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Engineering, Culture, Landscape:
the Collection of Crossover Forum

工程 · 文化 · 景观

“ICOMOS-Wuhan无界论坛”论文集

执行主编 · 丁 媛

In November 2013, the second session of ICOMOS-Wuhan "Crossover Forum" was held in HuaZhong University of Science and Technology. The theme of this forum is "Engineering, Culture, Landscape". The forum gathers world-renowned experts in historic preservation from Germany and Belgium, academicians of the Chinese Academy of Engineering, specialists in Exploration Design and many scholars from China. Through an open and in-depth discussion on the topic of "large construction and cultural heritage preservation", researchers and scholars have reached the following consensuses:

Cultural heritage preservation in construction process, especially in large-scaled construction process, is often complicated and involves many factors. It is a worldwide problem to protect heritages that are difficult to preserve yet require high quality preservation process. China is a member of "The World Heritage Convention". Chinese governments, designers and researchers have successfully preserved a batch of highly valued cultural heritages of human kind in planning and construction process. We are pleased to see a number of excellent practices in which cultural heritage preservation is integrated with water conservancy projects, railway construction and bridge construction represented by The Site Protection of Baiheliang Museum of Underwater Heritage. These practices serve as examples and promotions for cultural heritage preservation industry in China as well as the rest of the world. The representatives at the forum initializes "Wuhan Proposal":

1. Integrate all kinds of social forces to achieve the combination of interdisciplinary and cross-industry in the development of heritage protection. With the respect mentality, inheritance responsibility and unbounded feelings, through scientific means of protection, safeguard cultural heritage and keep healthy environment for the projects (especially for large projects) in construction at the same time.

2. To achieve the mutual promotion of projects and protection, engineers and technicians should take the protection of cultural heritage as their own responsibilities. In engineering design and implementation process, realize the values of heritage further and expand the impact of heritage. Spare no effort to protect and pass on the fine Chinese historical cultural heritage.

3. Realize the integration of engineering and art. Engineers and technicians should look for and create beauty in the process of design and construction in an effort to make contemporary projects the cultural heritages in the future.

4. Experts in construction, social activists, politics and wide range of public representatives are welcomed to participate and exchange their points of view on a joint platform and for further promoting of policy and scientific knowledge. Participation of both public representative experts in the processes of cultural and historic heritage preservation and exploitation, regional image of heritage, help to build an advantageous social environment. The above is the voice of all the representatives. We call for the social cultural heritage preservation industry in China in an effort to pass



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Derelict industrial land, a valuable resource for the city of tomorrow—some international best practices of potential consequence to China

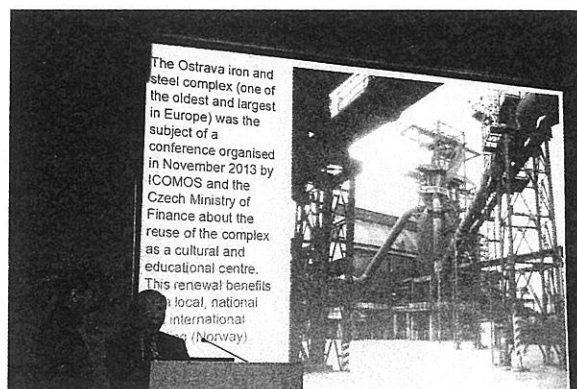
皮埃尔-拉孔特 博士

Dr. Pierre Laconte

Abstract: Nowhere is the need for adaptive reuse more evident as in the case of industrial and engineering heritage, which is in very large supply as a result of industrial delocalization and accelerated technical obsolescence. The 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 keep the memory of its past. It examines among others the reconversion of German large industrial wastelands 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. It takes 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 19th century for educational purposes. Other examples include electricity and gas plants, historic flood control waterworks in Holland and reuse of steam engine rolling stock. A recurring issue is the reuse of the inside space.

Key words: Derelict industrial land, heritage

摘要: 就工业工程遗产来说,对适应性再利用的需要是更加明显的,因为它在工业的变迁以及加速技术的变革当中有很大的应用。本文拟通过实例来阐述工业工程遗产在当代的背景下是如何被保存和再重新利用的,同时让后代记住它的过去。在德国的恢复当中,它将大型的工业荒地变成湖泊或公园;在捷克共和国,为了教育的目的,它把一个复杂的重工业废弃地保存下来;在布鲁塞尔,把对工业遗产的处理作为市区重建计划的一部分。欧盟工业工程遗产委员会(IEHC)每年都会评选出一些年度的欧盟文化遗产奖。其中的一个奖项颁给了布鲁塞尔的一个啤酒厂,它是从一个装饰艺术的啤酒厂改建为一个艺术和文化相结合的啤酒厂,同时它还尽力去为了教育的目的而再利用一些19世纪早期机器。此外,还有荷兰的电力和天然气发电厂,历史性的防洪给水工程,还有蒸汽机的重新利用。一个反复性的问题就是内部空间的重新利用。



皮埃尔-拉孔特博士在会议发言中

1 Europe's de-industrialisation and the oversupply of industrial land

A fall in EU population by 2050 will bring it down to 5% of the world population and entail

numerous shrinking industrial cities (Fig 1).

