




# o life

magazine No. 13

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Architecture  
and design.

The art of designing air.

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## Design and efficiency.

With the energy transition plan the federal government is pursuing an ambitious goal. By the year 2050 Germany's energy is to be obtained mainly from renewable sources, and by 2020 the proportion of renewable energies for gross power consumption should amount to 35%. Regarding all the discussion about the renewable production of energy, the best energy is the one not being used. Particularly in building technology where undreamed energy-saving potential still slumbers: thanks to sustainable high-tech design in architecture and intelligently networked systems and system services for air-conditioning and ventilation.

In this brochure we are introducing you to two ambitious building projects which are trendsetting with respect to sustainability in the creation of the buildings and their operation: International Quarter in London (Stratford) and Bangaroo South in Australia's Metropolis Sydney.

One milestone at TROX and in the industry is the improved offer of additional systems services. The intelligent integration of components and devices with systems, such as TROXNETCOM (fire protection and smoke extraction), X-CUBE air handling units or also via X-AIRCONTROL (a room control system tailored to suit the need), makes the saving of energy and safety easier than ever. The automation leads, by necessity, to a more complex system technology. With the operative and strategic collaboration of TROX HGI GmbH and TROX Service GmbH & Co. KG, we offer this special know-how to our customers for the entire life cycle of our products.

Service has also been a criterion of the Vertrauenspreis of LÜKK (Trust prize LÜKK). Across all companies that submitted themselves to the vote, the after sales service fared the worst. This reinforces our intention to offer the customer an even more comprehensive service in the future.

Aside from the technical know-how which we would like to convey to you in greater detail, the entertainment in TROX life is also not missing. Read facts worth knowing, the bizarre as well as the interesting on the topic of this TROX Life: Architecture and Design.

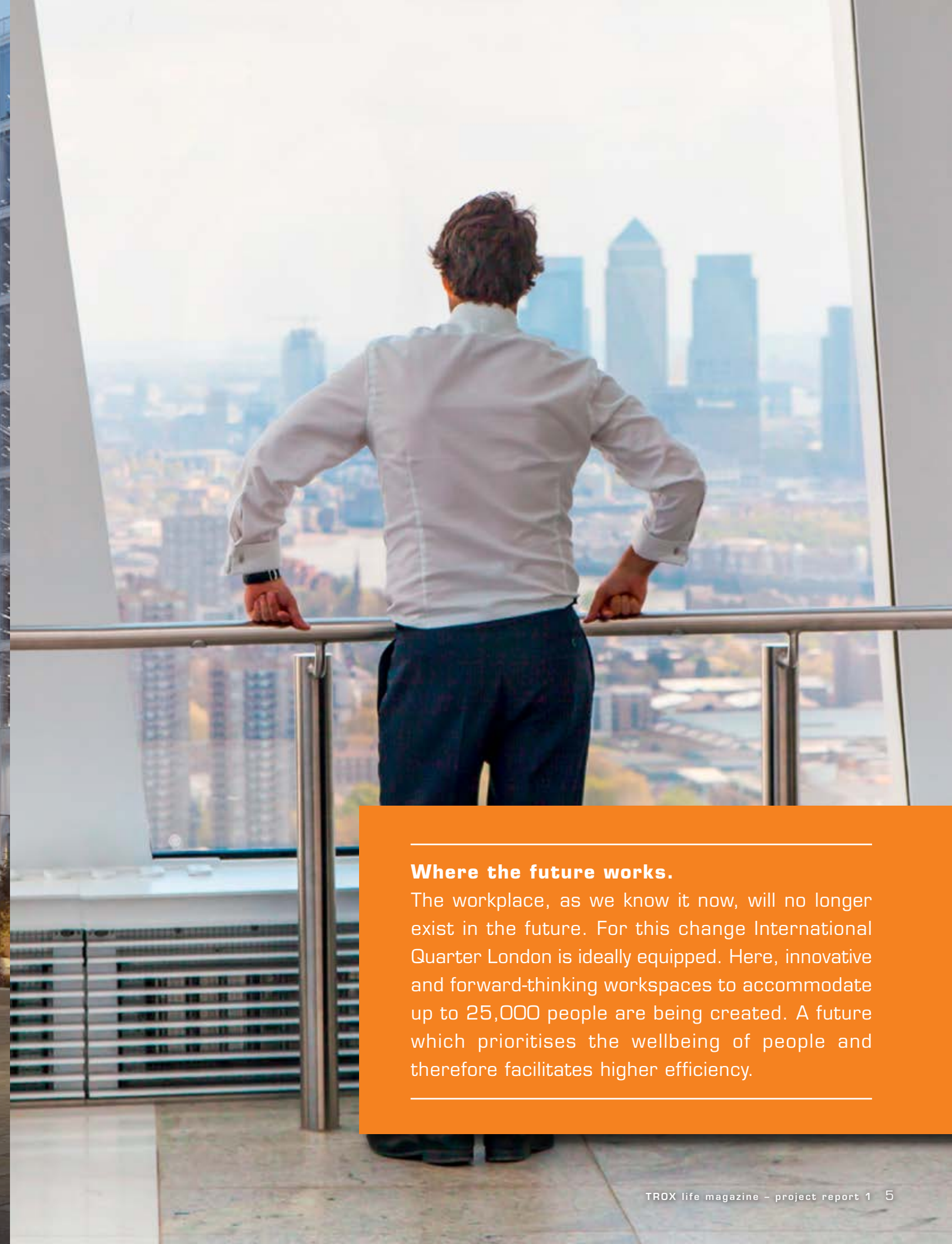
We wish you a lot of fun.



Udo Jung  
TROX Board of Management



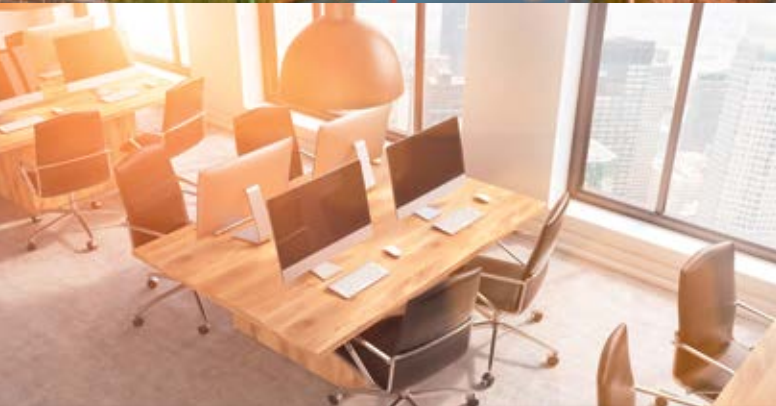
# Designed for the Future. International Quarter London.



## Where the future works.

The workplace, as we know it now, will no longer exist in the future. For this change International Quarter London is ideally equipped. Here, innovative and forward-thinking workspaces to accommodate up to 25,000 people are being created. A future which prioritises the wellbeing of people and therefore facilitates higher efficiency.





