control waterworks in Holland, and reuse of steam railway rolling stock. A recurring issue is the reuse of the inside space.

As European industry has globalized and shifted production to emerging countries, it has left high unemployment and many shuttered production plants in its wake. This trend, coupled with declining birth rates in most countries, will lead to a decline in population in the European Union (EU). By 2050, economists project that the EU will comprise just 5 percent of the world's population.

In spatial terms, this means that the EU's industrial cities will shrink. The Berlin-based Shrinking Cities International Research Network, founded in 2004 by Phillip Oswald, conducts and disseminates research on the social, economic, environmental, cultural, and land-use issues of shrinking cities. It analyzes the contributory factors and recommends appropriate interdisciplinary policies to address the phenomenon of shrinking industrial cities, ranging from "green" strategies (including phytoremediation) to "blue" tools (using water as conservation).

Derelict industrial buildings and engineering monuments, sometimes called "the cathedrals of the industrial age," are a form of architectural heritage that attracts increasing attention. Indeed, while churches, civic monuments, and castles have enjoyed attention since the early nineteenth century, the growing stock of abandoned industrial buildings and engineering monuments have only recently begun attracting interest.

Players in Industrial Heritage Preservation

Two organizations have played a major role in the preservation of industrial and engineering heritage:

1. The International Council for Monuments and Sites (ICOMOS)—which is related to the United Nations Educational, Science, and Cultural Organization (UNESCO)—is the global organization tasked with defending international architectural heritage. It includes a large number of officials and professionals responsible for monuments and sites. Activities linked to industrial heritage take place through the work of the International Committee for the Conservation of the Industrial Heritage (TICCIH).[1]
2. Europa Nostra was created in the 1960s in reaction to the wholesale destruction of European heritage that was taking place at the time. As its mission states, Europa Nostra is "the pan-European voice of heritage." Europa Nostra serves as a complement to ICOMOS, and its members occasionally draw on the expertise of ICOMOS professionals. Its core membership includes people who have a special interest in historic monuments and landscapes. This predominantly private membership structure allows Europa Nostra to act freely as an advocate of endangered monuments or sites and to achieve greater influence when arguing for these sites with public officials. The French delegate to Europa Nostra's Industrial and Engineering Heritage Committee is a cosponsor for the next TICCIH congress, which will take place in Lille, France, on September 6–11, 2015.

Specialized sectors of industrial and engineering heritage (such as maritime heritage) have also benefited from the Venice Charter. The charter has been the main inspiration for the Barcelona Charter, which relates to historic railways.[2] Similarly, the Venice Charter influenced the creation of the Riga Charter, which has proven to be a useful guideline for the restoration of both infrastructure and rolling stock.[3]

Large-Scale Industrial Heritage Projects of National and European Significance

The German "IBA" Projects and "the Power of Example"

The *Internationale Bauausstellungen* (IBA, or International Building Exhibitions), which started in Berlin in 1957, were established to function as regional case studies that could serve as models for wide duplication. One famous IBA project was the 1989 creation of Emscher Park, which includes large areas in the Ruhr steel region of Germany (an area that spans over seventy square kilometers). More recent IBA projects, including the project named IBA-See, have addressed Eastern Germany's large-scale industrial wastelands.[4]

IBA-See has successfully demonstrated the reuse potential of industrial wastelands, both by reusing industrial and engineering monuments and by submerging excess land to create new water features. An outstanding example of reuse is the coal conveyor belt in Lichterfeld that was inaugurated in 1989, shortly before the end of the East German State, and was stopped immediately after the merger with West Germany. This compressed timeline of operation made it relatively easy to keep the conveyor belt in good condition. Today, the Lichterfeld coal belt is a major tourist attraction for visitors, although the industrial activities of the site are interpreted rather than reenacted. Elsewhere in Eastern Germany, the transformation of the Fürst-Pückler-Land industrial wasteland demonstrates the

potential for recapturing excess industrial land. At Fürst-Pückler-Land, the superfluous land was submerged underwater, creating an artificial lake that will fill up naturally in a period of six years (Fig. 1). Many other examples of land submergence for recreational purposes can be found in the Leipzig area.

Vitkovice steel complex (Ostrava, Czech Republic) as an educational project of European significance[5]

The Ostrava iron and steel complex (one of the oldest and largest in Europe) was the subject of a conference organized in November 2013 by ICOMOS and the Czech Ministry of Finance. The site and conference drew international interest, given that the iron and steel produced by the Ostrava complex was used by various countries at war in the nineteenth and twentieth centuries and also allegedly for the construction of the Eiffel Tower in Paris. Conference discussions focused on the effort to reuse the complex as a cultural and educational center. The project benefitted from the support of local, national, and international sources (including financial assistance from Norway), since Ostrava and other similar industrial sites illustrate the international significance of Europe's industrial heritage (Fig. 2).