Shrinking industrial cities have become a worldwide form of de-urbanization, resulting in oversupply of industrial land and buildings.

The Berlin-based “Shrinking Cities International Research Network”, founded in 2004 by Phillip Oswald, conducts and disseminates research on the social, economic, environmental, and cultural and land-use issues of shrinking cities. It endeavors to analyze the different situations and recommend appropriate cross-sectoral and cross-disciplinary policies, ranging from “green” (including phyto-remediation) to “blue” (using water as conservation tool) (Fig. 1).

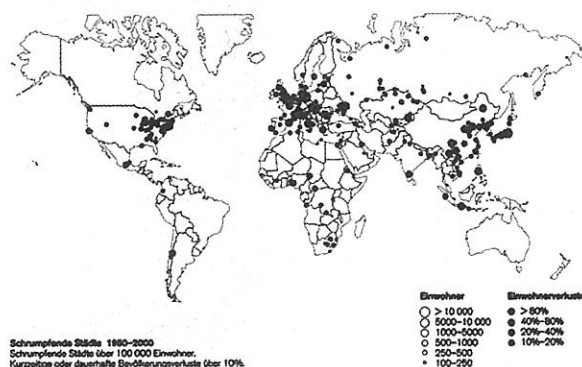


Fig. 1

Derelict industrial buildings and engineering monuments, often called “the cathedrals of industrial age”, are a form of architectural heritage which attracts an increasing attention. Two organizations have played a major role in the preservation of industrial and engineering heritage:

1) The International Council for Monuments and Sites ICOMOS—related to UNESCO—is the worldwide organization defending architectural heritage in general.

It includes a large number of officials and professionals of monuments and sites. Its activities linked to industrial heritage take place through the International Committee for the Conservation of the Industrial Heritage TICCIIH¹.

2) The organisation EUROPA NOSTRA. Europa Nostra is the pan-European voice of heritage. It includes people who live or have a special interest in monuments and sites. It is naturally complementary with ICOMOS. It gratefully uses the expertise of ICOMOS professionals. On the other hand its predominantly private membership allows it to have a total freedom of speech about endangered monuments of sites and a large capacity of intervention towards responsible officials. The next TICCIIH congress “Industrial Heritage in the Twenty-First Century, New Challenges” Lille, 6—11 September 2015, will be co-organised by the French member of Europa Nostra’s Industrial and Engineering Heritage Committee.

Specialised sectors of industrial and engineering heritage, e. g. the maritime heritage, have taken a particular benefit from the Charter of Venice, as it has been the main inspiration for the historic railways

Barcelona Charter². The same took place for railway heritage through the Riga Charter³, which has proven a useful guideline for restoration of both infrastructure and rolling stock.

2 Examples of large-scale industrial heritage actions

2.1 The “IBA See” Project

The Eastern Europe large-scale industrial wastelands have been the theme of “IBA-See”⁴.

IBA-See has most successfully exposed the reuse of industrial wastelands, both by reusing industrial monuments and by drowning excess land:

1) An outstanding example of reuse is the coal belt conveyor that was inaugurated shortly before the end of the East German State and stopped immediately after the merger. It was therefore easy to keep in working condition. It has become a major tourist attraction (Fig. 2).



Fig. 2

2) As to the drowning of excess land, an example is given by the conversion of the Fürst-Pückler-Land industrial wasteland into an artificial lake to be filled naturally in a period of six years (Fig. 3). Many other examples are to be found in the Leipzig area.



Fig. 3

2.2 The case of the large Vitkovice steel complex (Ostrava, Czech Republic)⁵

The Ostrava iron and steel complex (one of the oldest and largest in Europe) was the subject of a conference organised in November 2013 by ICOMOS and the Czech Ministry of Finance about the reuse of the complex as a cultural and educational centre. This renewal benefits from local, national and international funding (Norway) (Fig. 4).

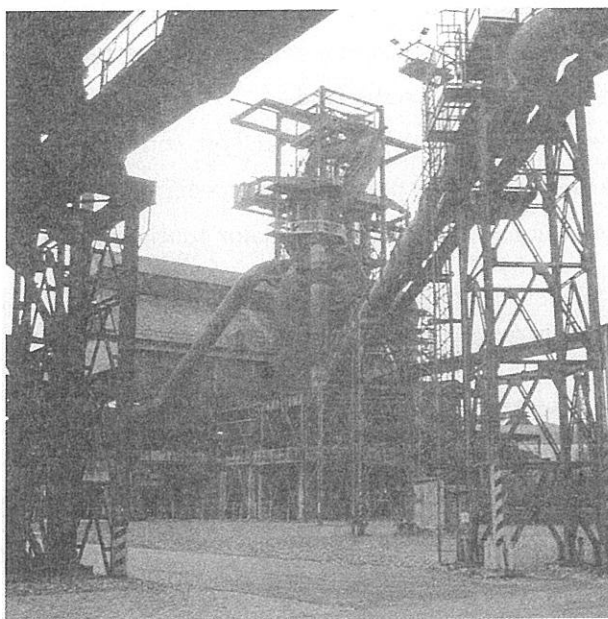


Fig. 4

Its gas holder was preserved and transformed into a cultural centre (Fig. 5).