**Feeling comfortable in the workplace.**

By December 2017 around 3,000 TfL employees (Transport for London) will have moved into the first office building of IQL. In the middle of 2018 an additional 3,500 workers from the FCA (Financial Conduct Authority) will follow. They will find workplaces that are no longer tied to a desk, but inspire, motivate and invite them to work together. "Feeling comfortable at the workplace" is the main concept that permeates the architecture, design and technology of the IQL. Here the internationally successful real estate developer Lendlease, has made the highest demands on the efficiency and sustainability of the technologies and materials as considered by the BREEAM standard.

**A vibrant future in 8.9 hectares.**

International Quarter London is a mixed-use development in the east London district of Stratford, on the 2012 Olympic grounds. This major building project, with an investment of around £2.4 billion, is poised to turn Stratford into London's unrivalled attractive and perfectly networked new business district.

New offices, commercial areas, restaurants, cafes and apartments find their place amid green parklands, luxurious sporting facilities and attractive cultural, training and recreational offerings. A concept with a future because increasing mobility makes the surroundings ever more important. That is why the IQL is planned with an unmatched digital and mobile infrastructure. Working on a green meadow or in a cafe, jogging or shopping will be just as important for optimum workplace conditions as the climate in the office.

The objective is to create a business district that is a magnet for future-oriented companies and highly trained, motivated employees. All reinforcing London as a hub of international economic power.



**INTERNATIONAL QUARTER London**

Brought to you by



*The Stratford area is fast becoming the capital's most desirable place to work, live and socialise.*



*Buildings S5 and S6 are fitted with TROX technology with a total of 5,200 SKYBEAMS and additional products.*

- Joint venture of Lendlease and LCR
- IQL project Technical Consultants, Hoare Lea
- IQL project Building Services Contractor, TClarke.
- Construction volume: £2.4 billion on 8.9 ha
- Construction phase up to 2025
- Office area: 371,000 m<sup>2</sup>
- Building floor space for shops: approx. 1,400 m<sup>2</sup>
- Apartments: 333
- Workspace for over 25,000 employees
- Location: in the direct vicinity of the Olympic stadium, London Aquatics Centre, Olympic Park, Theatre, Westfield Shopping Centre, university, railway station...
- Access to public transport: 202 train connections/hour at peak periods, all major traffic junctions can be reached in 35 minutes.
- Flow of people: daily around 57,000 employees, students, visitors
- Expected volume of purchasing power: £110 million per year





**Two strong partners, one objective.**

The planning partner of Lendlease is the architectural office of Rogers Stirk Harbour + Partners (RSHP), which is globally renowned for its high-quality design expertise. With RSHP and TROX, two global players have joined with the conviction that workstations designed for wellbeing have a positive effect on health and productivity.

**Clear feel-good parameters for interior rooms.**

Currently an office worker spends 90% of his/her time in interior rooms. A healthy feel-good climate, which has been proven to lead to higher performance and better health, is therefore an absolute essential for RSHP and TROX in the design of optimum workplace conditions.

For International Quarter London this means, among others:

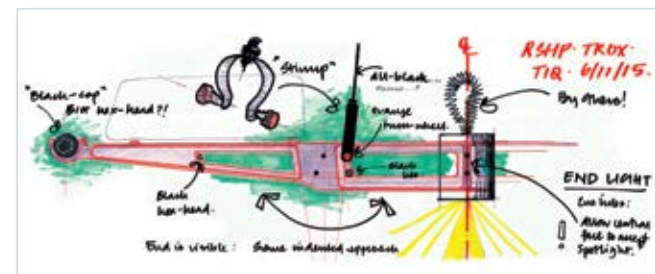
- Healthy air and thermal comfort at each workstation, implemented by means of energy-efficient, high-performance TROX air-conditioning technology
- A maximum of natural daylight and a wonderful view, guaranteed by the high rooms, floor-level window frontages and complete exterior glass facing.

**From Chilled Beam to the globally unique SKYBEAM.**

The quality of the TROX air-conditioning technology has convinced the customer. Yet, what started with commonly used passive chilled beams quickly developed into an exceptional design optimisation.

The architects from RSHP and design engineers at TROX developed a well-thought-out, tailor-made air-conditioning solution of a strikingly simple design – reduced to the absolute essential and of a new modular construction. The SKYBEAM, a passive chilled beam of globally unique flexibility is the result of this process of cooperation and in consultation with M&E Consultants, Hoare Lea, adopted it for installation at IQL.

During the latest competition at the German Design Award 2018 it also convinced the international jury of experts and was the winner in the energy sector.



**High efficiency, fewer components, greater flexibility.**

SKYBEAMS remove heavy loads via the medium of water. This has the advantage that thermal energy is transported more efficiently by water than by air, which means that less energy and less space is required to provide the same heating or cooling capacity.

*The TROX UK team around Martyn Mills (front left), which developed the SKYBEAM jointly with the architects from RSHP*



*The SKYBEAM, jointly developed by TROX and RSHP, with only a few components is very flexible in its options for design and has won the German Design Award in the energy sector.*



Thanks to the passive chilled beams the flow-rate volume of the supply air, which is fed in via the TROX floor diffusers, can be reduced precisely to the required room air change rate, which reduces the energy consumption noticeably at the same output. Also the additional fans for cooling the ambient air are no longer necessary, so that neither draught nor air-generated noise is created. This makes the rooms fitted with SKYBEAMS very quiet and increases the comfort.

The modular construction with few components additionally offers very flexible options for design. This makes available metal frames and side panels of various colours, cover grids of various designs and different lighting elements.

To meet the project requirement for high rooms with a lot of daylight, a suspended ceiling can be omitted with SKYBEAM. All cables disappear behind the sound-optimized central cover, which cares for better room acoustics and in which smoke detectors etc., can be integrated according to requirement.

**14,600 m of installed TROX SKYBEAMS. Up to now.**

In the two TfL and FCA office buildings (S5 and S6) the 1.50 m long modules of the TROX SKYBEAMS were installed over a total length of 14,600 m – at clearly reduced installation times and costs. And, very welcome, added are lower operating costs.

Aside from the 5,200 installed SKYBEAMS, close to 7,000 additional TROX components such as air vents, ventilation grills and regulating devices are used.

Also the sustainability objective, the BREEAM award, is affected extremely positively thanks to the reduced use of materials and the high energy efficiency.

