TROX life magazine feb/2011

Exhibition air.

Architecture needs to breathe. TROX and Hall 11 in Frankfurt/Main.

contents

editorial

Air is a factor in your quality of life.

But not just the only one! A good magazine with interesting articles and impressive pictures can also enhance the quality of your life. As is the case with our products, this is the goal of our new customer magazine TROX life.

For a company that is involved in the air business and understands the art of handling air, it stands to reason that its next step would be to design a magazine on this subject matter. Interesting stories, which are anything but plucked from the air, will illustrate the topic of air from many different perspectives. Technical details will form the background to an exciting interaction of different aspects that will take centre stage in the magazine. Our goal is to awaken your interest in air.

The first issue of TROX life covers topics associated with the upcoming ISH, the world's leading Trade Fair for sanitary, heating and air conditioning systems. Along with interesting scientific papers, you will also discover many surprising articles on all aspects of Trade Fairs, Frankfurt and air in general.

In the fresh air of Hall 11 in Frankfurt – which is incidentally provided by powerful induction units from the TROX product range – we will introduce you to a range of interesting innovations at the ISH Aircontec. Without a doubt one of the most important news items is that TROX has become a producer of central plant air handling units – a step that will enable our company to move from being a component manufacturer to a systems supplier. TROX has now become a one-stop shop for complete air conditioning systems.

In terms of the economy, the wheels are clearly turning in the direction of growth. Evidence of this could be seen in the huge number of visitors to the BAU in Munich. This issue of TROX life will give you the experts' predictions in terms of the economic situation of our industry, information on the delights awaiting you in Frankfurt and much much more.

I hope you enjoy browsing through the many different articles in this first issue of TROX life.

Have fun reading!

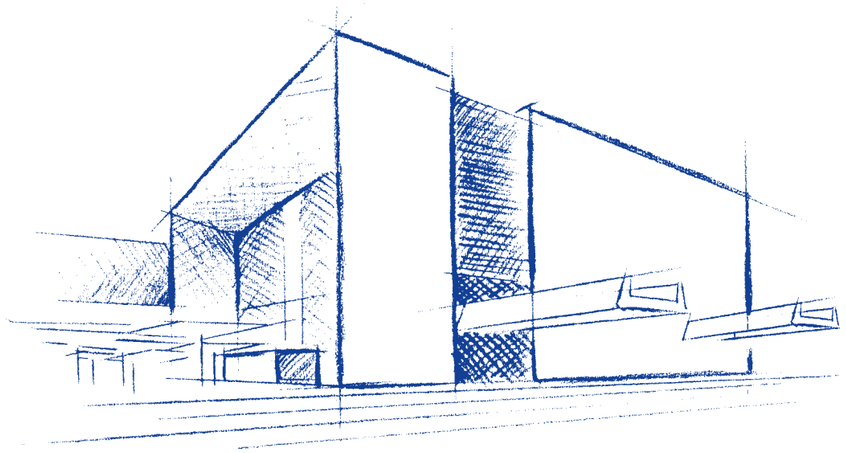
Lutz Reuter
Managing Director
TROX GmbH

The new Hall 11 – a breath of fresh air.

New hall in Frankfurt places huge demands on architectural and air conditioning systems.

This year, a feat of construction is awaiting ISH 2011, namely Hall 11. Virtually no other exhibition building has received so much attention from the expert community before even being built. TROX will not only be presenting its latest new developments in this hall at this year's ISH, but it will also be responsible for ensuring excellent air quality in this fantastic architectural triumph and increased safety in the field of fire and smoke protection.

Fair Entrance West



In contrast to other, often uniform, Trade Fair buildings, every exhibition building in Frankfurt is unique, reflecting the construction style at the time it was built. To enter the city's Trade Fair grounds is therefore like taking a trip back in time through the history of Trade Fairs in Frankfurt. Internationally renowned architects such as Helmut Jahn, Oswald M. Ungers, Nicholas Grimshaw or Rainer Hascher and Sebastian Jehle have impressively put their mark on the Trade Fair landscape, lending the Frankfurt Trade Fair grounds today a style that is truly unique. The foundation stone of this exhibition landscape was laid between 1907 and 1909 when the banqueting hall was built. The finishing touches finally came in 2009, the year of the grand opening of the impressive Hall 11 and the entrance building to the IAA in the western section of the exhibition grounds.

The Trade Fair grounds have become over time a „city in a city". The different architectural styles, including modern trends, Bauhaus and post-modern approaches, have combined to create a true work of art.

Planned and designed by the renowned architectural firm Hascher-Jehle, Hall 11 has an exhibition area covering more than 23,000 m² and combines innovative function with the highest aesthetic quality. With its western entrance building, the hall including the entrance building fits perfectly into an overall architectural concept that, even from afar, seems to beckon visitors in. Its transparency symbolises the many different visitors that enter its doors through the lively interplay of open and closed surfaces.