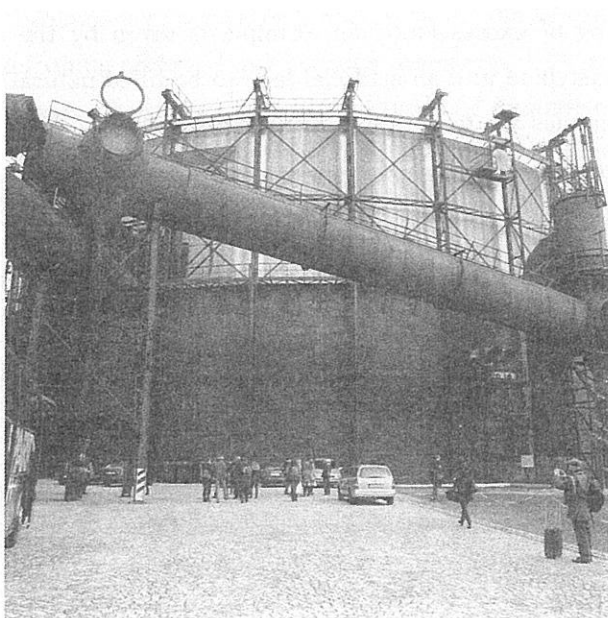


Fig. 5

The top floor was transformed into a theatre and concert hall (Fig. 6).

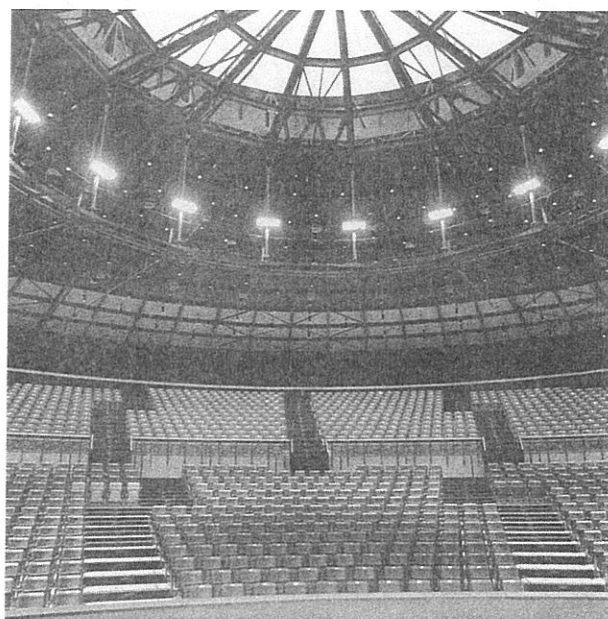


Fig. 6

Added windows gave natural light to lower floors (Fig. 7).

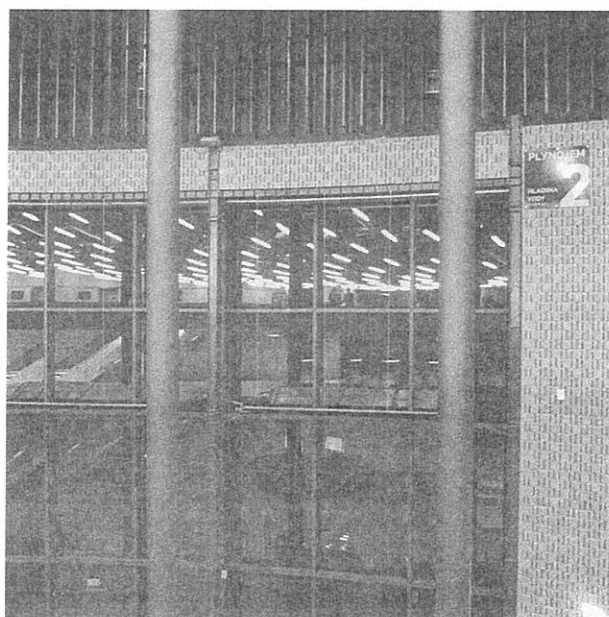


Fig. 7

Cases like the one of Ostrava illustrate the transnational significance of Europe's industrial heritage. The iron and steel produced by this complex was used by successive belligerents and also allegedly for the building of the Eiffel Tower in Paris.

Since its restoration in mid-2012, the new cultural and educational centre has had more than 1 million visitors per year. Further extensions are planned (Fig. 8).



Fig. 8

2.3 Industrial heritage handled as part of an urban renewal project: the case of Brussels canal area

The royal warehouse of Tour & Taxis in Brussels stopped its activities in the seventies as a result of the European market integration. Its turn of the century main building was saved from demolition thanks to a campaign triggered by Lord Soames, an early Europa Nostra President. The site was transferred with conditions to a joint venture between three developers. Its superb Jüгенstil architecture has been well preserved and the interior floors were kept and adapted into multiple service activities (Fig. 9).