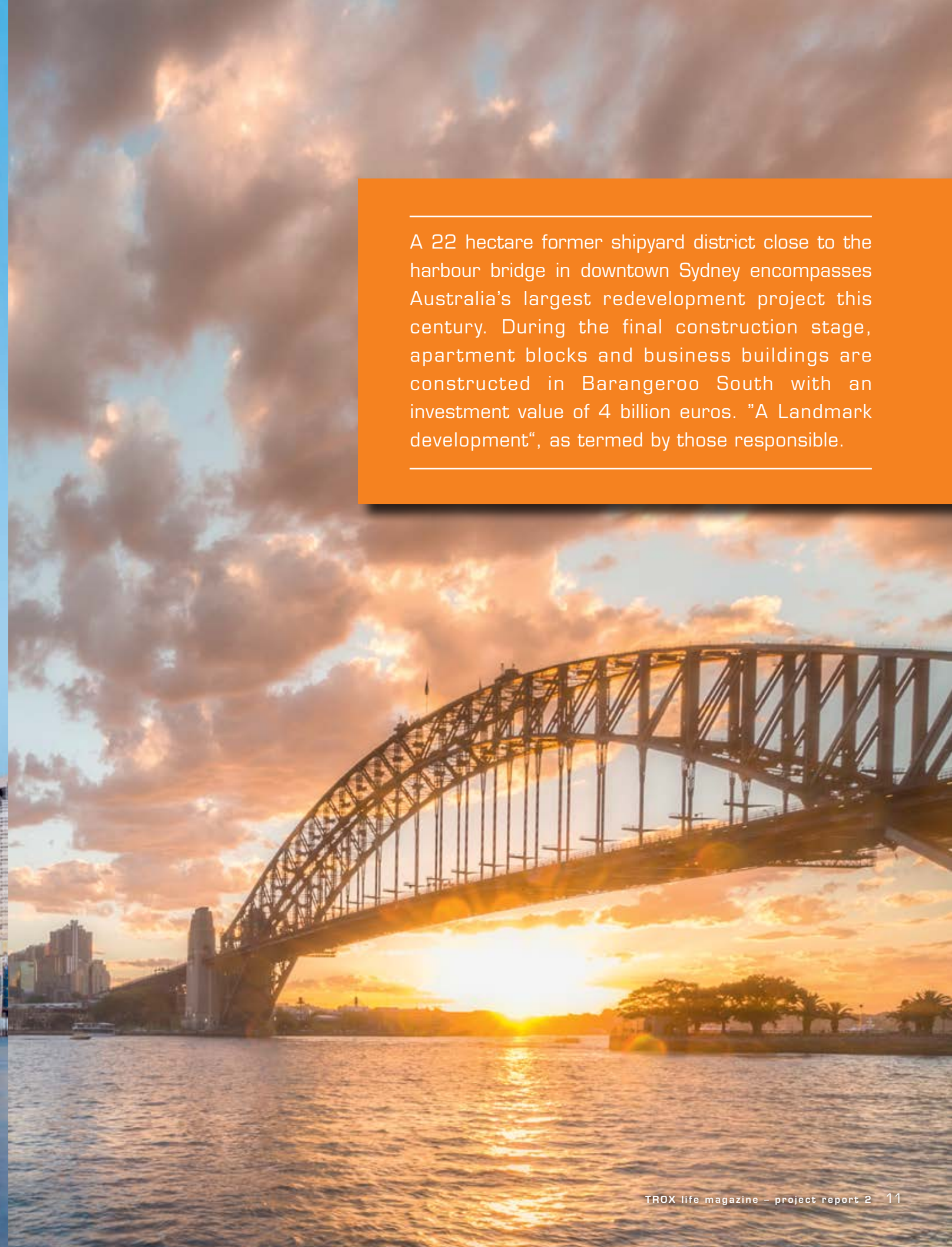
Due to optimum product development of all involved, SKYBEAMS are also in focus for additional buildings of International Quarter London. 2025 is envisaged for the completion of this promising new business district in which the TROX air-conditioning technology will care for a pleasant feel-good climate at the workplace.







# Landmark architecture. Barangaroo.



A 22 hectare former shipyard district close to the harbour bridge in downtown Sydney encompasses Australia's largest redevelopment project this century. During the final construction stage, apartment blocks and business buildings are constructed in Barangaroo South with an investment value of 4 billion euros. "A Landmark development", as termed by those responsible.





During digital planning with BIM (Building Information Modelling), particular attention was paid to the sustainability of the buildings. For the ventilation and air-conditioning of the new office tower, the largest project of its kind in Australia, the decision was made for an air-water system. The medium of water allows the thermal loads to be removed more efficiently than with air. TROX supplied 17,000 active chilled beams and passive chilled beams, which were tested beforehand at the construction site in trial buildings to verify air-flow behaviour and energy efficiency. Also over 5,000 Type VDW swirl diffusers of TROX in addition to the passive chilled beams were installed in the central zones of the building.

**Cooperation on an international level.**

This project demonstrated smooth international cooperation within the TROX Group. Project planning was carried out in Australia, produced in Malaysia, developed and tested both locally and in the R&D department in Neukirchen-Vluyn.

The production group in Malaysia invested specifically in a new fin press for manufacturing the heat exchangers for this project. Size and variability of the machine was adjusted precisely to the requirements of the upcoming project. All diffusers also have a Pressure Tab Valve (PTV), to speed up commissioning.

With respect to sustainability the client also specified strict requirements relating to transport and packaging. Only two packaging materials were used making recycling easier: a carton for repackaging and pallets, with adhesive tape only on the front and on the spigot.



Ongoing communications between all parties in the supply chain minimised interruptions and guaranteed the smooth running of processes.

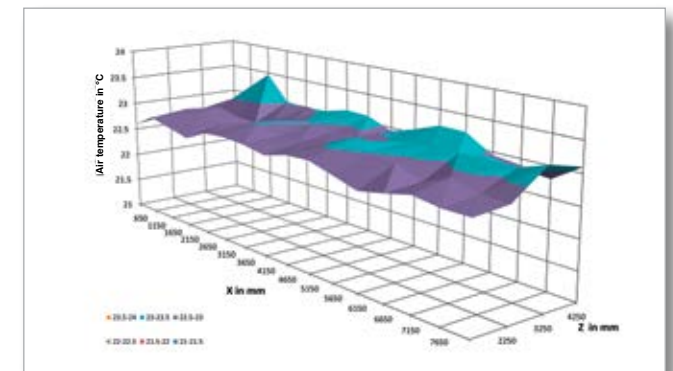
**Testing in the laboratory.**

To guarantee the utmost comfort and convenience, extensive tests, relevant to each product type, were carried out in the laboratory prior to construction.

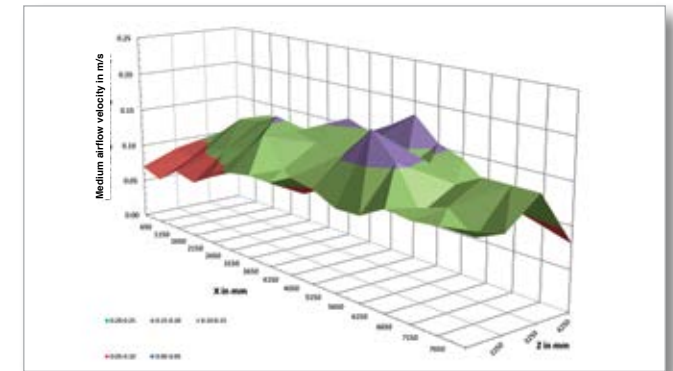
These included:

- Reduction of airflow velocity and difference in air temperature in the occupied zone
- Temperature variation
- Draught-free/DR + PMV + PPD (ISO7730)\*
- Sound power level and pressure loss
- Thermal output/cooling and heating

