

THE SECOND LIFE OF INDUSTRIAL BUILDINGS

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The second life of industrial buildings

Introduction

The process

- Basis
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- Development of cities, change of situation of industrial buildings in the city structure
- Development of industrial technologies, thus changes in the requirement concerning industrial buildings
- Changes in economical structure

These caused a significant part of American and Western European plants and factories to close in the last third of the 20th century, in Central and Eastern Europe, and thus in Hungary as well parallel with the political change.

The reutilisation and the change of function in former factories and warehouses has become accepted.

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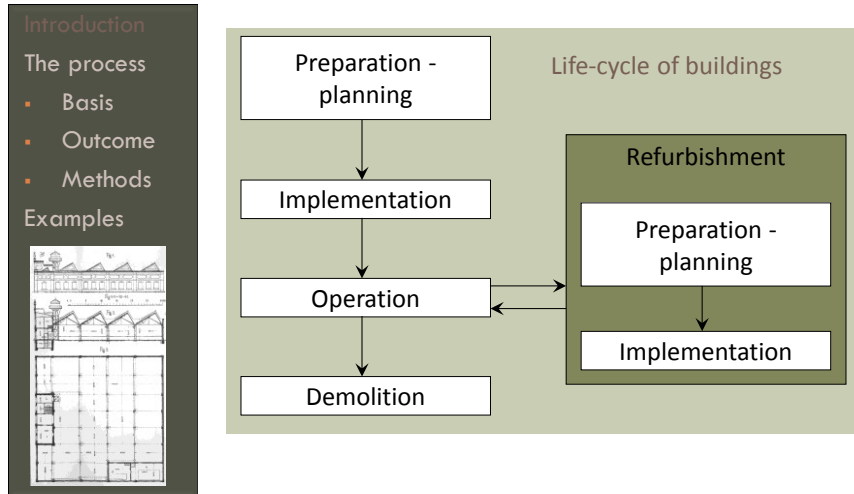
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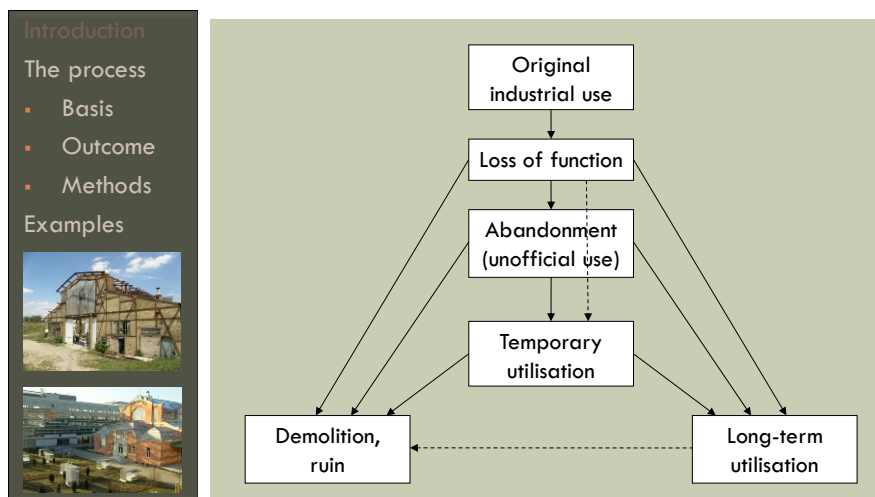


- The decision between destruction and reuse is affected by economical and technical aspects as well as the question of preservation of built heritage
- To achieve a good result it is necessary to examine reuse projects the conditions and the connections of the reuse and the relevant areas, such as
 - ▣ urban conditions;
 - ▣ brownfield issues;
 - ▣ buildings, their structures, materials;
 - ▣ the technologies of refurbishment, strengthening structures and other interventions.