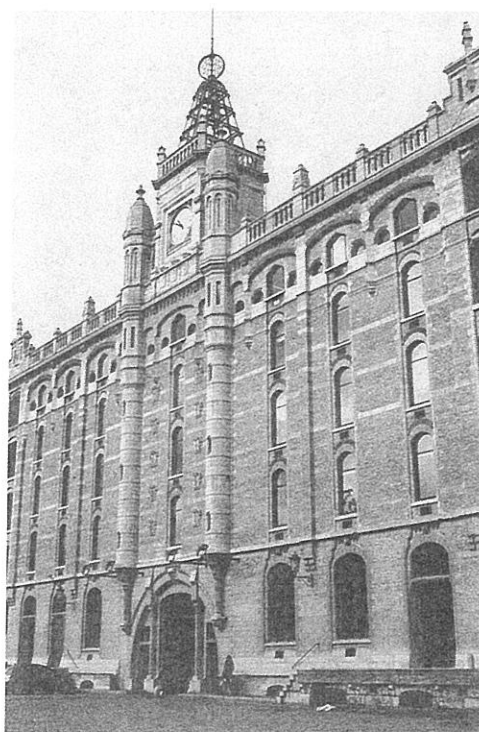


Fig. 9

By contrast the celebrated manufacture textile plant in Lodz (Poland), of similar quality, was sold to developers without strings and largely rebuilt as a shopping center, keeping the brick walls.

As to the Tour & Taxis warehouses, a common master plan for the site was accepted by the different land owners. It includes housing, offices, exhibition space and a 12-ha public park, designed by Bas Smets⁶ (Fig. 10).



Fig. 10

The entire Brussels canal area is presently open for renovation.

A general master plan is being elaborated (2014) by Alexandre Chemetoff & Associés, Paris. The apartment tower on the right replaces a former warehouse (Fig. 11).

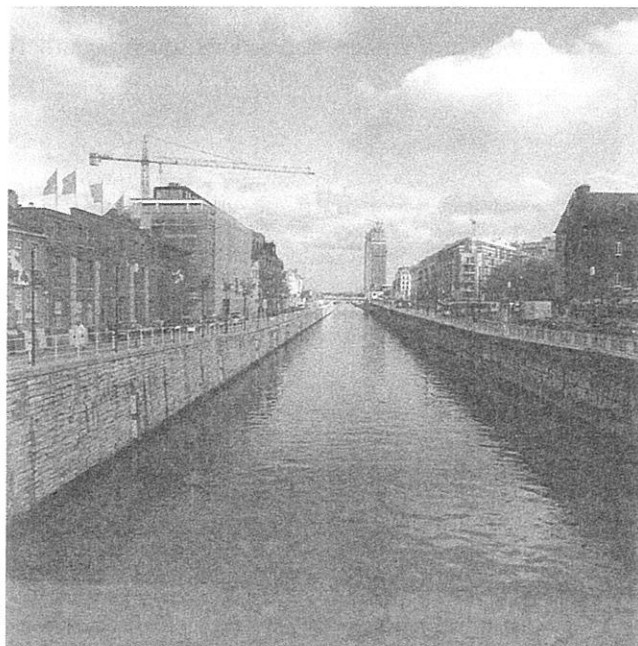


Fig. 11

All along the canal former manufacturing industry is replaced by housing, hotels (on the former Belle-Vue brewery), shopping and art galleries (Fig. 12). More than 200 industrial buildings of heritage interests have been identified.

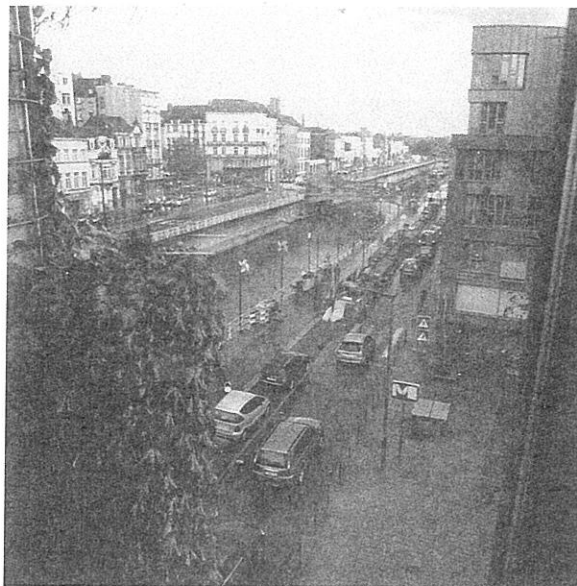


Fig. 12

3 Examples of industrial buildings and engineering features

An important source of examples of industrial and engineering preservation is provided by the Europa Nostra's Conservation Awards. Europa Nostra's activities cover all the fields of architectural heritage. It organizes exchanges of experience among its members and actions towards authorities (Fig. 13).