Exhibition Frankfurt, Hall 11: Areas with visitor traffic, supply air and smoke extract volume flows:

Hall 11.0 and 11.1 respectively
Exhibition area approx. 12,000 m², height approx. 11 m /13 m
Smoke extract, 480,000 m³/h
Supply air 468,000 m³/h

North foyer and south foyer, respectively
largest floor area available to public approx. 1,800 m² or 2,300 m²
Smoke extract 211,000 m³/h

Entrance building, total floor area approx. 5,000 m², height approx. 30 m
Entrance building, largest floor area available to the public approx. 2,600 m², height approx. 30 m
Smoke extract 500,000 m³/h

Exhibition Hall 11 in Frankfurt/Main

Construction:
Exhibition Frankfurt, Venue GmbH & Co.KG
Engineering:
Karl Lausser, Heizungsbau- und Sanitär GmbH
Technical support:
Engineering office Peter Vogelsang
Fire and computational fluid dynamics:
INNIUS GTD GmbH

Exhibition Hall 11 in Frankfurt/Main with TROX induction units

Difficult to even imagine. Huge quantities of air flow through Hall 11 in Frankfurt/Main.

Ask people what they dislike about attending Trade Fairs and their likely answer will be sore feet and stale air. Unfortunately, TROX cannot help with sore feet, but eliminating poor air quality is precisely its speciality. Hall 11 serves as a perfect example in this context, as the ventilation system faced a huge challenge here.

2,000,000 m^3 metres of air have to be re-circulated every hour in Hall 11 and in a manner that is draught-free, quiet and energy-efficient. This is a volume of air that is difficult to even imagine. An all air system would require a three-fold primary air flow rate for space cooling – with correspondingly high energy costs for air treatment and air supply. For this reason, air-water systems are the solution here. With these systems, 2/3 of the heating and cooling capacity is generated by means of induced air in conjunction with the medium of water. The huge advantage of air-water systems is that energy transported using water is much more efficient than if it is transported using air. The same heating and cooling capacity is generated but with a considerably reduced energy consumption.

„A new induction unit from TROX had already proved to be a great success in Exhibition Hall 3. For this reason, we decided to also use this type of product in the construction of Hall 11," said Anton Heisler, Head of the Building Services Department at the Frankfurt Trade Fair. „In their special field of application, these units are setting new standards with respect to ensuring energy efficiency and a climate of well-being."

Fair Entrance West´ Foyer

Complex simulation calculations were carried out in advance in order to be able to overcome this huge challenge. The calculations revealed that optimum results and air quality are achieved. Depending on the load (cooling or heating), the airflow discharge into the occupied zone can vary from horizontal to vertical, this is achieved by motorised adjustment of the damper discharge control blades. Discharging air from one or both sides, a total of 288 induction units with maximum dimensions of 2.50 x 1.80 x 0.65 m are installed in the 10 m-high hall, where they ensure excellent air quality for Trade Fair visitors.

IDH Induction units for high mounting heights

Technical data:
Length: 1.500 2.000 2.500 mm
Width: 305 and 548 mm
Height: 1.405 mm
Volume flow: up to 2.000 m^3/h outdoor air
Cooling capacity: up to 27 KW
Heating capacity: up to 170 KW

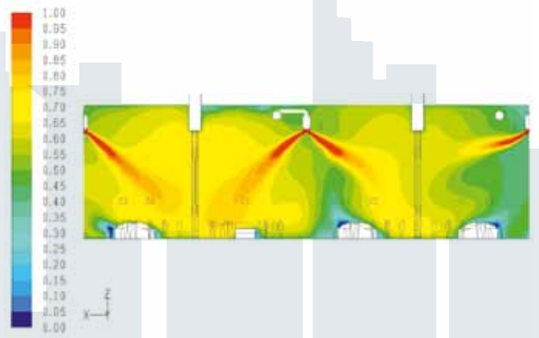
Simulations point the way.

For the ventilation and air conditioning of exhibition halls, displacement flow systems as well as mixed flow systems with swirl diffusers, nozzles or supply air grilles are used. Along with the classic ventilation systems, induction systems have also become an established means of ventilating such halls. The selection and size of the optimum ventilation system and its components have to be in line with the shape of the space, the target air conditioning parameters and the thermal loads.

Drawing on the positive experience with the air conditioning system used in Exhibition Hall 3, the decision was also made in favour of induction technology for Hall 11. The challenge: the sizing of the induction ventilation units taking into consideration the arrangement in the space and the drafting of a specification listing for the units operating at thermal loads of up to 350 W/m^2. To find the right solution here, it was decided to use CFD simulation (Computational Fluid Dynamics). The first step was to design the induction unit. In doing so, the dimensions along with the number, size and arrangement of nozzles were optimised with respect to the induction and performance requirements. Check measurements on just one sample unit verified the characteristics produced by CFD. Furthermore, the arrangement of the induction ventilation units was decided on the basis of aerodynamic considerations. Here, the length of the damper blade as well as its final shape played a decisive role. Instructions were subsequently drafted that specified which unit parameters needed to be set depending on the type of exhibition. The functional capacity of all system components and the operating manual was impressively demonstrated at the IAA 2009.