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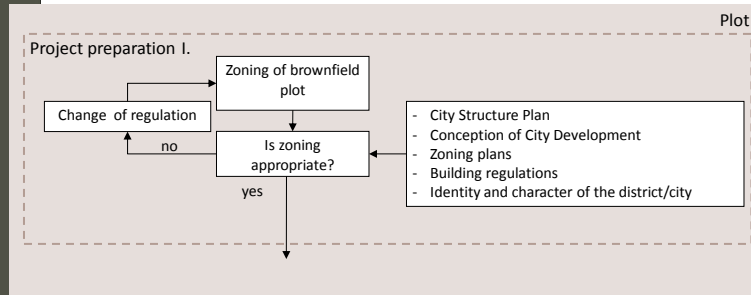
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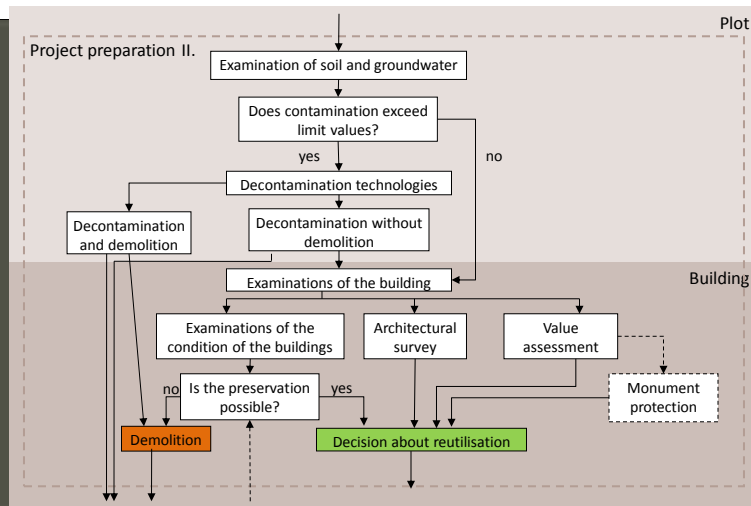
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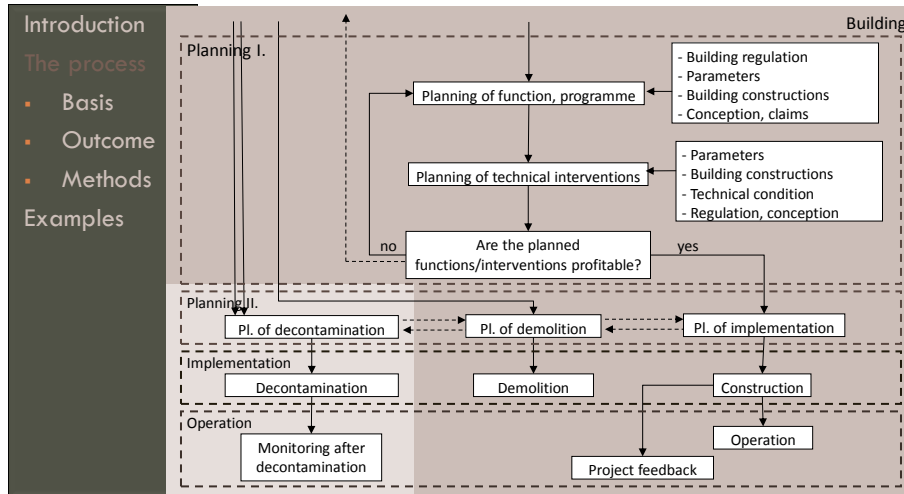
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- The location of the building – three zones in the city structure
 - ▣ Internal zone;
 - ▣ Interim zone;
 - ▣ External zone.
- Brownfield definition:
 - ▣ abandoned, under-utilised industrial, commercial and vehicular areas, where the probable contamination raises difficulties in the rehabilitation.
- The process of decontamination and its consequences

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- Examinations of the building (surveys)
 - Research of written sources and other documentation – plans, building journal, bills, photographs, paintings and the recollection of the late users;
 - Architectural survey;
 - Inspection (building element method, or by list of rooms);
 - Non-destructive tests;
 - Removing the coverings;
 - Sampling (destructive tests).
- The building constructions and their condition depends on
 - The original construction technologies, building materials and constructions
 - The former use, maintenance and refurbishments
- Surveys shall fit the structure's significance and the expected result!