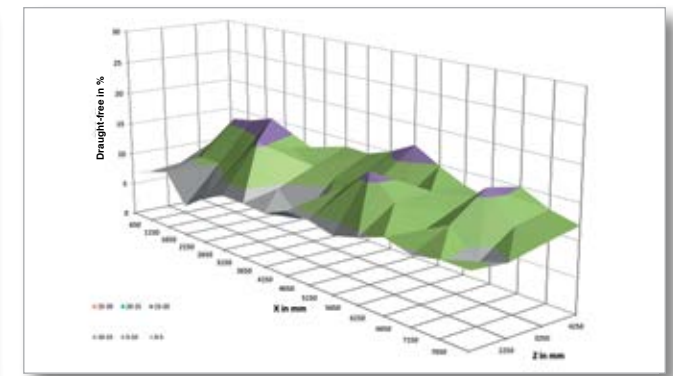
\* DR: Draught air (Draught Rating), PMV: predicted mean vote, PPD: predicted percentage of dissatisfied



Air temperature



Medium airflow velocity



Draught-free





The interior zones were fitted with passive chilled beams and swirl diffusers, the perimeter zones with combinations of active chilled diffusers DID632, DID631, DID-E and DID 300B, (all fed with water cooled in the harbour basin and controlled demand-based). The result: the ventilation and air-conditioning system in Barangaroo operates to the complete satisfaction of the clients and users.



Active chilled diffuser DID

#### **Six stars for sustainability.**

The highest building in Australia was created with the construction of the 42-storey Barangaroo South Tower 2, which was also awarded the highest grading (6 green stars) by the Green Building Council of Australia for sustainable office buildings.



# High energy efficiency potential in office architecture.

For a successful energy transition<sup>1</sup>, aside from the massive development of renewable energy, a clearly improved energy efficiency in building stock is necessary. According to BMWi, around a third of the energy consumption of the entire building stock for room heating, warm water, cooling and lighting goes to non-residential buildings. A fifth of this goes into office buildings. According to the Dena study, 64% of office buildings were constructed before the first heat protection directive came into force in 1978, this means that there is huge potential for saving to be tapped into during the next few decades. Here the consumption of energy for heating and warm water alone amounts to around 20%.

The consumption of energy in all office and administration buildings for heating, warm water, lighting and cooling amounts to around 65 TWh/a. There is actually no precise data available as to what share of this should be applied to air-conditioning and ventilation systems. The details deviate greatly from each other: 13% (BMWi) and 51% (Ecofys).

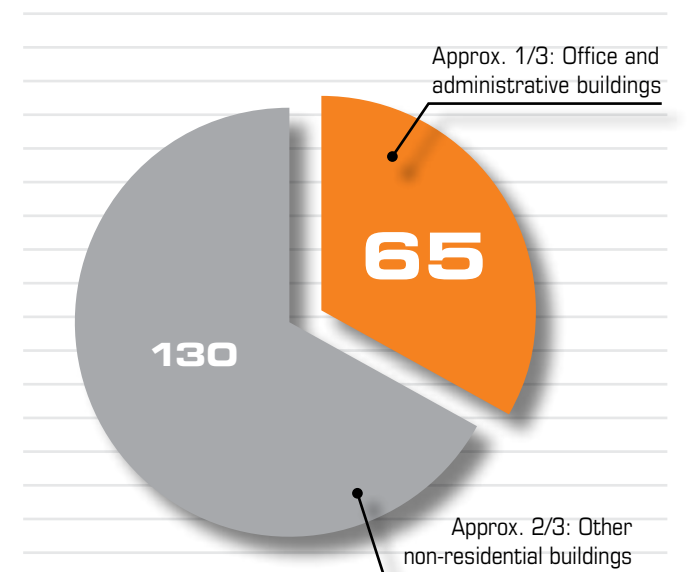
However, according to an FGK study<sup>2</sup> around 30% of energy (power and heat) could be immediately saved as a result of an energy inspection which considers low-investment measures (i.e. by means of simple changes during running operation – such as operation optimisation, cut-downs or rectification of faults). There is huge potential particularly in the broader use of heat recovery; especially in the areas of speed control for fans and pumps.

In the area of electric energy there is a saving potential of around 3.67 TWh<sup>3</sup>, the study established. A complete exchange of the heat recovery devices to the current standard could save an additional 15 TWh of heating energy.

An additional untouched area is the regular inspection of systems. According to FGK<sup>2</sup> (professional institute for air conditioning in buildings) up to 55 GWh of primary energy could be saved by means of the regular maintenance of existing systems. Yet currently only around 3% of air conditioning systems are inspected regularly.

The possibilities contained in the energy-efficient refurbishment of obsolete room air conditioning systems are potentially huge. The conversion of existing systems to a demand-based regulation (adjustment of speed) alone would lead to energy savings equivalent to half of a nuclear power station's output.

**Power consumption: heating, warm water, lighting and cooling [in TWh/a]**



Source: BMWi

<sup>1</sup> Figures refer to Germany. Source: Deutsche Energie-Agentur [dena] (German Energy Agency) Study of office real estate. Energy efficient condition and incentives for increasing energy efficiency.  
<sup>2</sup> Institut für Luft- und Kältetechnik ILK Dresden [Institute for ventilation and air conditioning] and Schiller Engineering office commissioned by the Fachverbands Gebäude-Klima [FGK] [professional institute for air conditioning in buildings] and Herstellerverbands Raumlufttechnische Geräte [association of ambient air unit manufacturers] [RLT] [Air Handling Unit]



# High-Tech-Design. Symbiosis of economy and safety.

```
... modifier_ob.  
... mirror object to mirror.  
... mirror_mod.mirror_object  
... operation == "MIRROR_X":  
... mirror_mod.use_x = True  
... mirror_mod.use_y = False  
... mirror_mod.use_z = False  
... operation == "MIRROR_Y":  
... mirror_mod.use_x = False  
... mirror_mod.use_y = True  
... mirror_mod.use_z = False  
... operation == "MIRROR_Z":  
... mirror_mod.use_x = False  
... mirror_mod.use_y = False  
... mirror_mod.use_z = True  
... selection at the end -add  
... mirror_ob.select= 1  
... modifier_ob.select=1  
... context.scene.objects.active  
... ("Selected" + str(modifier_ob.  
... mirror_ob.select = 0  
... = bpy.context.selected_object  
... data.objects[one.name].select
```

System technology is speeding ahead. During this time of climate change the economic and ecological aspects are coming more and more to the fore. A newly developed control technology with frequency inverter for smoke exhaust fans now leads us to the point where building investors can obtain enormous cost benefits.

```
... object.  
... mirror X"  
... context):  
... context.active_object is not
```





Efficiency and safety: The axial smoke exhaust fan BVDAX can be controlled via frequency inverters and has a fully thermally insulated housing which tightly seals the external envelope of the building.