Aided by this monetary support, the Ostrava gas holder was preserved and transformed into a cultural center (Fig. 3). The top floor was transformed into a theatre and concert hall, and additional windows gave natural light to lower floors. Since its restoration in 2012, the new cultural and educational center has received more than 1 million visitors per year. Each part of the former mill site has been made accessible to guided tours (with lifts for visitors with reduced mobility). Further restorations are planned.

Brussels Canal Area and Industrial Heritage within a Larger Urban Renewal Project

Built in 1900 along the Brussels-Antwerp canal, the Royal Warehouse and Maritime Station of Tour & Taxis in Brussels ceased operations in the 1970s as a result of the European market's integration and the consequent redundancy of intra-European customs. Lord Christopher Soames, former European Commissioner and an early Europa Nostra president, and several citizen associations spearheaded a campaign that saved the site's "Jügendstil" main building and adjoining buildings from demolition. In 2001, the Belgian national railways (SNCB-NMBS), owner of the site, sold it for redevelopment to a joint venture of developers Robelco and Leasinvest.

Today, the superb architecture of the Tour & Taxis site has been well preserved. The interior space and floors are intact and have been adapted for multiple service activities. A common master plan, approved by the site's various landowners, will guide development on the rest of the site, which will include housing, offices, exhibition space, and a twenty-nine-acre public park designed by Bas Smets (Fig. 4).[6] A new apartment tower will replace a former warehouse, and elsewhere along the canal, former manufacturing industry has been replaced by housing, hotels (on the former Belle-Vue Brewery site), shopping, and art galleries. In total, more than two hundred significant industrial buildings have been identified in the canal area. The Paris firm of Alexandre Chemetoff & Associés is finalizing

Figure 2. Vitkovice ironworks in Ostrava, Czech Republic. (Pierre Laconte)

a general master plan, and the entire Brussels canal area, which is available for renovation and reuse.

Case Studies: Individual Industrial Buildings and Engineering Features

Europa Nostra's Conservation Awards, awarded annually for fifty years, provide important examples of industrial and engineering preservation. The organization's activity covers all the fields of architectural heritage, fostering exchanges among its members and initiatives towards authorities. Within Europa Nostra, the Industrial and Engineering Heritage Committee (IEHC) seeks to call attention to this type of heritage, mainly through private initiatives. One successful example of these initiatives is that of a pumping station that was transformed into a hotel in a manner that fully respected the Venice Charter.

Europa Nostra's yearly gatherings include the European Heritage Awards ceremony, which draws more candidates with each passing year. The awards are divided into four

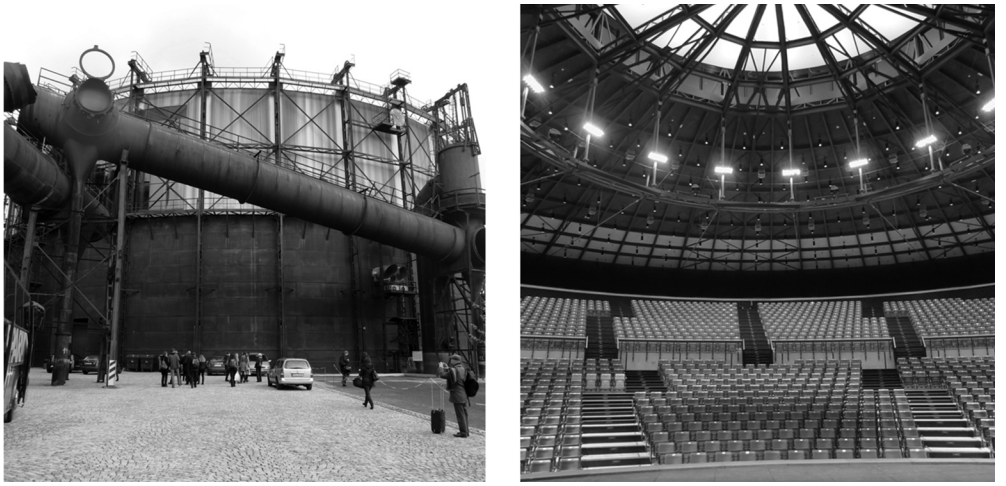

Figure 3. View of the gas holder at Vitkovice complex, Ostrava, Czech Republic (left), and the upper level concert hall constructed within, 2013. (Pierre Laconte)

