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NEWS

PROJECT

RE/SOURCED Renewable Energy SOlutions for URban communities based on Circular Economy policies and Dc backbones

Leiedal Intermunicipal Association, Belgium

TOPIC

Circular economy

EDIT 04 NOVEMBER 2021

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UIA EXPERT

What is RE/SOURCED?

See on UIA website

The RE/SOURCED Project & TRANSFO

RE/SOURCED is a UIA project being led by the intermunicipal organisation Leiedal in its role as co-owner of Transfo, a former power station site located in the municipality of Zwevegem in Belgium. Contemporary Transfo has benefitted from substantial urban regeneration and the UIA project focuses on the design and implementation of an innovative renewable energy generation, storage and distribution system that will benefit local residents and businesses. Specifically, it is planned to create a DC backbone that will maximise the efficiency of the renewable energy that is produced on site.

It is appropriate to understand Transfo's evolution before considering RE/SOURCED in detail.

Context for Transfo

Transfo is a former power plant that commenced operation in 1912. The complex comprises a unique mix of boiler rooms, a turbine hall, power distribution building and various additional buildings and machines. In addition, the external facilities comprise former grid infrastructure and large storage tanks all of which are located on a prime site within the municipality of Zwevegem.

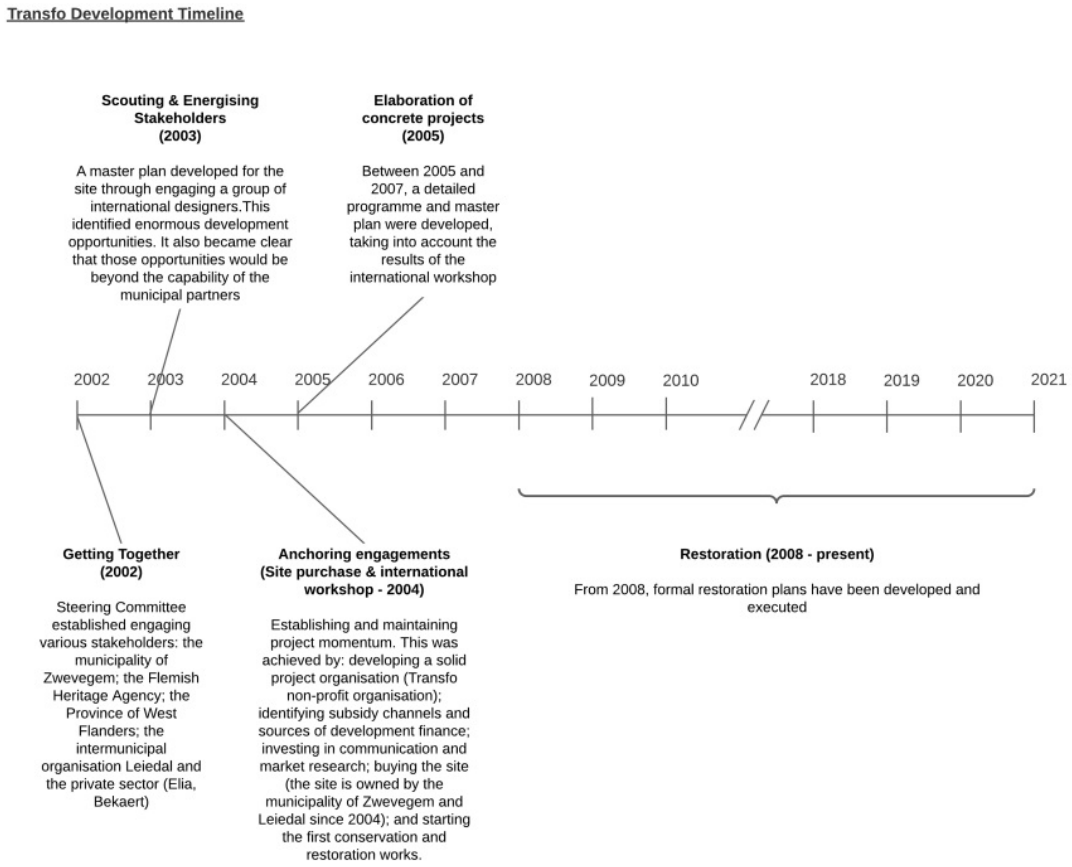
The Transfo plant used coal to generate electricity for most of the 20th century, with production only ceasing in 1985. The plant continued to produce steam for industrial purposes until 2001, at which point it was closed permanently. As the power plant approached the end of its operational life, the owner considered its demolition with a view to redeveloping the site for residential end-uses. Around this time and given its strong industrial heritage, the site was granted "listed status" in 1999 and demolition was therefore averted.