#### Smoke exhaust fans with frequency inverter.

While the adjustment of speed for ventilation fans (demand-based supply) is normal, frequency inverters have not been used for smoke exhaust fans up to the present because constant volumes were assumed. TROX X-FANS recognised the potential of speed-regulated smoke exhaust fans since it offers the option of using only one smoke exhaust fan for different building sections with different volumes, which represents a huge saving of costs for the operator with respect to both investment and maintenance.

#### The task of a frequency inverter?

The motor of a fan connected directly to the three-phase network would run at the constant speed typical for the network frequency. A frequency inverter ensures that the alternating voltage supplied by the local network can be converted into an alternating voltage whose amplitude and frequency can be changed.

Precise speed adjustment which aligns itself to the required load is possible by the control of frequency and voltage.

Frequency inverters make speed adjustment of smoke exhaust fans possible



#### Safety first.

Safety is the highest priority for fire and smoke protection since it involves the saving of human life. This is why the "brain" and "receptors" of a smoke extraction system, the control and sensor systems, must work absolutely reliably. To support this requirement special firmware was developed for the frequency inverter which guarantees the safe smoke extraction in the event of a fire. Here the protective mechanisms of the frequency inverter are bypassed. TROXNETCOM with its economical and absolutely safe AS-i architecture also guarantees this high standard of safety (up to SIL2). The controller requires merely five milliseconds for the retrieval of data. Therefore, the control centre is, at all times, precisely informed about the current condition of the system. Also regular functional tests are carried out and documented to ensure that all components and systems function reliably in the event of a fire.

#### X-FANS CONTROL saves costs.

With the new X-FANS CONTROL frequency inverter unit (certified according to EN 12101-3) TROXNETCOM control system is now also in the position to adjust the speed of the smoke exhaust fans safely and precisely in single or multi-area systems. This is currently the only type of this solution on the market.

The speed adjustment of the smoke exhaust fan leads to enormous savings on initial investment, installation and maintenance costs:

- Only **one** smoke exhaust fan can be used for several smoke sectors. This is made possible by means of adjusting the respective volumes.
- This also allows for the smallest possible fan sizes to be used.

The result: Less need for space, fewer components, ducts and cables, less installation work and less maintenance expenditure.

The frequency inverter unit is fully pre-programmed at the factory, and is therefore easy to install. The optional TROX X-FANS fan diagnosis system also allows for maintenance based on the actual condition of fans. This extends the deadlines for replacement, demonstrates functional reliability and ultimately saves money.

This is also the case for the high thermal insulation option available for the fan housings, which meet the EnEV specifications and tightly seal the envelope of the building.

#### X-FANS CONTROL in Stuttgart's showpiece.

This year Cloud No. 7 opens, which is a prestigious building in the centre of Stuttgart with hotel and privately owned apartments (priced between 8,500 and 14,000 euros per square metre). The 61 metre high tower is equipped with smoke exhaust fans of type BVDAX, BVAXN and BVZAXN, which are regulated via frequency inverters. Thanks to the new inverter system there is a large potential saving available to the investors.

Stuttgart: Cloud No. 7





**Colour your Life.  
Colour for  
functional  
architecture.**

A young student objects to the grey wasteland of numerous concrete buildings: Using Photoshop he attacks them with colour and gets surprising results.





Architecture often presents itself with a dull side. Unimaginative concrete blocks, grey in grey, make the image of many large cities look bleak. That is Brutalism. Yes, this is a genuine term. It describes an architectural style of the modern world. The term originates from the French *béton brut* (‘raw concrete’), which refers to a basic characteristic of definition of style, the visibility of the building’s materials.

The grey of the concrete disillusioned an architecture student and at the same time inspired him. In an unusual project Paul Eis, aged 19, injects colour into the uniform grey of large cities. Using Photoshop he turned boring panel structures and office buildings into colourful works of art.

**“I definitely see my photo series as criticism of the uniform grey of city architecture”** Paul Eis (Student of architecture)



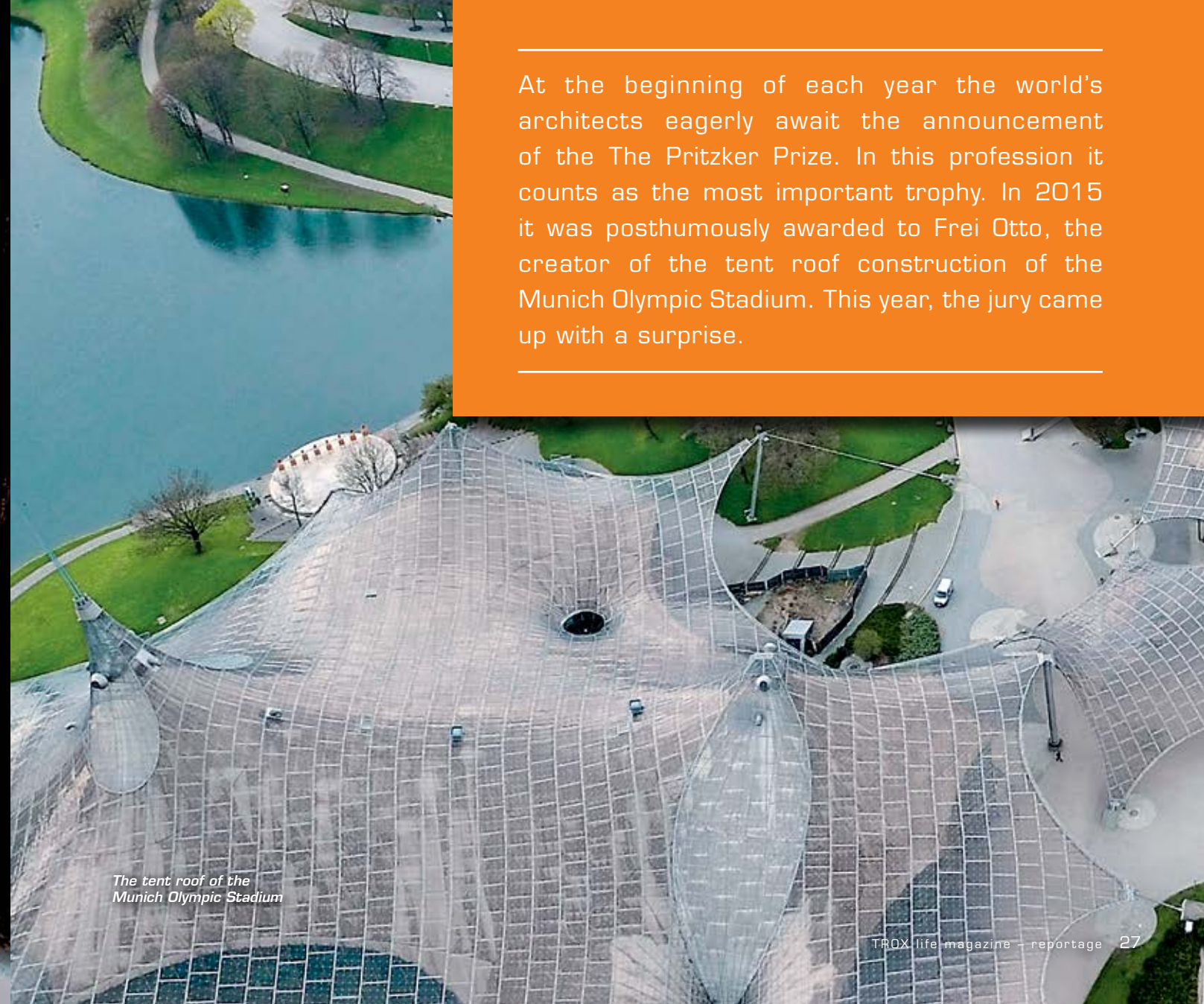


*Vinyard Bell-Lloc, Palamós, built into the grape producing ground where the wine is stored.*

# ”The Nobel prize of architecture.“



At the beginning of each year the world's architects eagerly await the announcement of the The Pritzker Prize. In this profession it counts as the most important trophy. In 2015 it was posthumously awarded to Frei Otto, the creator of the tent roof construction of the Munich Olympic Stadium. This year, the jury came up with a surprise.