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Types of tests and object of the tests	Steel, cast iron	Wood	Concrete, reinforced concrete (stone, brick, mortar)	Building structures
Visual inspection (structural survey, discovering defects and determining the further tests required)	X	X	X	X
Checking the displacement and deformation				
Geodetic or traditional methods	X	X	X	X
Crack testing microscope	X	X	X	X
Photogrammetric survey				X
Surface, near-surface quality, strength				
Knocking	X	X	X	X
Brinell-, Rockwell-, Vickers-hardness tests	X			
Poldi-hammer	X			
Crack testing by magnetic field deterioration	X			
Schmidt-hammer, swinging hammer			X	X
Surface sticking and tensile tests			X	
Strength tests, homogeneity				
Ultrasound tests	X			
X-ray tests	X			
Ultrasound concrete tester			X	
Corrosion tests with inspectoscope	X			
Moisture tests				
Measuring the electric conductivity		X	X	X
Measuring the water absorption			X	X
Temperature measurements				
E.g. infrared thermometer	X	X	X	X
Infrared thermography				X
Searching for metals				
Metal indicating probe			X	X
Magnetic induction tool			X	X
Inspectoscope			X	X
Supporting structure test with test loads				X

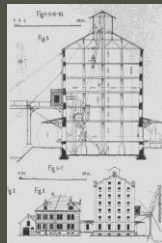
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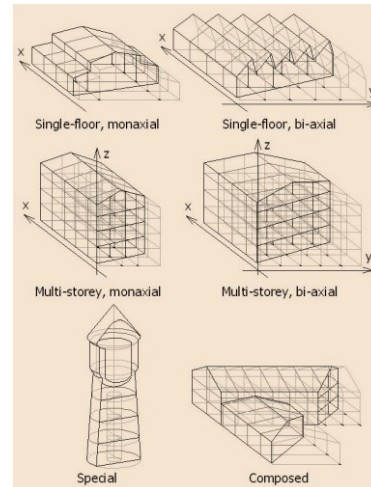
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- The layout structure of the building – defines the available room



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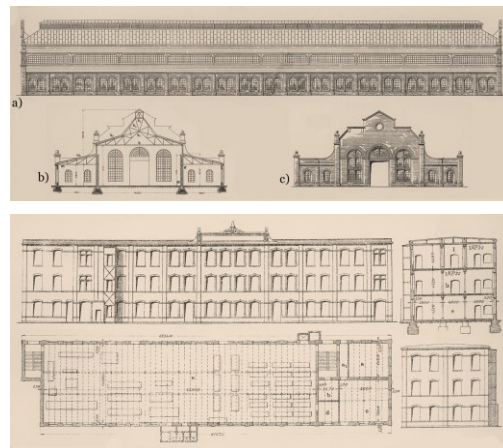
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- The layout structure of the building



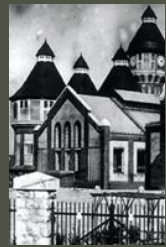
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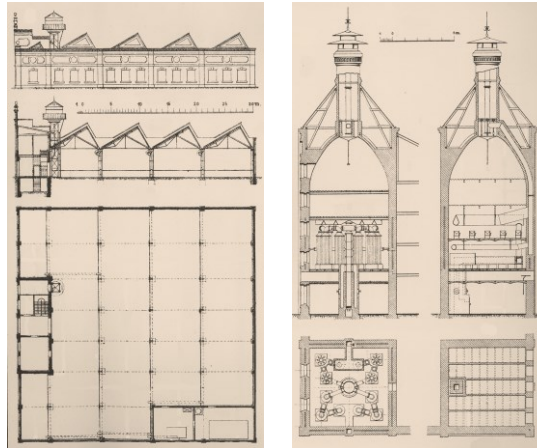
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□ The layout structure of the building