Figure 4. The Royal Warehouse of Tour & Taxis in Brussels (left), and as seen from the air. (Pierre Laconte)

categories: conservation; research; dedicated service; and education, training, and awareness-raising. Event organizers decided in 2014 to centralize and digitize the entire 50–year archive of the Europa Nostra Awards at the University of Krems (Austria). This archive should be of interest to future studies of the evolution of the notion of heritage—including industrial heritage—from the earliest years of the Venice Charter's implementation to the present.

The culmination of the awards ceremony each year is the proclamation of the Grand Prix. Through IEHC's active support of industrial and engineering heritage projects, the share of these projects in the conservation category, has grown to around a quarter of the prizes. These winners include the 2012 Grand Prix, awarded to the Sagunto blast furnace in Valencia, and the 2013 Grand Prix, which was presented to the exceptional machines at the Wielemans-Ceuppens Brewery in Brussels, Belgium (Fig. 5).

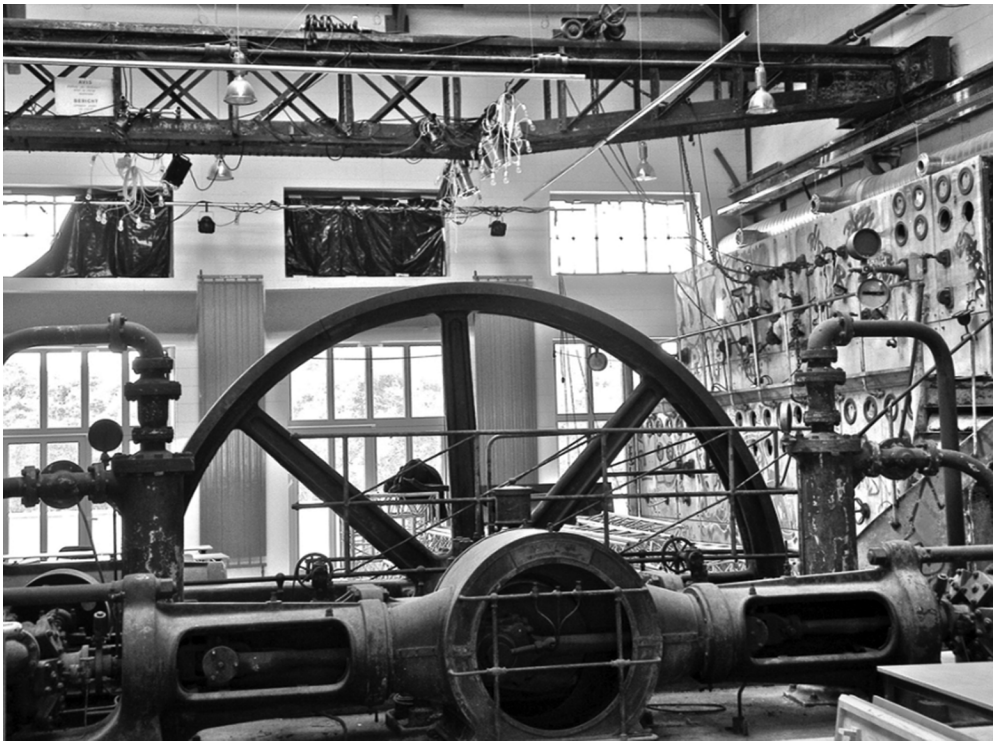

Figure 5. Exceptional machines at Wielemans-Ceuppens Brewery, Brussels, Belgium, 2013. (Pierre Laconte)

The committee also organizes industrial heritage study tours, each one centered on a particular theme. As an example, the 2011 IEHC tour concentrated on the heritage of Dutch waterworks. Among the sites visited that year were the Haarlemmermeer pumping stations, which made it possible in the eighteenth century to drain the large Haarlem Lake. This enabled the construction of Schiphol Airport. (In Dutch, the word "schiphol" means shipwreck.)

A 2010 study tour of Istanbul's early-twentieth century industrial plants examined other best practices for industrial sites. The itinerary included the "Santral" power plant, which is now Bilgin University's conference and exhibition center (Fig. 6). Although the building has been converted to a different use, its industrial machinery has been fully preserved as an attraction for the university's events. In contrast, London's Tate Modern, which is also located in a former power plant, has totally eliminated the industrial and engineering memory of the site.

