



WHAT THE ELEVATOR CONTRIBUTES TO THE CYCLE



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The climate crisis demands a swift transition from linear to circular construction. When it comes to elevator construction, the Bernese family-owned company Emch is leading by example.

When it comes to reuse, the first thing that comes to mind is usually façade tiles, wash-basins, or ceramic tiles with some patina. Or perhaps colourful collages with windows and doors rescued from a demolition site. However, the reuse of building components is no longer limited to just the exterior or interior of a building. The highly acclaimed Kopfbau K118 on the Sulzer-Areal in Winterthur – the largest construction project in Switzerland to date, mainly comprised of reused building materials – demonstrates that a consistent reuse approach extends to the very core of a building, including the structural framework. When we think of reuse, we often associate it with simple construction methods, the craftsmanship

of assembling individual components and materials. It is a way of building that has little to do with glued or cast finished products, whose inner workings are unknown and incomprehensible to the layperson.

However, the complex technical systems that became an integral part of architecture with electrification in the early 20th century are rarely thought of when it comes to the concept of reuse. However, if reusability and circular thinking are to become the new standard in the construction industry, then complex high-tech components that only specialists can understand must also be taken into consideration, in addition to cladding, furnishings, and structural framework.

Undoubtedly, the largest and most important of these technical systems is the elevator. Its significant role in architectural history – no skyscrapers without elevators!

Complete drive systems are also waiting to be reused in the „exotic warehouse“



- makes it clear that when we think of reuse on a larger scale, especially in multi-storey architecture, the elevator cannot be overlooked. This is not just a matter of convenience, but also of accessibility and inclusivity.

The importance of expertise and specialized knowledge

What does reuse mean in the context of elevator construction? There are as many answers to this question as there are approaches to a circular transition in the construction industry. Perhaps it is worth recapping the goals of the circular economy and why they are so urgent. The principle is simple yet radical: instead of a linear construction process where everything that is built is eventually demolished and thrown away, a circular building culture should take its place. Ideally, this culture would produce zero waste and continually reuse and repurpose what has already been built. This would eliminate the grey energy that is generated during the production of new building components. In combination with an energetically optimized building operation, it would greatly reduce the CO2 emissions

of the construction sector. Currently, this sector is responsible for 25% of Switzerland's CO2 emissions and generates approximately 17 million tonnes of waste annually, which is a staggering amount. What makes sense for kitchens, toilets, facade claddings, and stair railings is equally applicable, if not more so, to elevator systems: why throw away what is still usable?

Circular thinking in elevator construction can be approached at various levels and scales. It encompasses the same categories that apply to building structures in general: preservation and reusability on-site (repair), reuse at a different location (reuse), and recycling of the raw materials (recycle). However, the challenges intensify when it comes to the reuse of elevator components, similar to the challenges faced with the reuse of simple building components. Who can expertly dismantle and reinstall an elevator system? Who knows which parts need to be replaced and which are still functional? Who understands the functionality of each element and their interdependencies? And who can guarantee safety? In other words, the circular transiti-

Emch's warehouse contains countless lift components that can be reused and repurposed

on in elevator construction requires the willingness and commitment of specialists who see the elevator not just as a finished product, but as a technically and aesthetically high-quality object that is carefully crafted and maintained. It is not surprising, then, that the drive for more reusability and repair in elevator construction comes from the Swiss company Emch, which sees itself as an elevator manufacturer, relying on innovation and creativity, and has long been committed to sustainability in the construction sector.

Vintage and Rare Treasures

Two contributions that the elevator industry can make to circular construction are deeply rooted in the DNA of the family-owned company Emch: prioritizing modernization over the installation of replacement systems, and expertise in the planning of customized new systems – individually designed elevators that enable access with minimal intervention in the existing structure, thus preserving old and sensitive building elements. Daniel Steiger, architect and sales manager at Emch, refers to them as „two types of vintage cars“. In the first case, the vintage car is an elevator that is no longer fully functional but, through repair or the replacement of individual parts, is given another cycle of use (see ‚Saving an elevator means saving architecture‘, page 8). In the second case, the vintage car is the building itself, which is adapted to today's requirements by carefully installing an elevator, making it fit for another phase of life (see ‚Customized upgrading‘, page 12). Both are repair works that aim to preserve – still the simplest and most effective method to avoid waste and CO2 emissions.

Emch pursues reuse strategies for reusing elevator components on both large and small scales. On a small scale, they preserve and reuse numerous elevator parts, similar to other building components, after a building demolition. In their large inventory

of used elevator components, known as the „Exotic Warehouse“ by Emch employees, you can find suitable parts of all ages and sizes for any elevator system, ranging from motors and pulleys to nuts, switches, relays, and buttons (see photo gallery in this issue). These „exotic“ items in Emch's material warehouse come from dismantled elevator systems salvaged from buildings prior to demolition. Because the prevailing demolition ideology still applies to buildings that are barely 20 years old, Emch employees occasionally collect valuable components before they end up in a landfill, including entire elevator systems. However, on this largest possible scale, reuse is still the exception today. This is partly due to the limited storage space for complete elevator systems at the company's headquarters. Nevertheless, Emch is already brainstorming ideas on how to fully dismantle, store, and eventually reuse elevators. This presents a logistical and spatial challenge that Emch intends to tackle with specialized partners.

Facing the Circular Future

A depot filled with retired elevators is desirable but ultimately just an intermediate step. In the future, the focus will no longer be on salvaging high-quality elevator systems and components from landfills, but rather on designing buildings and elevators in a way that allows for easy dismantling, storage, and reuse of the elevators, in the case of changes in building use. Manufacturers should consider the entire lifecycle of production, initial use, dismantling, refurbishment, and reuse in a different context (see ‚What makes an elevator sustainable?‘, page 16). The temporary elevator that Emch is currently building for a train company, BLS, demonstrates how this could work: everything is designed to be deconstructed with effort or material loss. Once disassembled and stored, the elevator can be reassembled when the need arises. This small-scale example showcases what will

hopefully soon become the norm in the entire construction sector: consistent circular thinking. The ecological urgency is already present, but for a successful transition from linear to circular construction, the commitment and expertise of each industry are required. The various initiatives by Emch exemplify what a single company can contribute to making circular processes work, even for complex technical components, and prove that ecological rethinking is not only a societal obligation but can also go hand in hand with pioneering spirit and inventiveness.

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