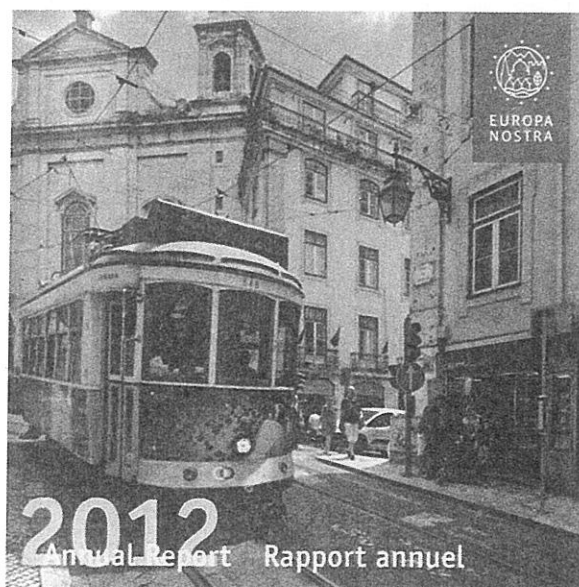


Fig. 13

Within Europa Nostra the Industrial and Engineering Heritage Committee (IEHC) is endeavoring to draw attention on this type of heritage, mainly through private initiatives. Herewith a pumping station is transformed into a hotel, fully respecting the Venice Charter (Fig. 14).

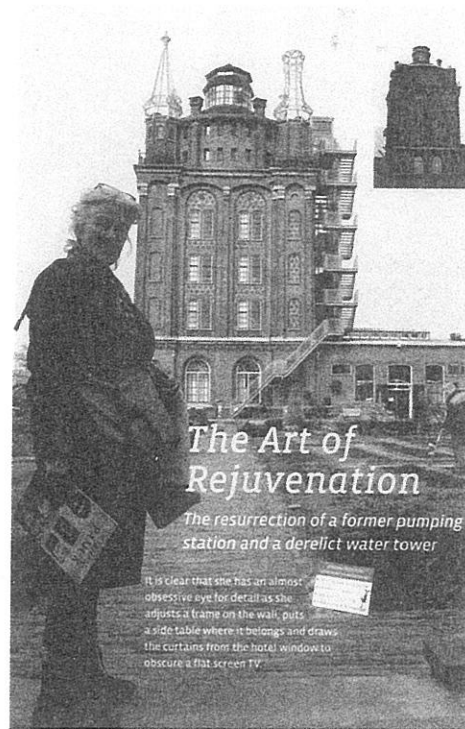


Fig. 14

Europa Nostra's yearly congresses include the European Heritage Awards ceremony and proclamation of its Grand Prix.

Each year there are more candidates for these awards. Through IEHC's active support of industrial and engineering heritage projects, the share of these projects in the conservation category is now (2013) around one-fourth of prizes. These include the 2012 Sagunto blast furnace Grand Prix (Fig. 15) and the 2013 exceptional machines of Wielemans-Ceuppens Brewery, Brussels, Belgium Grand Prix (Fig. 16).



Fig. 15

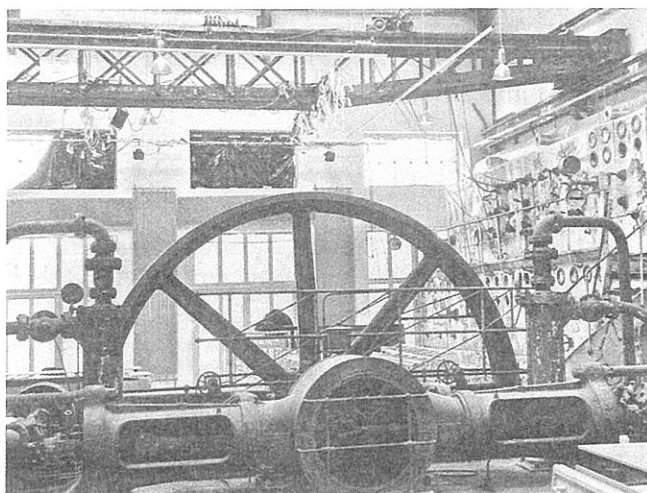


Fig. 16

IEHC is active at Country Assessment level and within the European Conservation Prize Jury. The Awards are divided into four categories:

- Conservation
- Research
- Dedicated service
- Education, training and awareness-raising.

IEHC also organizes industrial heritage study tours. As an example the IEHC 2011 tour included the Dutch waterworks heritage, including the Haarlemmermeer pumping station; herewith, participants to the Amsterdam congress IEHC tour listened to the explanations by Ir. Hans Pluckel, Commissioner, Hoogheemraadschap Rijnland (Fig. 17).



Fig. 17

Other examples of best practice, explored at a study tour (2010) in Istanbul include the “Sentral” power plant (now Bilgin university conference and exhibition centre). It has fully

preserved its machinery, an attraction of its own for its events.

By contrast the London's Tate Modern, also located in a former power plant, has totally eliminated the industrial and engineering memory of the place (Fig. 18).