The municipality of Zwevegem and intermunicipal organisation Leiedal bought Transfo in 2004. While the site and facilities can best be described as "unique" from a heritage perspective and are striking in architectural terms, Transfo could never be described as an "easy" site to repurpose for contemporary use. It therefore presented a very significant challenge to the municipality of Zwevegem: its listed status and legacy industrial assets had a clear strategic significance for the municipality, but at the same time, it was quite clear that a thoughtful and sustainable re-use would be extremely difficult to identify.

The Transformation of Transfo

This was a complex regeneration project. The municipality and the intermunicipal organisation Leiedal assembled a group of relevant stakeholders to agree how the site and its assets might be repurposed. The graphic below describes the evolution of the project from 2002 to the present day and exemplifies the inclusive and multi-partner engagement of a broad range of different stakeholders.

In 2016, Transfo, with the intermunicipal organisation Leiedal as the representative organisation, was a partner on the URBACT INT-HERIT project, which brought together nine European cities facing challenges related to the revitalisation of their cultural heritage.

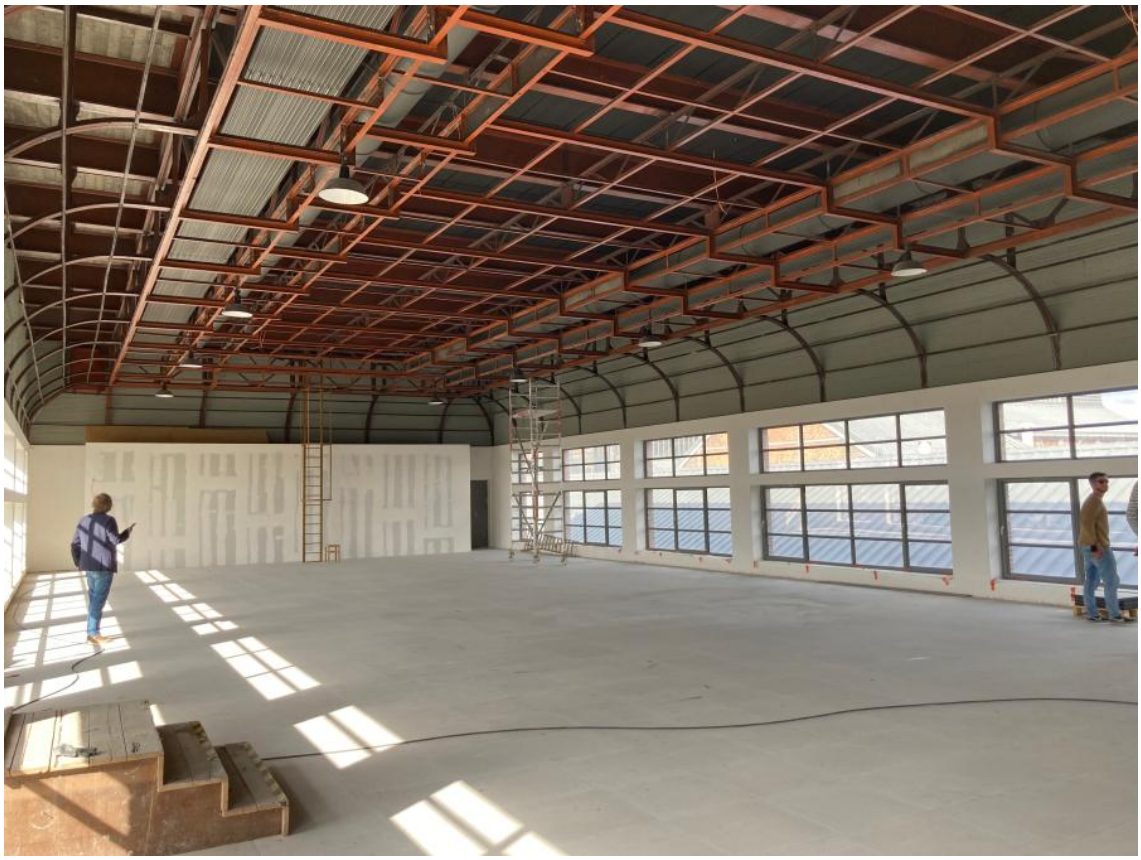


Transfo Development Timeline

Transfo Today

Transfo has been totally transformed over the past 13 years.

Today, Transfo comprises a revitalised and iconic civic asset within the municipality of Zwevegem. It has been completely repurposed to deliver significant value for the community, through the creation of residential, commercial and recreational assets and amenities. The images above summarise these assets and the amenities they form while the following video provides a current description of the Transfo development.



