



Regenerative Construction and Operation

Bridging the gap between design and construction, following a Life Cycle Approach consisting of practical approaches for procurement, construction, operation and future life.

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IMPRESSUM

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6. FUTURE LIFE

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in a Los Angeles drum and subjected to mechanical treatment of constant parameters in order to finally separate the cement mortar from the coarse aggregate grains. IV stage - the cooled material was sieved through a 4 mm sieve to separate the fine fraction < 4 mm from the coarse fraction (≥ 4 mm). The coarse aggregate of dimensions ≥ 4 mm was additionally divided into fractions of 4-8 mm, 8-16 mm, and 16-32 mm. Then the prototype of the device has been designed, which, thanks to its design, combines thermal and mechanical treatment of concrete rubble. As a result of experimentally selected parameters of the process the high quality recycled aggregate and active fine material obtained as a result of additional remilling of separated mortar (< 4 mm) were obtained. The device and the way the concrete rubble is processed have become the subject of a patent PAT.229887 („Method for separation of set cement mortar from coarse aggregate and for crushing that mortar, and the device for the application of this method”). The aim of the invention was to develop a method and device for comprehensive recycling of concrete rubble, eliminating the disadvantages of methods used so far.

The elimination of waste generation, as well as the change of waste into a product, are not only economic benefits, but also an important step towards implementing the principles of the circular economy and sustainable development. The method is currently being implemented for production in an existing production plant in Poland.

Conclusion

The use of recycled materials in the age of development of the world is an increasingly aspect but in my opinion, more scale and more accessible activities are needed. This may change with stricter legislation and introduction of significantly higher charges for the storage and disposal of rubble-cement waste. Creating the wide-range public awareness policy, as well as trainings, programmes for designers or investors or any participant in the construction process may encourage the use of good practices.

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6.5.2 THE ROLE OF WATER IN OUR PRESENT LIFE AND ITS REFLECTION IN REGENERATIVE RESTORATIVE ARCHITECTURE

KEY THEME OF WG 1: Water

THEMES OF WG 3: Future Life

Author: **Elena GUALANDI**

The importance of water in restorative architectural interventions can be easily witnessed by the beautiful 30 meters high water tower that stands right near the main entrance of NOI TECH PARK in Bolzano/Bozen. The water tower was built in 1934 and today, thanks to the project of Claudio Lucchin and Chapman Taylor

it regained its original role of tank, whose water serves as thermal energy storage for the climatization of the whole building; also, it works as a fire fighting reserve, since part of the water collected in the tank can be used for this specific purpose.¹

In accordance with the tool that our team proposed in the frame of the WG3 of the Cost Restore program, it's important to enlighten the strict connection among the different phases of a building process and the efforts needed by all the actors involved, first to achieve better performing buildings, and consequently to build districts that are efficient from the environmental point of view. It is central for the future of regenerative architecture to stand on those bases of collaboration and mutual listening.

This is because the expectation of use in the long term of a building, and therefore its "second life" phase has to be taken into consideration from the very early stage of the project. Future use and the possibility of reuse have been considered to be central and to play the role of coordination criteria for the whole project. Doing so the benefit in terms of maintenance and bio-climatic comfort in the long run, are evident from the start.

Water and "Second Life"

It is in such perspective that water management has been a major issue and a subject of constant research in the area of restorative and regenerative architecture.

This inevitably passes through the increase in people's awareness of the value of water: the respect of the natural hydro-graphic network of the territory, the use of the right amount of water according to the needs of the ecosystem and the collection and the purification of water for the purpose of reuse are just some of the fundamental precautions to be kept in mind.

The major challenge is how to design management systems that know how to best take advantage of rainfall and other natural phenomena in favour of a "closed" and efficient re-use from the early procurement phase of the project. It is vital, moreover, to adopt these management systems to less intrusive, economically affordable and architecturally elegant construction technologies, all within the building constraints.

The Challenge: Intervention on an existing building

It is clear that this can become a huge challenge in the case of an intervention on an already existing building, as the intervention has to forcibly pass through the awareness of the actual dwellers and users of such building and the probable update of the existing technologies and infrastructures. In contemporary times we are used to taking resources for granted, and too often we lose touch with the real needs of the ecosystem.

It is not always the case, though: the Markas Headquarters - that we had the opportunity to visit during the workshop - are an example of architecture that helps to raise awareness of water as a valuable element of the workplace. The offices, in fact, were provided of water fountains placed no further than 30 meters of distance from the workstations, making water a useful and constant presence and a value to protect.

Another useful action is to reduce losses of water due to leaks of the building's facilities, with an increase in the efficiency of water systems through a modernization of the technologies involved and the perfect maintenance of the existing ones.

It is also to be noticed, when talking about the reuse of rainwater, that not all European Countries allow them, due to different legislation on the hygienic standards to respect.

In Paris, for example, phytopurification and use of grey water for domestic use is a habitual practice and it has been broadly used as of its launch in 2001 for the design of the most modern eco-neighbourhoods and in the recovery of historical spaces such as the Boucicaut.

The eco-neighbourhood of the Boucicaut is extended over almost 3 hectares of an area that was initially used as a hospital complex, set in the west of the 15th arrondissement of Paris. the project deserves a distinction for the management and economy of water resources, involving a cut in their consumption and a reduction of 55% in the waste of rainfall water.

Water is integrated with the development and in the functioning of the eco-neighbourhood through the installation of efficient devices and tools for water conservation (such as double flush WCs)

Run-off related pollutants are also limited, thanks to reorganization and adaptation projects of public spaces that favour the natural infiltration of rainwater: drainage channels, grooves along the perimeter of the road network, semi-intensive green roofs, planted flower beds and underground collection basins.

Despite the successful and unsuccessful studies and experiments on regeneration in the most modern projects, the real challenge for the existence of a “second life” phase for the majority of buildings will be the adaptation and the organic inclusion of efficient water systems in the existing (and outdated) architectures and heritage buildings, keeping in mind the operational costs and the eventual change of destination of use of the building itself.

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