*The tent roof of the Munich Olympic Stadium*



It was awarded for the first time in 1979 and counts as the Nobel Prize of architecture: The Pritzker Prize donated by the founder of the Hyatt hotel chain. Star architects such as Richard Meier, Frank O. Gehry, Aldo Rossi, Tadao Ando, Renzo Piano, Norman Foster and Zaha Hadid count among the most famous prize winners.



*The Soulagés Museum in Rodez*



*Open area for the Restaurant Les Cols, Olot*

*Barberí Laboratory, 2008, Olot, Girona, Spain*

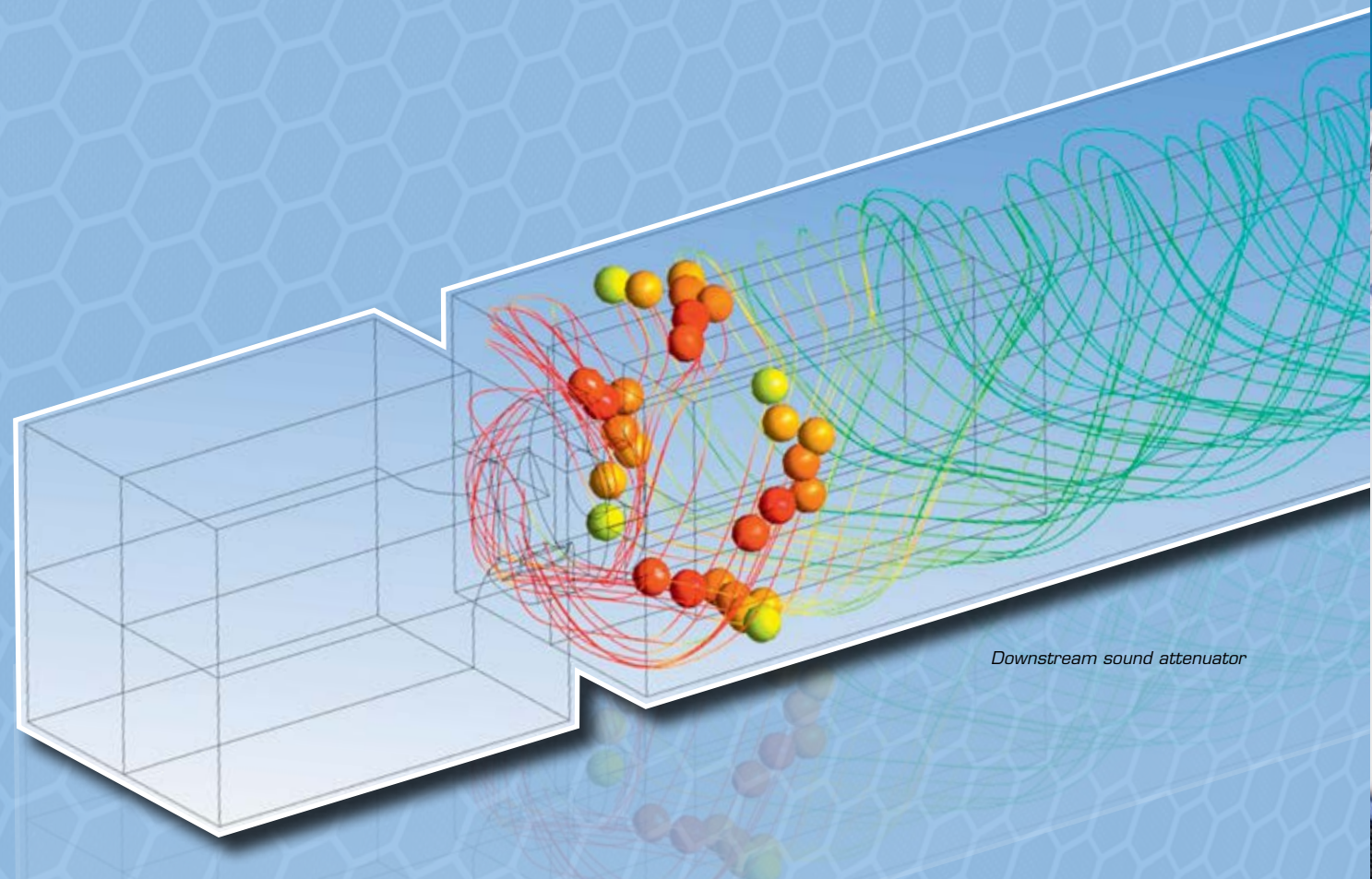


**The Pritzker Prize winners of 2017.**

This year the world's most important architecture prize surprisingly goes to the trio "RCR Arquitectes"\* in the Catalanian province, quite a sensation. The three architects have been working in the small town Olot northwest of Girona since 1988 and are known for creating their designs out of the regional context. No design icons or pompous buildings with general handwriting; rather, they charm us with individual architecture and consideration for nature and environment.

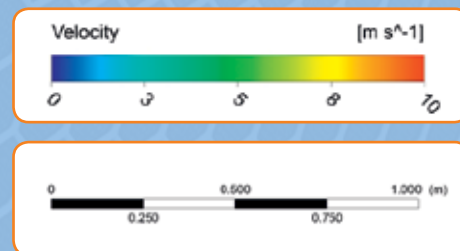
\* Rafael Aranda, Carme Pigem and Ramon Vilalta





Downstream sound attenuator

# Efficient design.



What counts during the development of new and the improvement of existing products is to raise the well-being of people. However, aside from achieving the highest possible air-conditioning comfort, safety and reliability, the art lies in achieving the highest possible levels of energy efficiency.



**Efficient Design.**

On the path of the air through a building there is the potential for optimisation that should be utilised. This is why TROX continuously strives to develop these opportunities and to improve the energy efficiency of ventilation components and systems. What counts is to minimise resistance, improve flow characteristics and acoustics, and maximise the efficiency by also exploiting the optimum interaction between the components. Under the leading theme of the trade fair "The TROX principle", numerous improvements and innovations have been developed along the air's path.

**Air conditioning.**

The X-CUBE can be classed as a state-of-the-art central AHU. With X-CUBE control it also offers an intelligent control system which has been specifically aligned to the requirements of the ventilation industry. Our R&D engineers continuously work on the further optimisation of air treatment components.