The special industrial and engineering tour during IEHC's 2013 Athens Congress included a visit to a coal processing plant. This site was transformed into a museum immediately after its closure but preserves some of the historic industrial processes (Fig. 7). For example, the coal gas produced in the retorts still ascends through the vertical tubes to the upper part of the retorts. The tubes lead up to the hydraulic main or "gas trap" (a

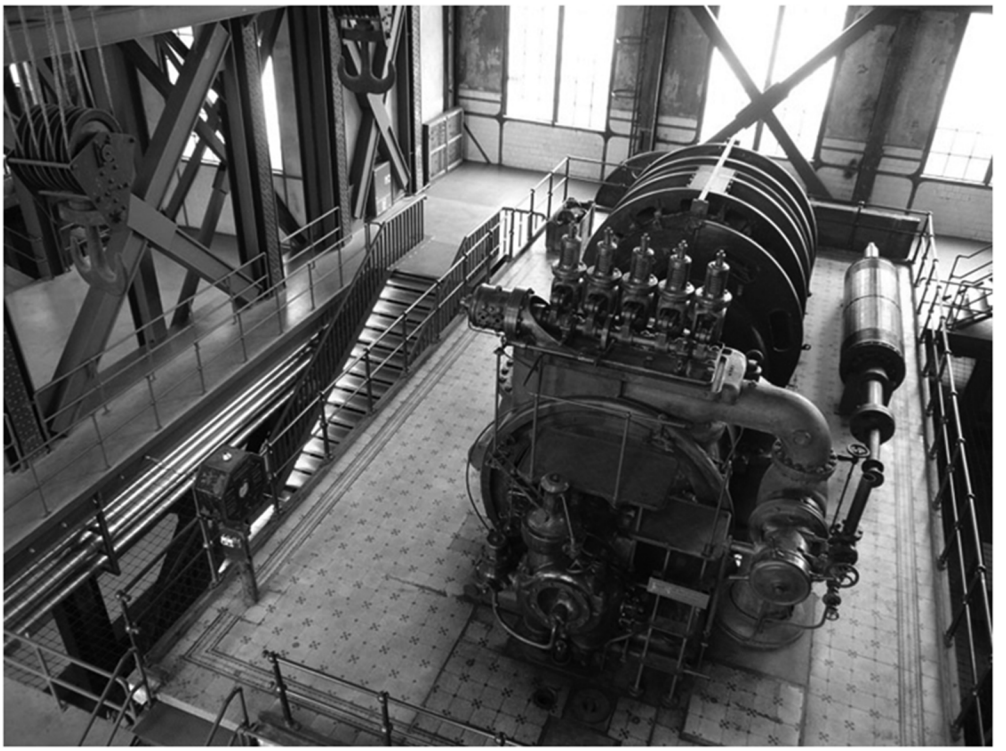

Figure 6. Istanbul's "Santral" power plant (1911) now serves as Bilgin University's conference and exhibition center, 2010. (Pierre Laconte)

large pipe filled with water up to the middle), and the gas passes through the water and accumulates in the upper part of the main.

Industrial heritage tourist trails have also become an important educational tool and have significantly contributed to Germany's tourist income. At the European level, the European Routes of Industrial Heritage (ERIH) is a network ("theme route") of the most important industrial heritage sites in Europe, including the Landschaftspark Duisburg-Nord.[7] Careful signposting helps visitors navigate the sites and understand their original industrial functions.

An interesting field of industrial and engineering heritage study is the history of water management and the prevention of floods. Large-scale land reclamation took place in Holland beginning in the seventeenth century. Using only windmills, the scheme's stakeholders sought to create new agricultural land in the midst of seawater. Speculation on this water-based property soared to levels on par with the tulip bulb boom, as shareholders competed for the right to drain expanding areas of land and convert them to agricultural use. The investment in dams and windmill-powered pumps was to be recouped from the farming income, which did not always provide a return on the investment. Beginning in the nineteenth century, pumping was done by steam engines and later by oil turbines.