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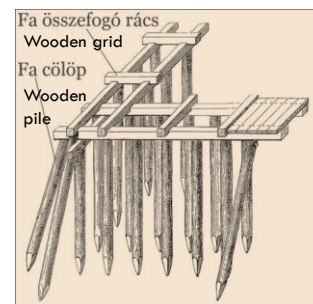
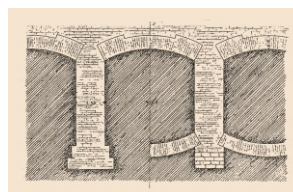
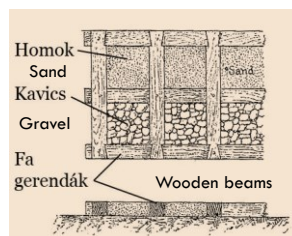
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□ Building constructions



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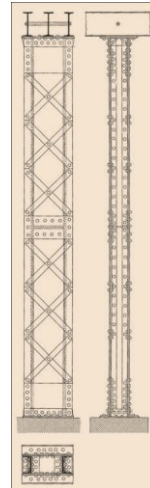
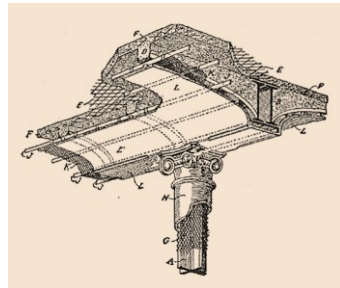
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Building constructions



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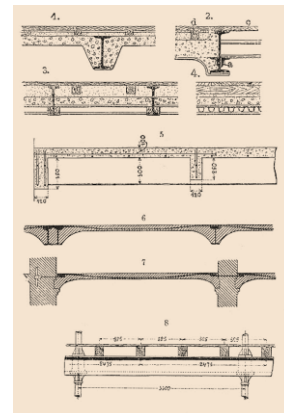
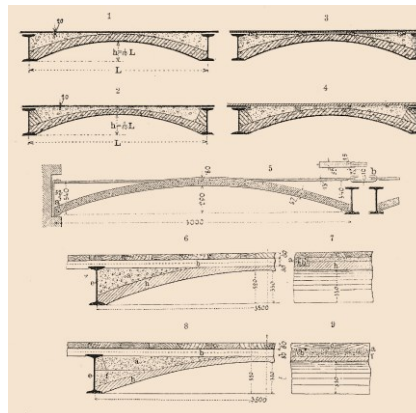
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Building constructions



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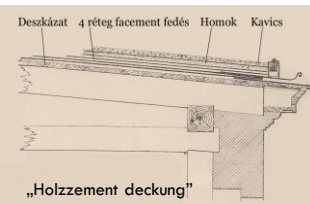
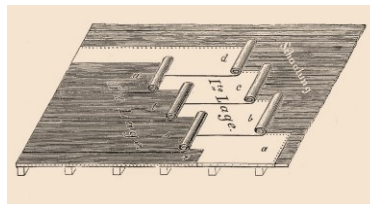
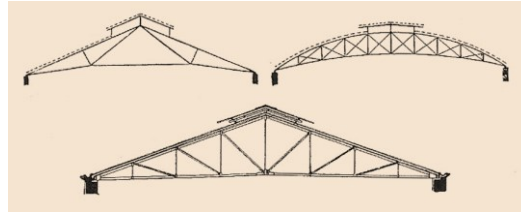
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Building constructions