Dr. Peter Vogel, INNIUS GTD GmbH, Dresden.

Determining the characteristics using CFD.



Degree of Efficiency

Effective escape routes and preventing the spread of toxic smoke. Fire and smoke protection in Hall 11.

The purpose of exhibition halls is to provide a venue for people to meet with one another and to obtain information. Exhibition visitors have to be able to trust that the organisation responsible for planning the event has taken the necessary precautions to ensure their safety, so that each and every person can quickly adjust to a new situation in the event of a fire and get themselves out of the building. Preventative fire protection thus plays a central role here. In the planning of large exhibition halls, science and experience come together in a crucial complementary relationship and this helps to save people in an emergency situation.

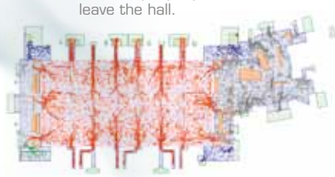
The basic principles of fire protection are incorporated into the design of a building from a very early stage. Fire protection and building geometry are intrinsically interwoven. The height of the hall affects the maximum length of the escape route; in Hall 11 this is 40 metres, which means that the width of the hall is therefore restricted to 80 metres.

The sweeping exterior terraces around the hall and the staircases play a central role in terms of evacuating the building on the top floor, making it considerably easier for visitors to reach a safe and smoke-free area within a very short period of time.

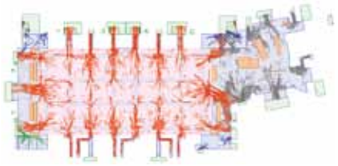
To customise the planning of individual escape routes for the fire protection philosophy, computer-aided escape simulations were carried out. A simulation of a dynamic evacuation of visitors needs to take into account reaction and delay times, the choice of escape route, people's behavioural patterns in terms of queue formation etc. and the development of toxic smoke. The calculations produced by the simulations in terms of the time needed for evacuation confirmed the effectiveness of the escape routes, which have a maximum length of 40 metres and a width of 3 metres.

Effective evacuation

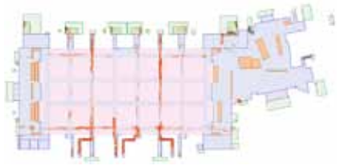
Minute 1: 15,649 people per floor start to leave the hall.



Minute 2: People moving.



Minute 7: Hall is evacuated.



In the event of fire more than 15.000 people per floor left Hall 11 in the quickest and safest way.

TROX Smoke extract damper

The visitors are warned by means of acoustic alarms. The smoke extract systems are controlled automatically by the fire detection system, and these help the visitors to leave the building in the event of a fire (which could reach over 35,000 people) and these also help the fire brigade personnel in their control tasks.

Maintenance and tests can only be carried out when an exhibition is not in progress, periods that are few and far between. During this time, complex programming and tests have to be carried out to ensure that the smoke extract systems are working effectively. For this reason, the hall was designed to reduce the possible fire scenarios to a minimum, which means that smoke extract systems have to ventilate larger areas and more rooms at the same time. After extensive planning and complex simulations, about 30 cases have been developed with automatic smoke extract. Approx. 2 million m^3/h of air is available for the purpose of smoke extract, and this air, in turn, has to be supplied to the building mechanically and through air inlets.

To stop the rapid transfer of toxic smoke via the air ducts, all together more than 1.500 fire and smoke extract dampers were installed .

Rüdiger Gurny,
Manager Fire and Smoke Protection,
TROX GmbH

For sure, the most modern of its kind: the International Center Fire Protection in Neukirchen-Vluyn.

TROX places a huge emphasis on the issue of fire protection. As market leader in this sector, the company has been pointing the way for decades. The TROX International Center Fire Protection (Internationales Center Brandschutztechnik - ICB) in Neukirchen-Vluyn, the most advanced facility of its kind, serves as a perfect example of TROX's pioneering leadership in this field. In cooperation with the RWTH Aachen, researchers in the ICB are exploring new ways of protecting and saving people in a fire situation.

TROX® TECHNIK
The art of handling air

The furnace - the heart of the International Center Fire Protection

Simultaneous recording of text and photographic data

Up there with the best Trade Fairs.

Interesting facts on the topic of Trade Fairs.

Data and facts on the Frankfurt Trade Fair.
The exhibition area is larger than the combination of 130 football fields. Every year, visitor numbers equivalent to the population of Hamburg bustle through the grounds – over 5 million m³ metres of renovated space.

