



**alchemia
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The green future is being invented in a cellar of Vienna's 14th district

When Johannes Kisser, the founder and CEO of alchemia-nova, said 8 years ago that waste is a valuable resource, few believed him and most laughed the statement off.

Since then, with alchemia-nova developing some of the most innovative nature-based and circular economy solutions that prove his statement, nobody doubts him and nobody is laughing.

Take, use and dispose – while this is still the dominant consumption model of today, in the basement of an old Viennese villa in the Penzing district, an international team of scientists are working away at some revolutionary nature-based technologies that will hopefully shape a more sustainable, circular economy future.

‘Circular economy is about changing how people see ‘waste’ – if people start seeing it as something that can be reused – it becomes a valuable resource,’ says Kisser.

With his mother employed in the waste management sector, Kisser spent his childhood summers at landfills, watching trucks dumping load after load of garbage. Witnessing the amount of garbage being piled up at the landfill led him to questioning if there was another way.

‘Nature’s ecosystems work in cycles and nothing is wasted – a tree blossoms with flowers, the flowers fall to the ground, and there they act to regenerate the soil in which the tree grows –human systems need to start working like ecosystems.’

Thanks to EU funding, the villa which is alchemia-nova’s home base will be transformed over the coming year into the first completely circular economy residential building, meaning that all waste output will be regenerated into reusable resources, like water, energy and food – nothing will be wasted.

As businesses increasingly start to understand the economic arguments in favour of adapting a circular economy approach, and the more environmental impact becomes prioritised by the new age of consumers, the more vital alchemia-nova’s research and development becomes.

‘The circular system is not something for the future, the time for it is now,’ says Kisser.

As an interdisciplinary and international team of about 20 individuals, besides consulting companies on how they can create and optimise circular systems within their business models, alchemia-nova has also developed commercial products such as vertical



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constructed wetlands, green wall façade panels and a city -friendly nature-based public urinal.

The vertical wetland dubbed vertECO®, purifies waste water to the point that the filtered water can then safely be used to flush toilets, water green areas and even wash laundry with.

One of the pioneering projects alchemia-nova is currently involved in is the European level project called HOUSEFUL, funded by the European Commission under the HORIZON 2020 program. This innovative project will see how circular solutions can be integrated into the housing sector.

As part of HOUSEFUL, alchemia-nova is currently developing technology that will lead to the organic waste produced by a building being converted into usable resources e.g. organic solid waste will be converted into biogas, in turn producing heat, and electricity. These innovations could result in the discovery of new ways to build energy-positive buildings.

While alchemia-nova is coming up with cutting edge nature-based and inspired technologies, it is one of the most experienced institutes in the field, having originally started in the year 2000, with a switch in focus in 2010 to circular economy solutions when the concept was in its infancy.

Over the coming year, as one of four demo sites for the HOUSEFUL project, alchemia nova's "haunted mansion" looking home-base will be fitted out with green-wall façades for water cleaning.

The building will also be fitted with state-of-the-art technologies that turn light into power, and a myriad of other innovative technologies such as winter-gardens for indoor air conditioning, organic composters for nutrient recovery, a soap-bubble greenhouse for vegetable production, aquaponics for fish production, and a central heating and power unit that runs on biogas.

'alchemia nova's circular economy vision began growing in the basement of this house and is now going to take it over completely when we transform this into one of the pioneer circular economy houses in Austria,' says Johannes.

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