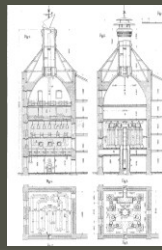
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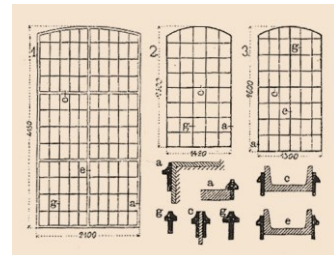
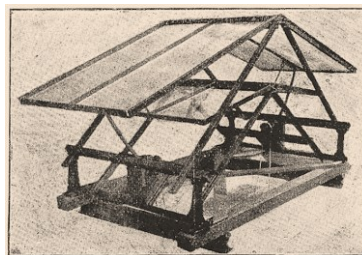
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Building constructions



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□ The new function of the building can be:

- Dwelling function;
- Offices;
- Commerce, services;
- Industry, warehousing;
- Cultural
 - exhibition,
 - presentation,
 - education;
- Leisure, sports;
- Miscellaneous;
- Other.

□ Aspects:

- the location of the building
- the historical and architectural value of the building
- the layout structure of the building
- the person of investor (owner).

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□ Dwelling function

- location: all
- historical and architectural value: positive – protection may be negative
- layout structure: high demand on natural light and ventilation
- investor: public or private



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Offices

- ▣ location: internal / interim zone
- ▣ historical and architectural value: may be positive
- ▣ layout structure: high demand on natural light
- ▣ investor: public or private



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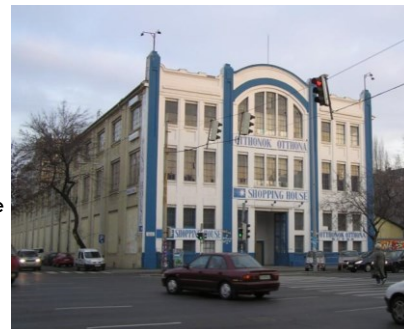
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Commerce, services

- ▣ location: depends on the profile
- ▣ historical and architectural value: neutral
- ▣ layout structure: depends on the profile
- ▣ investor: private



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□ Industry, warehousing

- location: interim / external zone
- historical and architectural value: may be positive
- layout structure: depends on the technology
- investor: private



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□ Cultural - exhibition

- Museums or art exhibitions
- location: internal zone or local center
- historical and architectural value: positive
- layout structure: depending on the pieces of art
- investor: public, private or PPP



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- Cultural - presentation,
 - ▣ Theatre, cinema or concert hall;
 - ▣ location: internal zone or local center
 - ▣ historical and architectural value: positive
 - ▣ layout structure: single-floor, monoaxial
 - ▣ investor: public, private or PPP



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- Cultural - education;
 - ▣ location: all
 - ▣ historical and architectural value: neutral
 - ▣ layout structure: high demand on natural light
 - ▣ investor: public



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- Leisure, sports;
 - Clubs, sport centers;
 - location: near to residential areas
 - historical and architectural value: neutral
 - layout structure: depends on the function
 - investor: public, private or PPP



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- Miscellaneous;
 - Several different functions in one building (or group)
 - location: all
 - historical and architectural value: neutral
 - layout structure: usually composed
 - Investor: mixed



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Other

- ▣ E.g.: hospital, studio, parking facility...
- ▣ location: depends on the function
- ▣ historical and architectural value: depends on the function
- ▣ layout structure: depends on the function
- ▣ Investor: may be temporarily utilisation



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Examples



Requirements of the authorities concerning the interventions, the function and the building:

- ▣ Town planning (regulations);
- ▣ Dimensioning (static), technical aspects;
- ▣ Fire prevention;
- ▣ Building energetics;
- ▣ Health;
- ▣ Planning, functional.

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Examples



□ The structural/technical interventions may be:

- Reinforcement due to static reasons;
- Partial demolition due to contamination, static or architectural reasons;
- Rebuilding due to static, mechanical or architectural reasons;
- Building in new constructions;
- Compliance with various regulations;
- Architectural or aesthetic interventions.