Basic data
- Employees worldwide more than 1.770
- Number of fairs and exhibitions 88, over half from abroad
- Exhibitors: 39.169 domestic, 25.669 abroad
- Visitors: 2,5 million
- Net area: 1,8 million m²
- Floor space: 578,000 m²
- Available hall space: 345,697 m²
- Available free space: 95,721 m²
- Number of halls: 10

ISH 2009
- Visitors: 200,759 from 140 countries, 1/3 from abroad
- Exhibitors: 2.317
- 50 years ISH

The ten most visited Trade Fairs in Germany:

IAA, Frankfurt	*1,000,000*
CeBIT Hannover	*556,248*
bauma Munich	*501,523*
International Green Week Berlin	*494,574*
Mannheimer Maimarkt	*402,369*
Drupa Düsseldorf	*394,478*
Agritechnica Hanover	*355,118*
Boot Düsseldorf	*308,891*
IAA International Motor Show, Hanover	*300,000*
Frankfurt Book Fair Frankfurt	*290,469*
Platz 16	
ISH, Frankfurt	***200.759***

Trade Fairs in the web.
You will find all information on Trade Fairs in Germany at ***www.messen.de****.*

Simply immense.
Exhibition sizes that will astonish you.
Large, small, whimsical, incredible, unusual. Here is some information on Exhibitions and Trade Fairs that will simply astonish you.

The Trade Fair that beats all others.
The bauma Trade Fair in Munich breaks all the records: 500,000 visitors, 500,000 m² exhibition area, over 6,000 lorries and 500 heavy goods vehicles needed for delivery purposes, the largest exhibits (the arrival of a 200 tonne mining excavator took 2 months alone) as well as the highest exhibition items (a 160 m high crane with a lifting power of 1000 t).

The Exhibition with the most visitors ...
was the speech given by John Paul II. in September 1979 in Dublin when more than 1 million people came to the Phoenix Park to see the Polish pope.

The smallest Trade Fair ...
in Germany was held in Offenbach in an 18,550 m² hall and an open area measuring 400 m².

The Trade Fair for Trade Fairs.
This takes place every year in Nuremberg and is called Sensor+Test.

The world's largest Trade Fair grounds.
Germany is a cut above the rest when it comes to Trade Fairs. It is the word's leading location for Trade Fairs and Exhibitions. Five of the ten largest Trade Fair companies in the world come from Germany, their combined annual revenues in the year 2006 reached € 2.45 billion. Between 150 and 160 international Trade Fairs and Exhibitions are held every year, and these are used by approx. 170,000 exhibitors and attended by 9 –10 million visitors.

1. Hanover Trade Fair grounds	495,265 m²
2. Frankfurt/Main Trade Fair grounds	345,697 m²
3. Fiera Milano	345,000 m²
4. Cologne Trade Fair grounds	284,000 m²
5. Düsseldorf Trade Fair grounds	263,888 m²
6. McCormick Place Chicago	248,141 m²
7. Fieria Valencia	230,837 m²
8. Paris Expo Porte de Versailles	227,380 m²
9. Crocus Expo IEC Moscow	213,813 m²
10. Paris-North Villepinte	206,000 m²

Global Fairs.

TROX products are not only exhibited at international Trade Fairs, but they are also installed in the major exhibition venues around the globe, where they ensure the highest air quality.

Globalisation of the economy is on everyone's lips. The reason for this is the world is moving closer together. Markets are growing at breathtaking speed in the so-called emerging countries. It is no wonder, therefore, that strong German medium-sized companies like TROX decide to move onto the worldwide stage. According to the maxim of success-oriented companies „think global, act local", TROX has positioned itself in the international arena with 25 subsidiary companies in 22 countries, over 25 other sales offices and more than 50 branch offices and importers. Moreover, TROX now manufactures its products in 11 different countries, has a total of 13 production plants and carries out research in 11 research and development centres around the world.

International Climate Fairs.

The capture of overseas markets naturally includes the need to „be at home" at Trade Fairs around the world. TROX thus has a presence in countless countries and markets around the globe. Here are some examples of some internationally important „air conditioning Trade Fairs".

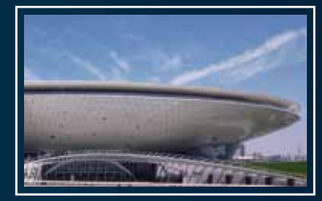
Acrex India, New Delhi	24. – 26.02.2011
ISK Sodex Istanbul, Turkey	02. – 05.05.2011
CIAR, Latin American HVAC-Congress, Mexico	14. – 16.06.2011
Febrava, Sao Paulo, Brazil	20. – 23.09.2011

Manchester Central Convention Complex, UK

Exhibition Center Fiera Milano, Italy

Bologna Fiere Exhibition Centre, Italy

Chengdu International Exhibition and Convention Center, China



Shanghai New International Expo Centre (SNIEC), China

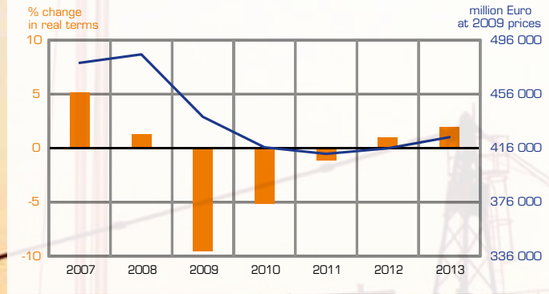
Kuala Lumpur Convention Centre, Malaysia