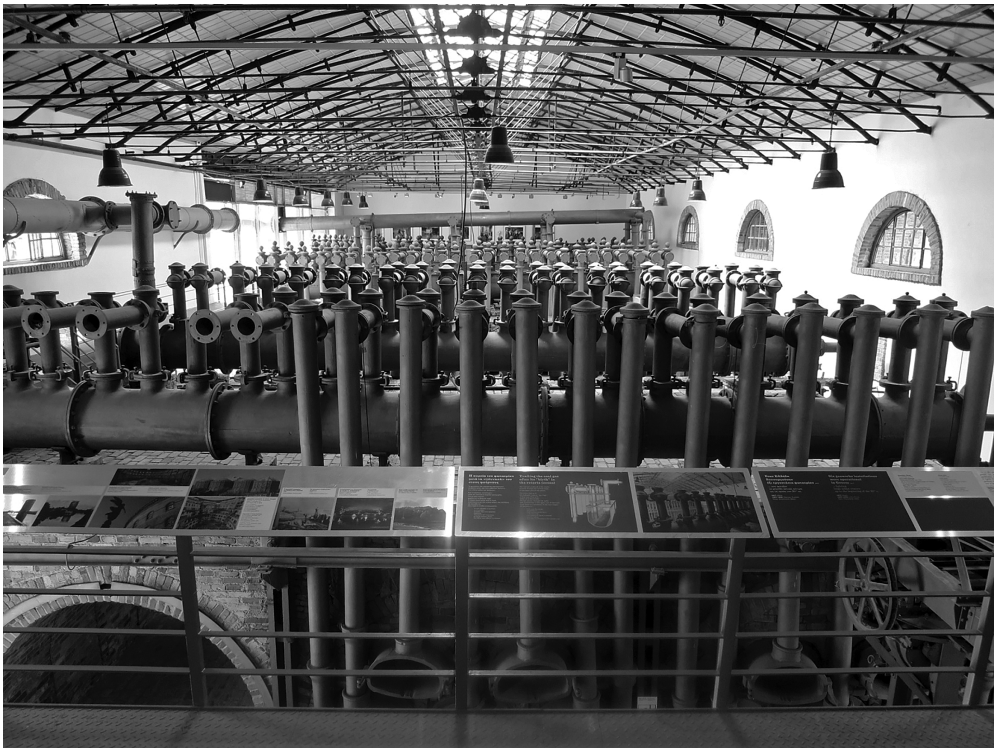

Figure 7. The coal-gas production plant of Athens, Greece, was transformed into a museum immediately after its closure but preserves some of the historic industrial processes, 2013. (Pierre Laconte)

Today, the remaining wind mills have been transformed into housing and museums. Disused water pumping stations have been transformed into meeting places, such as restaurants, while keeping the existing machinery whenever possible. Display models show how the mills created new agricultural land, and the disused machinery is kept in running order for educational purposes. In the event of very high rainfall, which has become more frequent with the changing climate, the pumps are reactivated to manage rising water (Fig. 8).

Old factories served by canals present another interesting aspect of industrial and engineering heritage. As far as possible, they are kept intact but equipped with the latest machinery, in accordance with the Venice Charter. The factory of Wormser, Netherlands, which houses the Lassie rice dehusking, conditioning, and precooking facility, exemplifies this idea by utilizing the former industrial site's century-old brick walls and ships (Fig. 9).

The Vatican offers a final case study of industrial and engineering heritage management in the form of the station and train that Mussolini offered to the pope in 1932 after the reconciliation between Italy and the Vatican. In 2012, the European Federation of Museum & Tourist Railways (Fedecrail) commemorated the eightieth anniversary of this event with a trip from Rome's Vatican station to Orvieto aboard the 1932 papal train, which was rarely used and has been kept in mint condition by Italian Railways volunteers.