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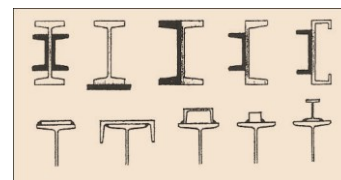
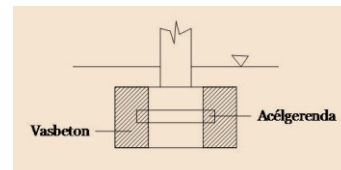
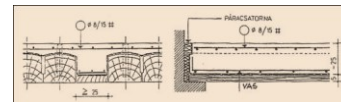
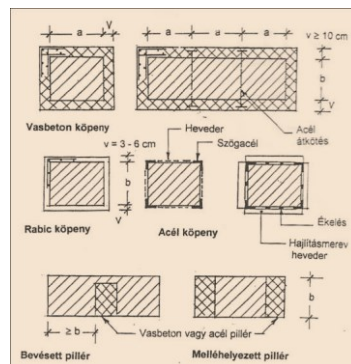
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Examples



□ Structural/technical interventions



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Examples

- Residential and commercial functions (2001), Coburg-Creidlitz – former porcelain factory (1906)



Grundriss 1. Obergeschoss - Umbauplanung 2001



Galerie in Loft 12
Foto: Marc Baumann, Coburg



Spiralstiege in Loft 10
Foto: Marc Baumann, Coburg



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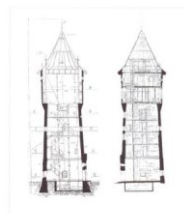
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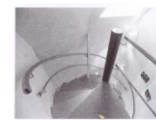
Examples

- „Family house” (1997), Bad Segeberg – former water tower (1910)



Schnitt durch den Wasserturm zur Zeit der Erbauung 1910

Schnitt durch den Wasserturm mit neuer Geschossdecke



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Examples

- School (1986-88), Bamberg
– former electricity works (1901-2)



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Examples

- MetaHaus (office building 2002), Berlin
– former transformer station (1929)



Altbaulicher Querschnitt, bei der Umnutzung wurden die überflüssigen Geschosse abgetragen



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- Residential, industrial and commercial functions (1996-), Hamburg Altona – former gasworks (1892-95)



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- Art college and other, Überseehafen, Bremen – former warehouse (1910-12)



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- ZKM HfG Karlsruhe: Centre for art and media-technology (1992) – former armory (1915-18)



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- Residential and commercial building (1994), Hamburg – former chocolate factory (1908)



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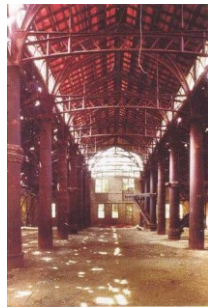
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- Eisenhütte (assembly hall 1828-30), Sayn
– former iron forge (1976)



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- Récsey Center (shopping mall 2004), Budapest
– former bus garage (1930)



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- The Cannery (shopping centre), San Francisco – former cannery



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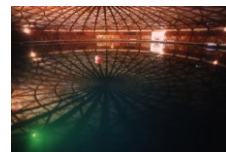
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- Landschaftspark Duisburg-Nord



Duisburg-Meiderich (D), Leisure center (1992)
Former Thyssen iron works (1902-)

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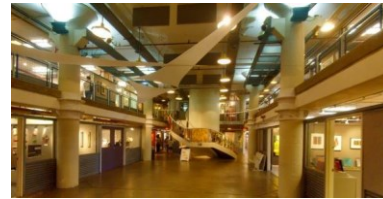
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Examples

□ Torpedo Factory Art Center



Alexandria (USA) Art center (1974)
Former torpedo factory (1918-)

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□ Parc de Wesserling



Husseren-Wesserling (F) Textilmuseum (1996)
Former printing factory (1819)

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□ Derby Silk Mill



Derby (UK) Industrial and history museum (1974, 2013)
Former Silk mill (1717-21)

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Examples

□ Elsterlofts



Leipzig, Plagwitz (D) Residential house(1999-)
Former yarn factory(1888-97)

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Examples

□ Supermarket



Frankfurt am Main, Bornheim (D) Supermarket (2008)
Former tram shed(1902)