Fira de Barcelona, Spain

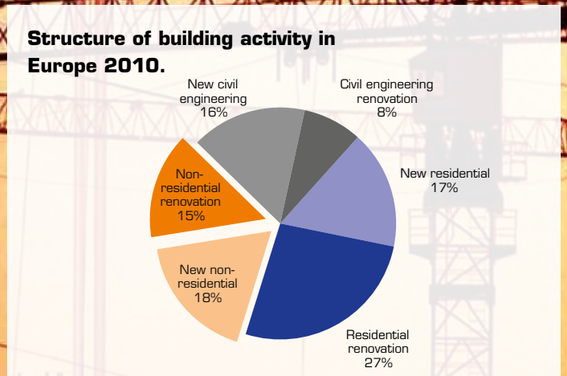
Instituto Tomie Ohtake, Sao Paulo, Brazil

Breathing room for fresh hope.

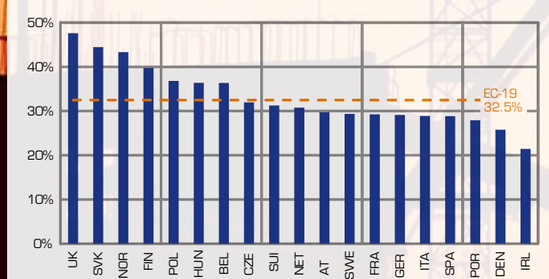
Development of investments in non-residential construction 2007 – 2013.



Structure of building activity in Europe 2010.



Percentage of non-residential construction as part of the overall building volume 2010.



Source: Euroconstruct Conference 2nd and 3rd December 2010 in Budapest

Market forecasts by the experts.
With the effects of the financial crisis having left their mark on our sector of industry, a better climate is being predicted in the building industry for 2011. Europe's leading research institutions are forecasting an eagerly awaited recovery over the next three years.

The economic situation in non-residential construction in Europe.

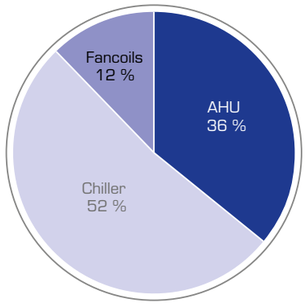
The recession has also had an effect on non-residential construction, albeit not to the same level as residential construction. After the high growth rates experienced in the economy up until 2008 due to the positive economic climate, these have now declined by roughly 15 %. A volume of almost 420 billion € is expected for 2010, a decline of 5.1 % in comparison with the previous year. The recession will not bottom out until 2011 (-1.2 % in comparison with the previous year). This will primarily be thanks to the private sector, rather than the public sector. Positive growth has been promised once again for 2012 and 2013.

The percentage of non-residential construction in terms of overall building activity has levelled off at a third, but this varies considerably depending on the country. The average in Europe is 32.5 %. In Ireland, however, this figure is just 21.5 %, while in the UK, this figure has reached 47.6 %. Higher percentages are also being recorded in Eastern Europe, where the average is 36.1 %.

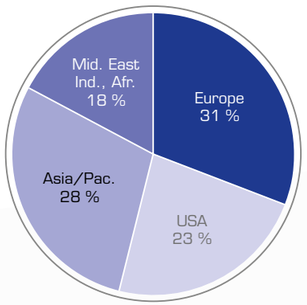
In 2008, the percentage of new construction was 58.3 %, and this declined by 13.7 % in 2009. Unfortunately, the negative trend will continue until 2011. New construction will then only account for 53.7 % of buildings. There has also been a decline in renovation and refurbishment activities, although not to the same extent as new construction. Its percentage is expected to increase to 46.3 % in 2011.

Commercial and industrial construction as well as office and administrative buildings comprise more than half of the total volume in the new construction sector. A third of the decline in the market can be traced back to this important sector. Great Britain, Slovakia and Poland are showing a very good economic situation in terms of new commercial building – the fact that these countries will be the venues for major upcoming sporting events is testament to this development, e.g. the Olympic Games in 2012 in London. With respect to new construction in the educational sector, anti-cyclical growth increments are expected for 2010. Likewise, the area of hospital and clinic building is also showing a positive trend.

The global market for air conditioning by product segments 2009.



The global market for air conditioning by region 2009.



Up and down in the global market for chillers, central air handling units and fan coils.

The global economic crisis has also had a severe impact on the ventilation and air conditioning sector since 2008. After global revenues in the product areas of chillers, air handling units and fan coils rose by 10 % in comparison with the previous year to reach $ 13.86 billion in 2008, the market has been on the decline since 2009.

The global market leader for „air conditioning systems“ is Europe with revenues of $ 4.08 billion. This is followed by the Asia/Pacific region at $ 3.66 billion and America at $ 3.04 billion. All three regions have recorded market declines, with only the Middle East, India and Africa managing to record an enormous increase in revenues of 42 % to $ 2.31 billion in 2009.