For the new TROX downstream sound attenuator for the X-CUBE a patent application has been filed. Uniquely, it is installed directly behind the fan, which noticeably reduces the sound pressure level. This not only saves space but this intelligent air distribution approach results in higher energy efficiency thanks to clearly reduced flow losses.



Downstream sound attenuator

A CFD analysis of the new sound attenuator shows improved airflow characteristics which also lead to energy savings.

**Air distribution.**

The new combination of Sirius plenum box with the RFD swirl diffuser is plenum box, volume flow controller, sound attenuator and air terminal device all in one. By placing the cylindrical volume flow controller directly above the air terminal device and the integration of sound absorbing materials, a very compact plenum box with excellent acoustic properties has been created. A real cost-saving unit.



A combination of Sirius plenum box and RFD swirl diffuser: The smart total solution with up to 50% cost saving compared to single components.

By optimising the air distribution the newly developed PURELINE slot diffusers operate quietly and efficiently preventing ceiling contamination. This result was reported in detail in the last issue of TROX Life.



PURELINE slot diffuser

**Air-water systems.**

The DID-E2 is a further development of the successful active chilled diffuser DID-E. It is ideal for installing in a plasterboard bulkhead, e.g. in a hotel or patients' hospital room. Thanks to its extended performance range and the additional boost operation, it can respond very quickly to desired temperature changes. It is also whisper quiet since no fan is required in the room. The new nozzle geometry cares for a wide range of applications and greater efficiency thanks to reduced pressure losses.

Various design versions are available for the secondary and supply air grids. Also the air discharge direction can be adjusted manually later via the supply air grid, which ensures high comfort in a waiting area application.



SKYBEAM

A totally new chilled beam system: The multifunctional, modular constructed chilled beam SKYBEAM can also be fitted with lighting elements and additional services such as smoke or motion detectors. Many design options and colour combinations turn it into a real eye-catcher. (See also p. 8/9)



Metal frames and side panels in various colours.



DID-E2

**SCHOOLAIR: Increased performance in the smallest of spaces.**

SCHOOLAIR-V-HV is yet another addition to the SCHOOLAIR range of ventilation units, and is suitable for considerably higher volume flow rates. Just two units with a flow rate of 600 m<sup>3</sup>/h each in boost mode are sufficient to provide standard classrooms with the required fresh air in order to achieve and ensure an average CO<sub>2</sub> concentration of less than 1000 ppm.

**New construction with rotary heat exchanger.**

A new and special feature of SCHOOLAIR-V-HV is the rotary heat exchanger used for heat recovery. The thermal energy is temporarily stored in the storage mass, a solid, slowly rotating wheel, and then, as the wheel comes into contact with the cooler airflow, the thermal energy is transferred into it. This process results in much higher efficiency levels when compared to plate heat exchangers.

As the rotary heat exchanger recovers the moisture from the air, no condensation forms, which in turn allows for omitting frost protection, i.e. the heat exchanger need not be switched off if the temperature falls below zero. No condensation forms so no condensate pipes are required, which is more hygienic. An ideal solution for new buildings and energy-efficient refurbishment.

Thanks to the heat recovery all year round, less external heating energy is required. Maintaining the humidity also protects the room from drying out during high air change rates. This raises the comfort of the climate.

Due to its proven high energy efficiency based on innovative heat recovery and acoustically optimised EC fans, the device already now meets the Eco design guideline ErP 2018.



SCHOOLAIR-V





# Awarded by the customer. TROX Technik.

As part of their 50th anniversary celebration, the German cci Dialog publishing house awarded, for the first time, a prize for trustworthiness in the ventilation, air conditioning and refrigeration industry. A significant award because the manufacturers are evaluated by their customers, the designers, HVAC contractors, system owners, facility managers and energy consultants. The winners were determined based on 25,600 votes from 536 jury members.

#### **TROX won three awards.**

**1st prize: Air terminal devices**

**1st prize: Fire protection components and systems**

**3rd prize: Central air handling units and their components**

For Udo Jung, Member of the Board of Management of TROX GmbH, "a prize of special value because it represents proof of the confidence our customers have in us. To care for and bind customers is of the utmost importance to us. Trust is something that doesn't come overnight; you have to earn it, through honesty, reliability and continuance. Given the stiff competition, all of us at TROX are proud and happy to have been named among the best in air management and fire protection, which are our strongest fields, and also in the air handling units sector, to which we are comparatively new."

# TROX academy

◀ **Review of 2017**  
**Preview of 2018** ▶



With our customers and partners we cultivate an in-depth exchange of experiences at the TROX ACADEMY. The seminars are diverse and interesting in order to continuously promote the professional expertise. The events are conducted by TROX employees and also by renowned external speakers.

The opportunity to attend has already been used by over 1,800 participants this year. A special highlight certainly was the TROX TLT Event Symposium in Bad Hersfeld on August 10 and 11. The main focus, as in other TROX seminar events in the entire German territory, was on mega trends of the technical building equipment with exciting lectures by renowned speakers.

How do business processes change in the TGA by BIM? What opportunities does digitalization offer in building services? These and similar questions were presented and discussed. Also presented were practical application reports and demonstrations of new techniques, new construction possibilities and current trends involving ventilation and air-conditioning technology as well as fire protection and smoke extract.

The crowning conclusion of the symposium at Bad Hersfeld was the visit of the musical "Titanic" at the Stiftsruine festival, one of the largest Romanic basilicas north of the Alps. The event was held in spite of the pouring rain. The unique tent roof construction over the ruin protected the audience from the floods. The huge "foldout umbrella" was developed by the famous Pritzker prize winner, the architect Frei Otto. Read also the report on pages 26 to 29.

The TROX Academy has much planned for 2018. Aside from numerous fire protection and smoke extract seminars covering installation, commissioning and maintenance, in-house expert lectures locally on different air conditioning and ventilation and safety topics, via half-hour Webinars TROX will acquaint its customers with complex topics (e.g. the new filter standard). Also two symposium series are planned, one in the area of ventilation and air-conditioning technology and the other in the area of fire and smoke protection. The academy programme for 2018 will be published by the end of the year at [www.troxtechnik.com](http://www.troxtechnik.com).



# Interview with Norbert Heger and Michael Buschmann.



In the context of the increasing automation of building services, there is a strategic necessity to offer customers dedicated service throughout the product life cycle. With the takeover of the majority interest of the TROX HGI GmbH (formerly HGI mbH) and the spin-off of the Technical Services in the TROX Service GmbH and Co. KG, TROX is ready to meet these growing demands for the future.



**Mr. Buschmann, TROX intends to rely more on the technical service in the future. What are the reasons for this?**

Automation and more and more intelligent networks are ever on the increase in building services. This progressive technology requires expert knowledge, to which planners and HVAC contractors must have access to when necessary. That is why manufacturers can no longer limit themselves merely to their basic task, the development, production and marketing of products. Rather, they must pass their special know-how on to their customers and offer them associated services. In the future, products and systems will be supported throughout their entire life cycle.