New offices nearing completion

The RE/SOURCED Project

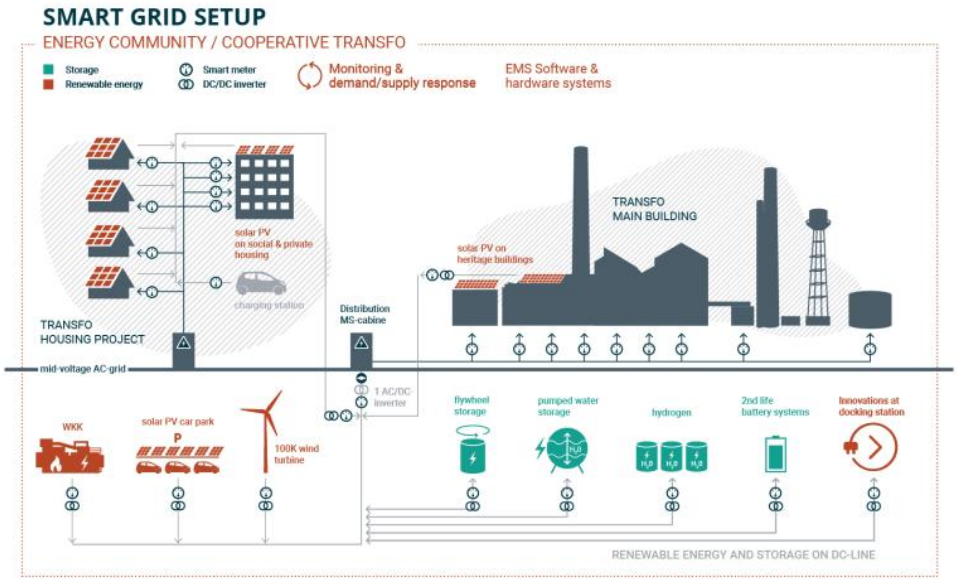
So where does RE/SOURCED fit within this transformation? Presently, there is a mix of private and social housing being constructed on the site (as depicted in the first image above). In addition, new office facilities and leisure amenities are being created.

The challenge RE/SOURCED recognises is that the increase of renewable energy goes hand in hand with increased demand for materials like lithium, aluminium and copper – these have to be mined and processed, using very significant energy in the process. Thus, there is a drive to ensure that the transition to renewable energy systems is more sustainable and is based on circular economy strategies. Circularity is a central goal of the project.

RE/SOURCED utilises the partnership-building experience gained through taking Transfo from a derelict factory to a vibrant community. It has six partners supporting Leiedal (as the Lead):

- Leiedal Intermunicipal Association (Lead Partner and Main Urban Authority)
- Zwevegem Municipality
- University of Ghent
- Province of West Flanders
- Flux 50
- REScoop.eu
- Flemish Institute of Technological Research (VITO).

RE/SOURCED will design and demonstrate a circular, mid-scale and self-sufficient energy system in an urban environment at Transfo. The backbone of the system is a DC (direct current) power grid, which offers efficiencies through fewer conversion losses and better use of materials (achieving circularity through gaining more capacity with the same amount of metals/materials).



The RE/SOURCED Grid

The DC power grid will link a collective set of distributed renewable resources (photovoltaic and wind) and energy storage (second-life batteries, pumped and flywheel storage in existing structures and vehicle-to-grid).

It is clear that this is a very innovative project and one that is breaking new ground on technical, regulatory and citizen engagement levels. A local energy community, in which all users participate, will manage the shared infrastructure and stimulate co-operation. The partners are focused on ensuring that the energy infrastructure created through RE/SOURCED will best meet the needs of citizens now and in the future. Citizen focus and engagement is central to the approach.

The project will be “a lighthouse’, comprising an operational circular smart grid that will nurture and engage citizens. An educational programme for citizens and children will be designed and implemented. A separate training package for professionals will facilitate the adoption of the RE/SOURCED process by other cities and will enable them to adopt integrated circular energy systems based on the learning.

Progress and priorities

The project was approved by UIA in June 2020 and the partners have used the past year to put the foundations in place through the development of the project’s technical blueprint. All dwellings, office buildings and other on-site energy users will have a supply from the (private) DC backbone as well as one from the public grid.

Early discussions with the Flemish Energy Regulator (VREG) and the distribution network operator (Fluvius) have highlighted fundamental challenges in how energy generated by the renewable energy system can be combined with that from the public grid in a cost effective manner that also meets the regulator's legislative requirements.

The fact that RE/SOURCED is a pioneering project is unsurprisingly exposing limitations associated with current legislation as well as the eligibility of projects for “sandbox” acceptance. The team has established a very good dialogue with the Flemish government, the regulator and Fluvius. It has also engaged expert inputs in an attempt to explore potential solutions and identify the optimum route forward. It is recognized that finding acceptable solutions will take time and this will be the focus over the medium term.

Circular economy

See on UIA website