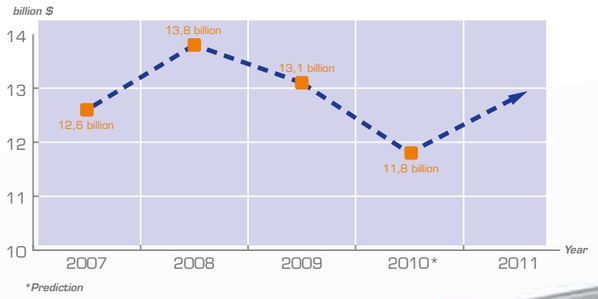
In Europe, the development in 2009 was very different. While chiller rates declined by 20 % to 51,300 units and air handling units by 25 % to 143,000 units, the sale of fan coils fell by 26 % to 836,000 units. The air conditioning market in Russia fell by almost a half to $ 240 million, and the countries of Greece, Spain, Great Britain and Italy recorded declines of 20 % or more. Only France managed to record only a slight decrease of 3 %.

Despite its market declining by 15 %, Germany also succeeded in maintaining its leading position in the European air conditioning market with revenues of $ 714 million in 2009.

At the end of 2010, analysts of the Japanese trade magazine Jarn and the British market research group BSRIA forecasted a further decline of 10 % in the European air conditioning market.

Source: CCI 1/2011 and 2/2011

The worldwide development in cooling/ventilation 2007 – 2011.



Trends and developments with respect to central plant air handling systems.

According to the statistical surveys, the central plant air conditioning sector of industry – at least in Germany and Central Europe – managed to survive the economic and financial crisis without any major existential problems. Exports to Eastern European countries, on the other hand, were hit severely.

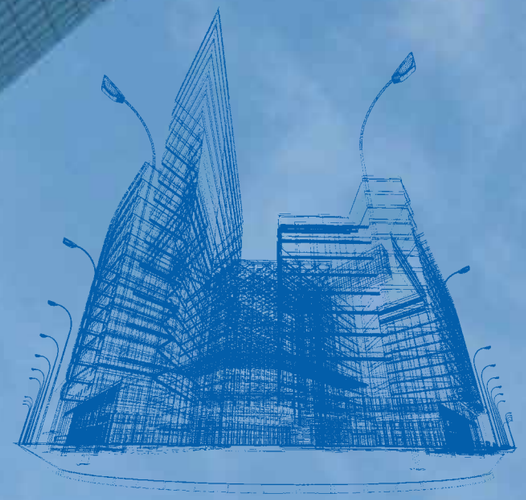
Thankfully, the markets for central plant air handling units are also undergoing dynamic development in this current prosperous period. An analysis of the current order backlog provides unmistakable evidence of this. From an energy-efficiency perspective, it is a very positive development that the number of units being equipped with heat recovery systems continues to rise steadily. Just as pleasing is the growing number of units being certified according to national energy efficiency labelling standards.

The next item on the agenda is to tackle the huge backlog of buildings requiring refurbishment by consistently implementing § 12 of the energy conservation regulation „Inspection of air conditioning systems“, and thus build up this market segment. If national and European energy concepts are pursued, manufacturers will face exciting challenges with respect to the integration of renewable energies in the overall environment of room air conditioning.