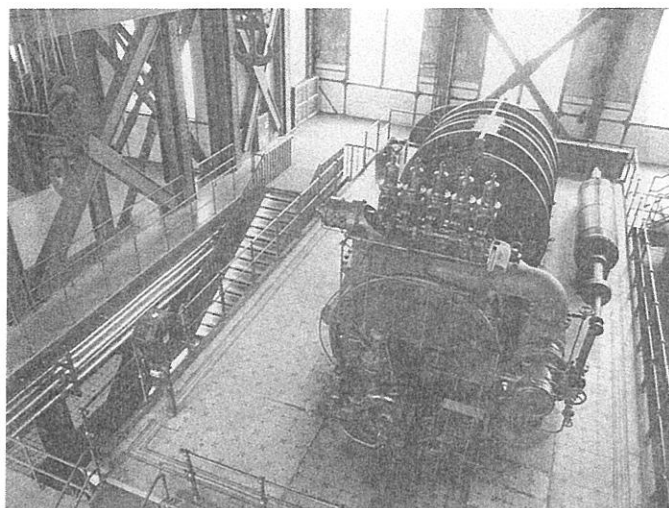


Fig. 18

The special industrial and engineering tour during the 2013 Athens Congress included a visit to a coal processing plant transformed into museum immediately after its closure.

The coal gas produced in the retorts ascends through the vertical tubes to the upper part of the retorts. The tubes lead up to the hydraulic main or “gas trap”, a large pipe filled with water up to the middle. The gas passes through the water and accumulates in the upper part of the main (Fig. 19).

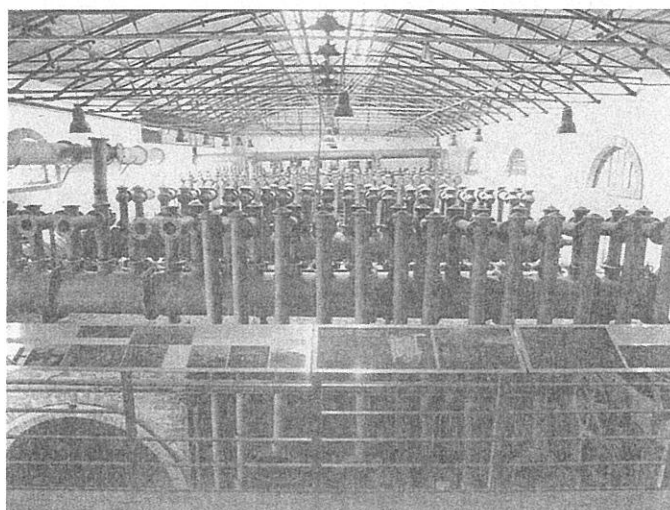


Fig. 19

Industrial heritage tourist trails have become an important part of tourist income in Germany. At European level, the *European Route of Industrial Heritage* (ERIH)⁷ is a network (theme

route) of the most important industrial heritage sites in Europe, for example the Landschaftspark Duisburg-Nord (Fig. 20). Careful signposting helps visitors (Fig. 21).

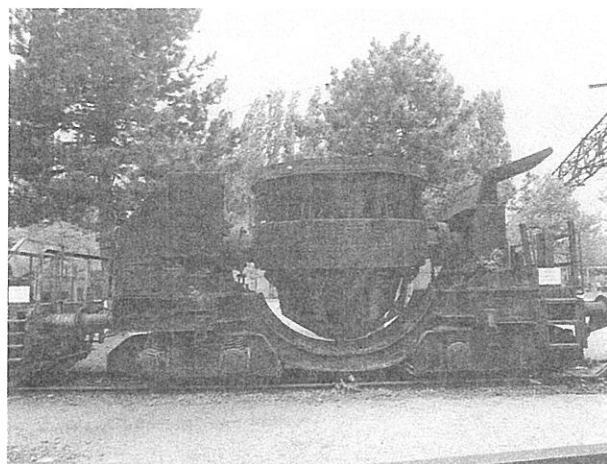


Fig. 20



Fig. 21

An interesting field of industrial and engineering heritage study is the history of water management. Large scale land reclamation had taken place in Holland since the 17th century, aimed at creating new agricultural land, on formerly sea water, using exclusively wind mills, collectively owned by the stakeholders (Fig. 22).



Fig. 22

Speculation on water squalled the one on tulip bulbs. These wind mills have been transformed into housing or in some cases into museums (Fig. 23).

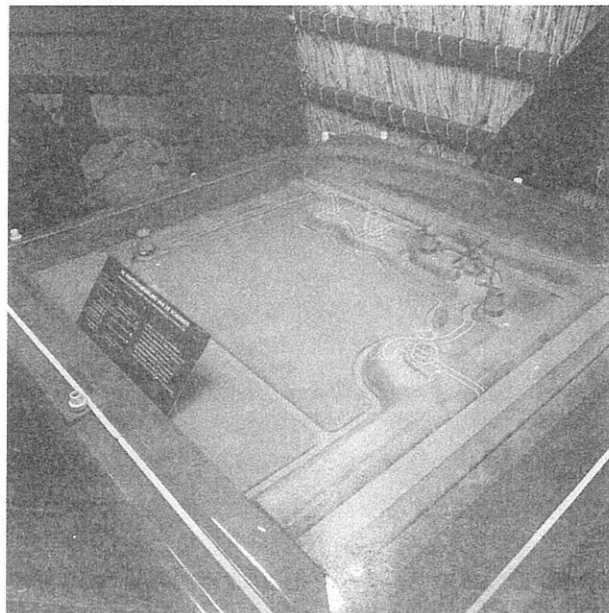


Fig. 23

The model shows how the mills pumped the water and created new agricultural land.