**Please give us a specific example of what service in the air conditioning and ventilation sector involves.**

Service basically starts with the enquiry and the order. Take the room air control unit as an example, which in some cases can include 50 or more networked products. Our task starts with planning recommendations and the configuration of the units, so that they can be attuned precisely to the requirements and spatial conditions. It continues with the logistics: Just-in-time delivery and just-in-time order, which means the devices are supplied according to the sequence of their installation.

In addition, the automation of the systems demands a lot of special know-how with regard to the parameterisation and monitoring of a system. That is why TROX together with the TROX HGI GmbH (formerly HGI mbH) has developed strength in this area.

Norbert Heger, Managing Director of TROX HGI GmbH, founded the HGI mbH with its headquarters in Hörstel, Germany over 20 years ago.

Michael Buschmann, until now Head of Product Management of Fire Protection and Smoke Extraction Systems at TROX GmbH, and Norbert Heger have taken over the management of the TROX Service GmbH & Co. KG.

**Mr. Heger, welcome to the TROX team.**

Thank you, I am really looking forward to my new task.

**What does it involve?**

The processes in production sequences are undergoing radical changes. Industrially produced components are put in operation as complete systems on the construction site because it reduces costs and prevents sources of error. To this we want to do justice by actively cooperating in the design of the sequences by making ourselves available to our system partners at the construction site both with advice and support. As a system integrator who intelligently networks the components of a system we want to support our customers especially in the automation sector – not the classic areas of the air conditioning and ventilation sector.

**Please describe the sequences to us.**

We will make a project leader available to the customer in the system business. Technical consultation is carried out directly after the order is received. The project leader will then, as it has been handled by the HGI up to now, support the customer during all phases of the project: starting from project planning via the coordination of deadlines and up to programming and project-specific parameterisation and commissioning of the system, and, if necessary, also the integration of the air conditioning system to the overriding central building management system.

**Are there still additional services beyond this?**

Yes, depending on the sequence of the construction phase we are available around the clock, if desired by the customer, also for the maintenance of safety and information-technical systems and for support during malfunctions. Systems can be remotely controlled via our Remote Operations Center (ROC), and if required, the appropriate support can be initiated.



**Please explain that to us in greater detail.**

The Internet makes this possible. Our components and systems communicate with each other thanks to intelligent technology. The information is passed on to a central location via the Internet. This makes remote access to systems possible for us.

A specific example: Monitoring in an event hall signals a deviation of a comfort parameter. This impacts the climate comfort during an event.

Thanks to the fast detection of the problem, quick supply of replacement parts and thanks to the deployment of our emergency service, the operator receives fast assistance which is also available outside normal working hours.

We are in the position to guarantee the customer fixed response times. An especially important aspect for fire protection and smoke extraction systems is that complex systems must, above everything, be reliable.

**Buschmann:** That is why we as leading manufacturer of complete room air conditioning system solutions, as well as fire protection and smoke extraction systems, see ourselves obligated to provide reliable commissioning, controlled remote monitoring and safe system technology.

**Please tell us! How did the merger of HGI with TROX come about?**

We have been working together already for a long time and very successfully, and as HGI has increasingly relied on TROX technology they are familiar with the products and systems. This led to the thought of striving for an even closer collaboration.

**Heger:** And for us the collaboration with a leading manufacturer offered an exciting challenge and future-oriented task.

**Mr. Heger, Mr. Buschmann, thank you very much for this interview and we wish you a lot of success in this new venture.**



# Design or not design.



As a result of an extremely high focus on aesthetics do designers miss what could be described as the most important feature, namely the functionality of the product?



Have you ever pressed lemons with a designer press? No doubt a design icon, but does it really fulfil its function? My experience: The juice squirts to all sides. Even a plate placed under the press only catches the bare essentials. It is also unstable and does not make it easy for the user to press everything out of the lemon. In spite of all the effort and exertion of force, the yield is poor.

**Design follows function.**

Is the design maxim here reduced to absurdity? Is design the end in itself? Do unusual design objects fascinate in spite of functional flaws? Design or not design, that is the question? The most non-designed part of my kitchen comes from the weekly market. A cheap and ugly plastic piece! But, it perfectly fulfils its function.

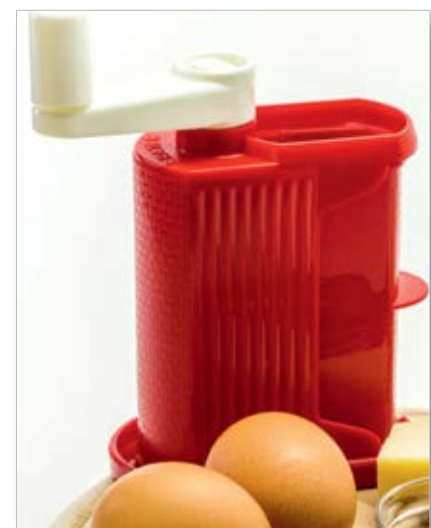
The grater with a V-shaped knife, which cuts potatoes into fine slices as quick as a flash for a perfect potato salad. But care must be taken. The fingertips are at risk! As far as cutting technology is concerned, the perfectly styled products of renowned manufacturers have totally failed.

Or do you know the parmesan mill, which I bought at a market in Italy? Red non-design. But with convincing functionality. The parmesan spreads itself wonderfully fine over the noodles. Not all cheese has been used? No problems either. The thing can be closed. No crumbs trickle out, and back into the refrigerator ready for the next pasta. It can, of course, also be found on the Internet.



A whistling kettle for music to your ears. The whistle made of copper is pleasantly pitched at "E" and "H" when the steam escapes. The credo: Design for all the senses. The designer wanted to avoid the unpleasant whistling of conventional water kettles.

Nice idea, but sadly they forgot to think about a functional pouring spout. The water kettle drips during pouring. Here the function sadly falls down, literally all over my work surfaces. I think my kettle is whistling.



**Then there is still the category of design ideas that you really don't need... but you don't want to do without.**

Technology freaks absolutely crave for such gadgets. Technical innovations which seem to have an undreamed of appeal. Admittedly, even the author can't resist it. Now the toy gathers dust in the drawers: The fan with a USB connection that is supposed to cool the computer. The LED reading lamp that you clamp to the book and which perfectly fulfils its purpose, as long as you don't need to turn the page. Or the power bank you don't have available right at the moment when you want to charge the smartphone or it just ran out.

Of course, designers have not only developed technical toys. In the household all types of things gather, which initially radiate unbelievable fascination and then fill the kitchen cupboards without ever again seeing daylight: The popcorn machine, the milk foamer, the electric cheese or pepper mill or the multifunction cutting-slicing-shredding-fine-chopping machine, et, etc. All things that are really of little use.

One ingeniously simple idea was located in my wardrobe. Socks with an embroidered "L" and "R". However, the embroidery did not prevent the mysterious disappearance of one of the socks. Now I am only left with the „R“. The cause of the repeated disappearance has now been cleared up in a video on Facebook, which has already been shared 18 million times.



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