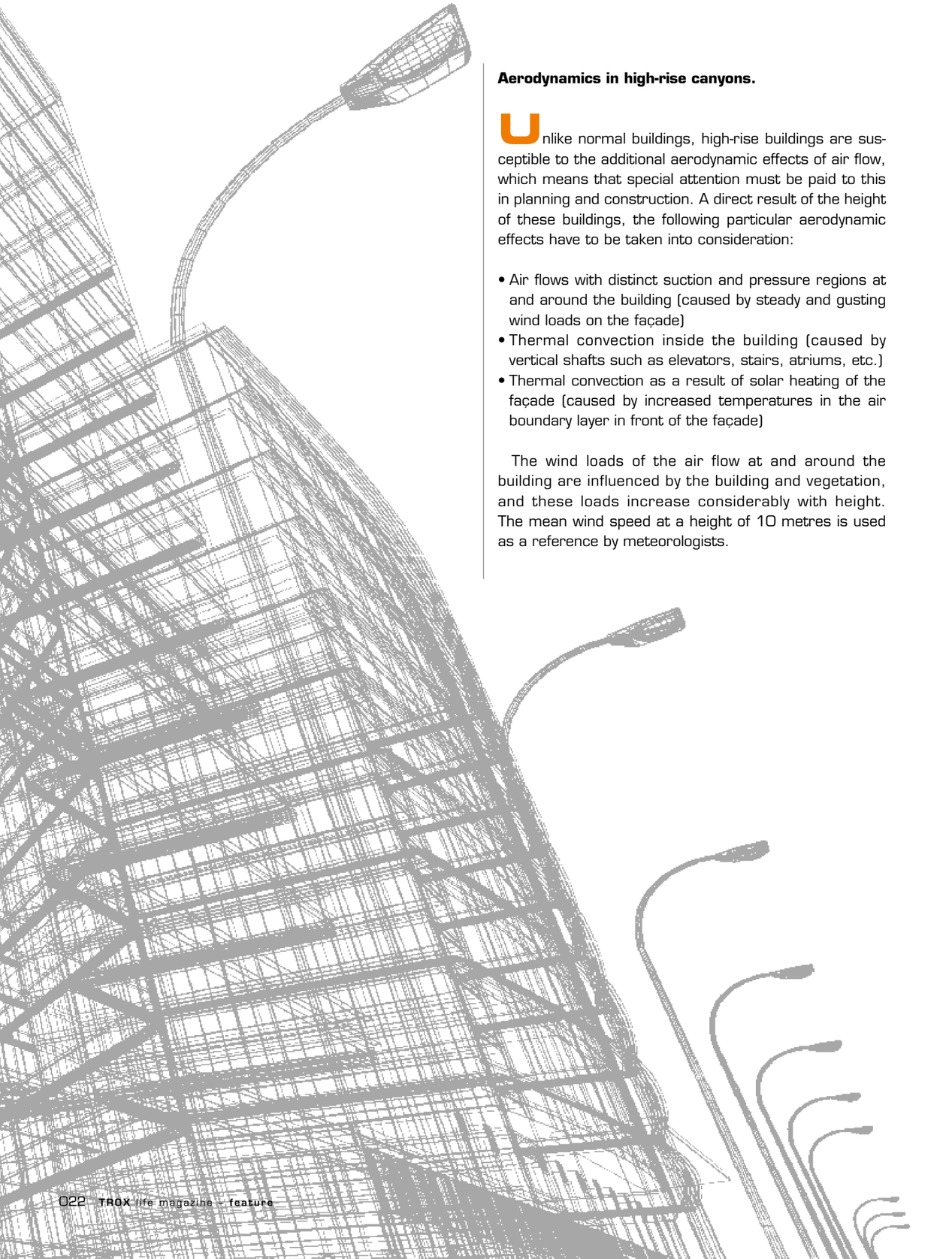
Günther Mertz M.A.,
CEO of Fachverband Gebäude-Klima e.V.

Air turbulence around high-rise buildings.

Aerodynamic flows affect building services engineering.



If you have ever been a pedestrian in the urban canyons of major cities, you will have undoubtedly witnessed the evidence of aerodynamic forces, namely powerful air movements. The following two articles discuss this special phenomenon.



Aerodynamics in high-rise canyons.

Unlike normal buildings, high-rise buildings are susceptible to the additional aerodynamic effects of air flow, which means that special attention must be paid to this in planning and construction. A direct result of the height of these buildings, the following particular aerodynamic effects have to be taken into consideration:

- Air flows with distinct suction and pressure regions at and around the building (caused by steady and gusting wind loads on the façade)
- Thermal convection inside the building (caused by vertical shafts such as elevators, stairs, atriums, etc.)
- Thermal convection as a result of solar heating of the façade (caused by increased temperatures in the air boundary layer in front of the façade)

The wind loads of the air flow at and around the building are influenced by the building and vegetation, and these loads increase considerably with height. The mean wind speed at a height of 10 metres is used as a reference by meteorologists.

In places with a high density of various high-rise buildings, aerodynamic turbulence between the buildings must also be taken into account. The comfort of pedestrians is strongly influenced by the microclimatic conditions and these can lead to mini tornadoes at the foot of the building, which can in turn lead to papers, leaves and sometimes even parasols being blown around.

To be able to react appropriately to these aerodynamic effects, the interaction between the façade and the type of ventilation must be researched and explored before the planning of high-rise buildings.

In the past, this interaction was almost exclusively determined by measurements in the wind tunnel. The performance capabilities of today's computers have pushed the boundaries of simulation beyond all perceived limits in terms of performance, and more importantly accuracy.

By means of Computational Fluid Dynamics (CFD), air flow and room temperature distribution in and around the building can be predicted with a high degree of accuracy. The ability, from the beginning of a design process through to commissioning, to size and determine the functional capacity of central plant air conditioning systems saves a vast amount of time and money.

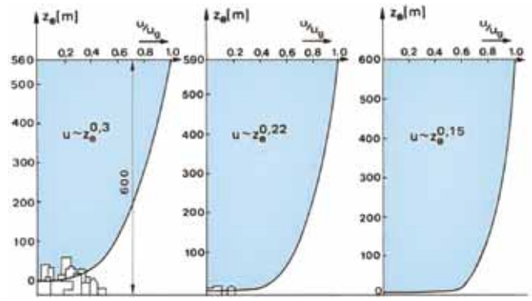
The development of highly efficient glass materials in recent times has meant that these materials absorb and reflect the sunlight at the façade; in the summer the façade surfaces can reach temperatures of up to 60° C. Particularly in the summer and on calm days, this physical effect leads to the appearance of a heated boundary layer on the façade with a strong thermal buoyancy on high-rise buildings. These boundary layers can reach layer thicknesses of up to 1 m, this was verified by ifes GmbH during the design of high-rise buildings using a CFD simulation.