From the 19th century, pumping was done by steam machines and later by fuel turbines. The disused machinery is kept in running order for educational purposes and occasionally reactivated in case of very high rains, which have recently been rising in frequency (Fig. 24).

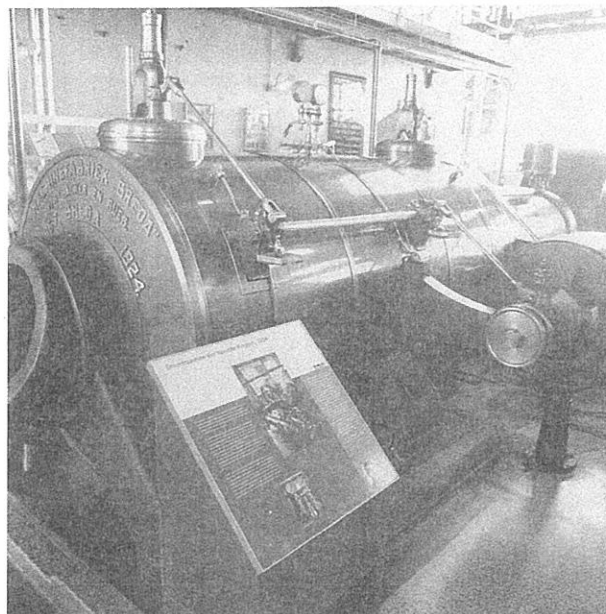


Fig. 24

Disused water collectors can be transformed in meeting places such as restaurants, keeping the existing machinery whenever possible (Fig. 25).



Fig. 25

Old factories served by canals are another interesting example of industrial and engineering heritage, and application of the Venice Charter. In as much as possible, they are kept intact, but equipped with the latest machinery, in accordance with Venice Charter. Herewith a rice conditioning and precooking plant hosted in century old brick walls and served by century old ships (Fig. 26).

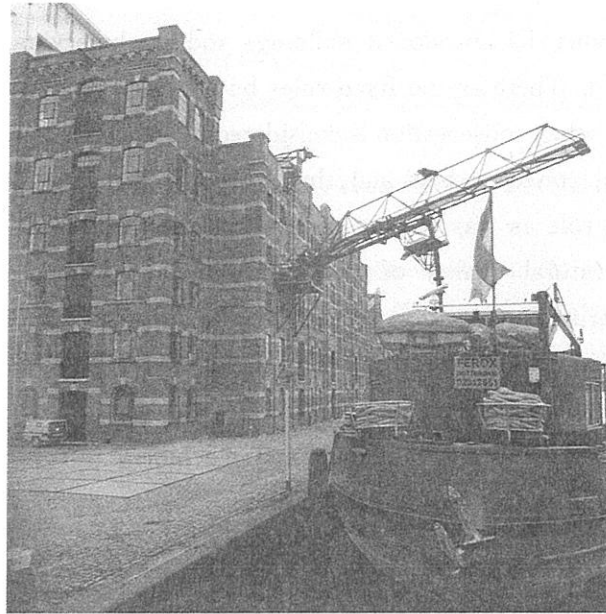


Fig. 26

A fine example of industrial and engineering heritage is provided by the station and train offered by Mussolini to the pope in 1932 after the reconciliation between Italy and the Vatican. In 2012, a trip took place from Rome's Vatican to Orvieto, using the 1932 papal train, hardly ever used and in mint condition. As no restoration was needed the Venice Charter guidelines were not needed either. Hereby the papal train was ready to cross the Vatican City wall for its heritage tour (Fig. 27).



Fig. 27

4 Conclusion

European industrial and engineering heritage is indeed an illustration of current challenges in defining heritage and its uses.

The oversupply of industrial abandoned buildings and machinery raises interesting issues in what needs to be preserved. There are no fixed rules but the state of conservation of the buildings and machinery at the time when conservation is considered plays an important role, as was suggested by the East German coal conveyor belt and the Athens gas plant. The urban quality of the surroundings also plays a role as was shown in the Brussels canal case, which also indicates the importance of the architectural quality of the buildings in deciding about the investment on restoration. As to engineering conservation criteria, the importance of the machinery for the history of techniques plays an important role for deciding about restoration, as was shown by the exceptional machines of Wielemans-Ceuppens Brewery case.

As to the adaptive reuse of the buildings and machinery a recurrent issue is the inside conservation and restoration of the abandoned buildings. The frequent wish of the owner and his architects is to erase the image of the defunct uses and users by the image of the new owner and the achievements of the new architects. This was illustrated by the Tate modern case, by opposition to the Istanbul power plant reuse as exhibition centre. The preserved machinery became an attraction on its own. The Istanbul central power plant is therefore of particular interest.

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Caption List

Table 1: A fall in EU population by 2050 will bring it down to 5% of the world population and entails numerous shrinking industrial cities.

Source: United Nations Department of Economic and Social Affairs/Population Division 5. World Urbanization Prospects The 2007 Revision.