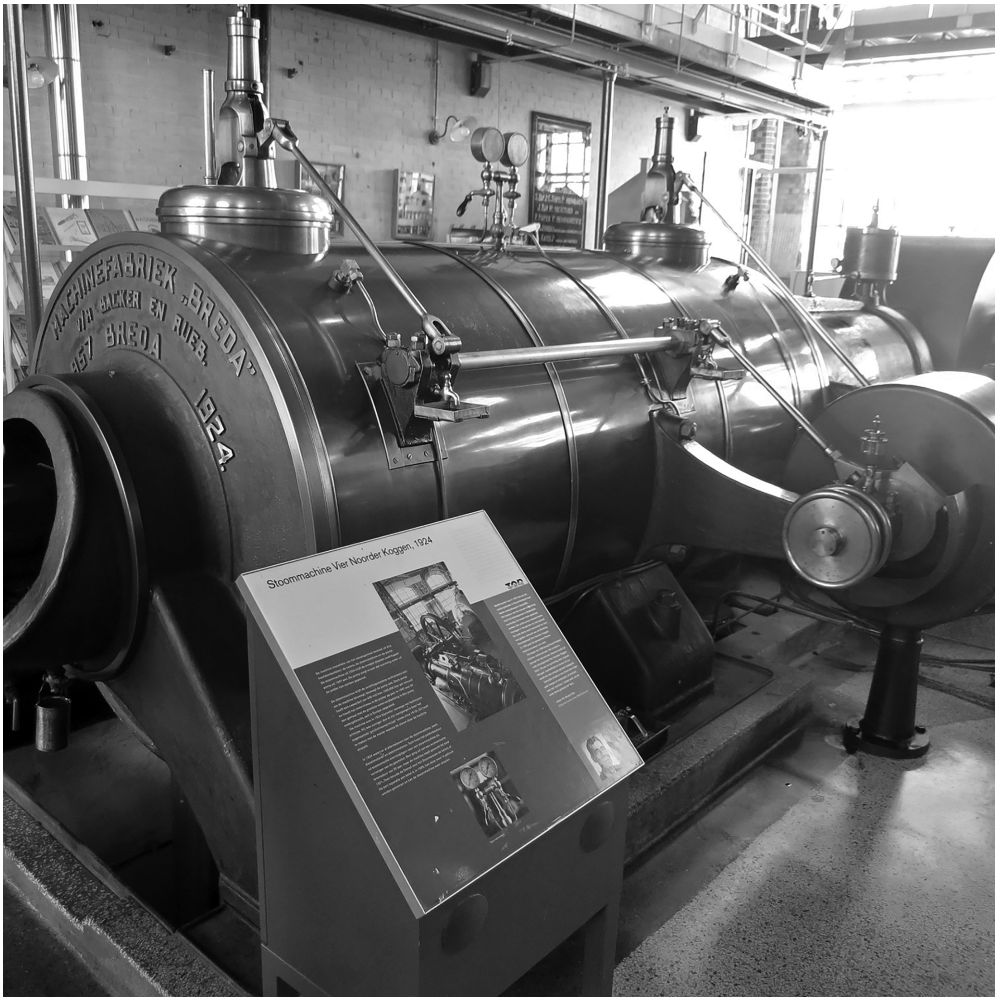

Figure 8. Disused machinery is kept in use for educational purposes and occasional use in times of high water, 2013. (Pierre Laconte)

The Riga Charter, which was inspired by the Venice Charter's guidelines, was used only to check the maintenance process (Fig. 10).

Conclusion

European industrial and engineering heritage is indeed an illustration of current challenges in defining heritage and its uses. The surplus of abandoned industrial buildings and machinery raises interesting issues about what needs to be preserved and how it can be preserved in keeping with the principles of the Venice Charter.

Specific challenges emerge from recent practices, as mentioned in the article:

1. As preservation is considered for an industrial building, complex, or machinery, the current condition of the site plays an important role in the chances of preserving and adaptively reusing it. This was illustrated by the case studies of the East

Figure 9. The modern Lassie rice conditioning plant in Wormser, Netherlands, is housed in a century-old brick building, 2013. (Pierre Laconte)

German coal conveyor belt and the Athens gas plant. In both cases, the preservation and adaptive reuse of the sites (as tourist assets) occurred immediately after the abandonment of the original industrial use. This plan requires that site stakeholders establish a monitoring system with expertise that can detect thefts and prevent the wholesale demolition of potentially valuable machinery.

2. The urban quality of the surroundings also plays a role, as shown in the Brussels canal case. This case study also indicates the importance of the architectural quality of the buildings for their potential restoration investment, which suggests the need for organized synergy between heritage and town planning professionals.
3. With regard to criteria for the preservation of engineering heritage, the importance of machinery in the history of technology plays an important role in site related decisions, as was illustrated by the case study of the exceptional machines

Figure 10. The papal train prepares to cross the Vatican City wall for its heritage tour, 2012. (Pierre Laconte)

in the Wielemans-Ceuppens Brewery. In this instance, the machinery is unique and significant, but funding for its actual preservation and public interpretation has yet to be secured.

4. A major challenge to the adaptive reuse of the buildings is the question of how much of the industrial building and its machinery to preserve. Often, the new owner and his architects want to erase the building's association with its defunct use and replace that impression with the image of the new owner and the talent of the new architects. This approach was illustrated by the construction of the Tate Modern, where the memory of its industrial past was erased with little evidence of its historic features now remaining. In contrast, the Santral power plant in Istanbul found new use as an exhibition center, where the preserved machinery became an attraction in its own. The Santral power plant is therefore of particular interest as an example of respectful adaptive reuse.

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