

Architecture and mobility of the future

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The high-rise is making a comeback and driving the demand for elevators and escalators to new heights. New technologies in building and elevator technology are available to make buildings and districts fit for the future.

The E2 Forum Frankfurt has set itself the goal of bringing together experts from development and industry with architectural and technical planners and constructors on these topics. We spoke with Renato Turri, Managing Director and co-owner of PSA Publishers Ltd. in Zurich. The publisher of www.world-architects.com and 20 other platforms maintains a worldwide curated network of architects and construction experts who stand for quality in architecture. Turri will moderate one of the two conference sessions on "Innovation, Digitization and Sustainability in the Building of Tomorrow".

1 - Mr Turri, how intelligent must new urban transport in buildings be?

According to forecasts, two out of three people will live in urban areas by 2050. This creates major challenges for architects in the planning, construction and operation of buildings. The transport of people in urban areas is playing an increasingly important role. In the highly developed countries, rural exodus is continuing, especially to the new global and megacities – which does not diminish the architectural and technical challenges even in shrinking cities. This new trend is superimposed on existing developments, which must also be taken into account, such as demographic change in ageing societies in the sense of barrier-free living or ambient assisted living (assistance solutions suitable for everyday self-determined life) and other, completely new forms of urban living and working.

Transportation within the building will never be entirely possible without planning the structure in the district. We see enormous opportunities here – also in view of the digitalisation in building technology – for networked system solutions that must also "pay off" in terms of energy efficiency, security and sustainability. But these new digital, increasingly radio-based solutions must be integrated, ideally right from the start. In other words, the planning and architectural method must be digital per se and must be digitally connected in the same way as Building Information Modeling (BIM) already offers today. This is not yet implemented as it should be in the trades involved, including the architects. This is why the E2 Forum in Frankfurt comes to the right place at the right time: It takes up these

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important topics and promotes the dialogue between industry and architecture within the framework of the specialist conference.

2 - Which of the new elevator and escalator technologies are driving architects to new (urban) planning heights?

There is a considerable number of innovative studies and innovations in the elevator and escalator industry that fascinate the architects in our network as a planning challenge:

Let's take the idea of a **double-deck elevator**, for example, which, due to the double access levels required, is not already accessible from the ground floor, but can be accessed via escalators if necessary. Digital solutions such as the Hall Call System, which assigns elevators in the lobby (or soon via smartphone), making vertical transportation faster and to a certain extent more individual, make this technology attractive for architects.

Drive technology: This is a very relevant contribution to the efficiency in the utilisation of the elevator shaft, which from a building planning point of view takes up the available installation space to an extent not to be underestimated. The rack and pinion drive becomes interesting. He lets the elevator cars "climb" in the shaft, the track for the counterweight is free for another elevator. This is especially interesting for super tall skyscrapers (300 - 499 height meters; 500+ m hyper tall, 600+ m mega tall; according to the International Commission CTBUH), if you want to reduce the core area of a functional mix (office, hotel, apartments).

If you think the principle further, you will come quickly to the **horizontal movement:** There is a remarkable study here, and perhaps soon also the first prestigious construction – in Berlin. And another direction of movement becomes increasingly important: the diagonal. There have been diagonal elevators since the double-deck elevators were installed in the pillars of the Eiffel Tower. However, the diagonal delivery of modern residential or office buildings is establishing itself only hesitantly, due to the still too low speeds. This is shown by the plans for the Beijing project CCTV Television Station & Headquarters and the implementation in Zurich central station – where the construction bridges only one floor.

Under no circumstances should the escalators be neglected: Commercial use above the ground floor is not possible without escalators. Rem Koolhaas and his co-authors provide excellent insights in Vol. 2 of the "Harvard Design School Guide to Shopping". Circular or spiral escalators are still very few in use. One is to be seen in Times Square Hong Kong (TSHK), a wonderful building complex that teaches us the importance of escalators for shopping.

And the Hamburg Elbphilharmonie certainly has a particularly interesting solution for getting up in the air: The double curved escalators are among the longest in Europe and belong to the aesthetic avant-garde. And to remain futuristic: A Paternoster 2.0 would also be great, without any security concerns and with a lot of interaction and experienceability of the building. Because only the paternoster manages to dissolve the otherwise anonymous separation of people into floors.

3 - Where do architects see the challenges or growth for the use of elevators?

Especially in super tall buildings, elevator travel itself becomes a critical factor in both office and residential buildings. Here the demand for speed and driving comfort will determine the dimensions.

The biggest obstacle in planning is the consumption of space in the core. The solution that manages several elevators in one shaft ensures greater efficiency – which alone is logistically difficult.

Presumably, today's studies on vertical-horizontal, rope-less elevators or the high-speed transport system – a transport capsule driven electrically by solar energy according to the tubular mail concept with travel speeds of over 1,000 km/h – show a way into the transport of the future. Perhaps also autonomous elevators (lift capsules) in a shaft network will do – similar to the vision of driverless taxis. And this closes the circle to other mobility visions, such as those of the automotive industry.

4 - What does the architect need for building in the high-rise segment and integrating new digital building technology?

All regulations, standards and norms that lead to the necessary type approval are equally important. In Germany, these are the model high-rise building guidelines and, of course, the DINs. More than ever, the generalist seems to be in demand here, as building technology is immensely important in the planning and core of digital interaction in the building of the future, keyword BIM.

Core optimization, area ratio and the facade are the key parameters for a high-rise building. Above all, architects need good elevator planners who can quickly and reliably calculate the capacity in connection with the corresponding waiting times, adapted to the height of the building. Elevator management, i.e. timing for peak times and speed, is the key. Online tools would be very helpful for this.

And – of course – personal, interprofessional networking is needed: A conference and exhibition such as the E2 Forum Frankfurt gives architects the opportunity, in addition to the large number of specialist presentations, to meet leading representatives of the industry in person in order to discuss desired innovations or individual needs, among other things.

5 - The elevator: More than just convenience: From which floor would you plan the elevator?

From the first floor onwards – with an ageing population, barrier-free housing and mobility are becoming increasingly important.

Thank you very much!

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Further reading and sources:

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www.e2forum.com/press

On the internet:

www.twitter.com/e2forum

www.technology.messefrankfurt.com

Background information about the Elevators and Escalators Division of the VDMA

The Elevators and Escalators Division of the VDMA (*Association of German Machine and Plant Manufacturers*) represents approx. 90 per cent of the German market for lifts, escalators and moving pavements. There are currently 750,000 elevator systems installed in Germany, of which some 640,000 are for carrying people. For escalators, the current figure is around 36,000 installed units. Turnover in the sector, which employs approximately 17,000 people, amounts to more than two billion euros.

Further information is available at: <https://auf.vdma.org>

Background information on Messe Frankfurt

Messe Frankfurt is the world's largest trade fair, congress and event organiser with its own exhibition grounds. With more than 2,400 employees at 30 locations, the company generates annual sales of around €669 million. Thanks to its far-reaching ties with the relevant sectors and to its international sales network, the Group looks after the business interests of its customers effectively. A comprehensive range of services – both onsite and online – ensures that customers worldwide enjoy consistently high quality and flexibility when planning, organising and running their events. The wide range of services includes renting exhibition grounds, trade fair construction and marketing, personnel and food services. With its headquarters in Frankfurt am Main, the company is owned by the City of Frankfurt (60 percent) and the State of Hesse (40 percent).

For more information, please visit our website at:

www.messefrankfurt.com | www.congressfrankfurt.de | www.festhalle.de

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