Figure 1: Schrumpfende Städte 1950-2000. Schrumpfende Städte über 100 000 Einwohner. Kurzzeitige oder dauerhafte Bevölkerungsverluste über 10%. (Shrinking cities 1950-2000. Shrinking cities over 100 000 inhabitants. Short-term or long-term population losses over 10%.)

Source: Oswald, Ph., “Atlas of Shrinking Cities”, Hatje Cantz 2006.

Figure 2: The photo shows a 300 m. coal conveyor which stopped to be used soon after its inauguration in 1989 and is now a major tourist attraction.

Source: <http://www.iba-see2010.de>

Figure 3: Surplus land is also used as water recreation as part of IBA See Project (lake to be filled by 2015, up to the buildings on the left).

Source: Photo Pierre Laconte, 2009.

Figure 4: Vitkovice complex, general view of the steel mill.

Source: Photo Pierre Laconte, 2013.

Figure 5: Vitkovice complex, view of the gas holder.

Source: Photo Pierre Laconte, 2013.

Figure 6: Vitkovice complex, view of the upper level concert hall.

Source: Photo Pierre Laconte 2013.

Figure 7: Vitkovice complex, view of the gas holder intermediate levels.

Source: Photo Pierre Laconte, 2013.

Figure 8: Vitkovice complex, view of the architectural models.

Source: Photo Pierre Laconte, 2013.

Figure 9: The Royal warehouse of Tour & Taxis in Brussels.

Source: Photo Pierre Laconte, 2013.

Figure 10: The Royal warehouse of Tour & Taxis in Brussels from the air.

Source: Internet.

Figure 11: General view of the Brussels canal.

Source: Photo Pierre Laconte 2013.

Figure 12: The Canal at the Dansaert area.

Source: Photo Pierre Laconte 2013.

Figure 13: View of the Lisbon historic tram

Source: Photo Europa Nostra.

Figure 14: A Dutch pumping station transformed into hotel.

Source: Europa Nostra.

Figure 15: Blast Furnace, Sagunto, Spain-Grand Prix 2012.

Source: Europa Nostra.

Figure 16: Exceptional Machines of Wielemans-Ceuppens Brewery, Brussels, Belgium.

Source: Photo Pierre Laconte 2013.

Figure 17: The Harlemermeer pumping system explained to IEHC industrial heritage tour participants.

Source: Photo Hildebrand De Boer 2012.

Figure 18: Istanbul “Sentral” power plant 1911.

Source: Photo Pierre Laconte 2010.

Figure 19: Coal-gas production plant of Athens.

Source: Photo Pierre Laconte 2013.

Figure 20: Landschaftspark Duisburg-Nord.

Source: Photo Pierre Laconte 2013.

Figure 21: Tourist explanatory poster in the Ruhr area.

Source: Photo Pierre Laconte 2013.

Figure 22: Windmills used for pumping water to create new agricultural land (Polders).

Source: Photo Pierre Laconte 2013.

Figure 23: Model showing how the water collection through wind mills was functioning. Source: Photo Pierre Laconte 2013.

Figure 24: Disused machinery kept functioning for education purposes and occasional use in case of high water.

Source: Photo Pierre Laconte 2013.

Figure 25: Waterworks transformed in restaurant while keeping the original machinery Source: Photo Pierre

Laconte 2013.

Figure 26: Modern rice conditioning plant housed in a century old brick building.

Source: Photo Pierre Laconte 2013.

Figure 27: Papal train ready to cross the Vatican City wall for its heritage tour.

Source: Photo Pierre Laconte 2012.

Biography

Pierre Laconte, Abdijdreef 19, 3070 Kortenberg, Belgium, pierre.laconte@ffue.org.

President, Foundation for the Urban Environment, set up in 1999 to explore synergies between land-use (including heritage), transport and environment/energy issues (www.ffue.org). Chair, Industrial and Engineering Heritage Committee of Europa Nostra, the pan-European heritage association (www.europanostra.org) and expert member of the ICOMOS CIVVIH. Author of the desk-review report about the Amsterdam Canals' candidacy to be included on the World Heritage list (<http://www.ffue.org/?s=singel>).

Was one of the three partners (with R. LEMAIRE, co-founder of ICOMOS, and J. P. Blondel) of Groupe Urbanisme-Architecture, created in 1969 by the Catholic U. of Louvain. It produced the Master plan of a new university town, near Brussels, and co-ordinated its implementation. This new town, called Louvain-la-Neuve, was built along the model of traditional European university towns. It includes a new railway station and many energy and water-saving features such as a reservoir treated as a lake. Its centre is car-free. Its shopping mall, linked to the station, attracts 8 million visitors per year. Abercrombie Award 1982 of the International Union of Architects (see French publication <http://www.ffue.org/?s=certu>).

M., Akademie der Künste, Berlin (Sektion Baukunst); Board M., Club of Rome-EU and author of its report about global-local issues (www.clubofrome.at). Publications in English include: "Brussels: Perspectives on a European Capital" (which shared the Society for Human Ecology 2008 Award for best publication of the year), "Water Resources and Land-Use Planning: A Systems Approach" and "Human and Energy Factors in Urban Planning: A Systems Approach" (both in 1982).