In the design and sizing of decentralised façade ventilation systems, the particular effects of these temperature increases near the façade as well as the effects of the increased wind pressure at the façade at high levels must be specifically taken into account.

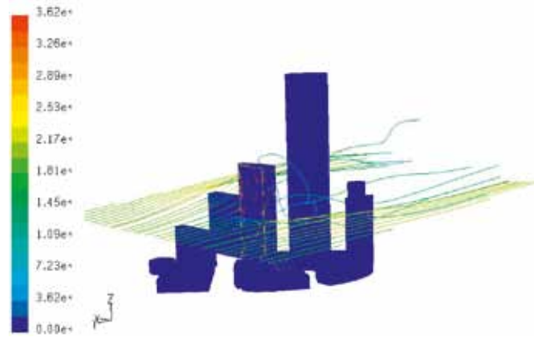
TROX has already utilised these findings in the development of its façade ventilation systems back in 2003. In this way, the performance of heating and cooling systems has been enhanced and differential pressure controls have been implemented with the aid of wind tunnel investigations and air flow simulations to ensure optimum ventilation.

Gerhard Hoffmann,
IFES Institute for Applied Energy Simulation and Facility Management

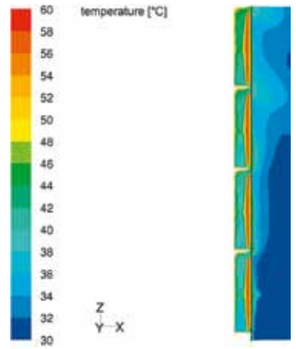
Air turbulence around high-rise buildings

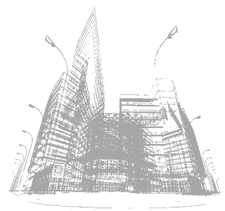


Air movement around buildings



Temperature distribution at the façade





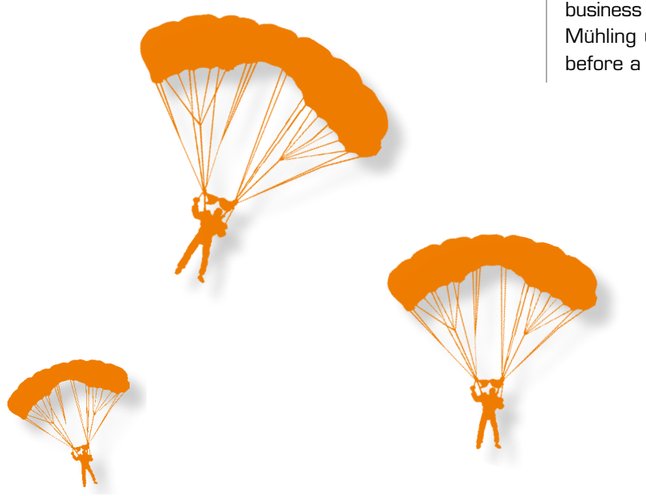
Sailing through the air.

Base-jumpers leap from Frankfurt Main Tower, 200 m above the ground.

„You have never known such fear. You see the ground rushing up to meet you and the only thing left for you to do is open your parachute. Your heartbeat accelerates to 180 and you ask yourself: Why am I actually doing this?“

Wind effects make the jump more difficult.

The man describing the adrenalin rush in the Focus-Interview is Jürgen Mühling, Chairman of the German Base-jumping Association for the region of Berlin-Brandenburg. His passion is basejumping and what draws him to this passion is the thrill of experiencing danger – something that is particularly high in basejumping. And as if that were bad enough, jumping from high-rise buildings involves even more risks, as we saw in the previous article.



Bridges, mountains, the Jesus statue in Rio de Janeiro, and even buildings have all been witness to the activities of base jumpers. The only place in Germany that offers the possibility of jumping from high-rise buildings is Frankfurt. The jump altitude is relatively low. And the narrow high-rise canyons produce treacherous thermal currents. Unlike jumping from an airplane, base jumpers do not have a lot of time to open their parachutes. What's more, base jumpers do not even carry a reserve parachute. For all of these reasons, base jumping is an extremely risky business and requires meticulous preparation and training. Mühling usually begins preparations three or more days before a dangerous jump.

For the fascinating ZDF series „Deutschland von oben" (Germany from above), „Mühle and Hannes" (Kraft), as they are called in basejumping circles, jumped from the Main Tower in Frankfurt, which is 200 m above the ground. The fascinating pictures shot during the jump were taken by a camera installed in one of their helmets – base jumpers need full use of their hands when jumping. Using the auxillary chute, which he holds in his hand when jumping and then lets loose, it opens the main chute within a matter of seconds, in order to be able to safely and precisely land in the narrow street canyons of Frankfurt.

„Of course, you don't want to die," said Mühling. „But base jumpers accept the risk." He refers to the base jumping community as „modern-day seafarers", because each jump is uncharted territory and a chance to discover your inner self. They are not afraid of dying, but rather of not living life with enough passion or intensity. And more and more people are joining this community.

The term ***base*** takes its name from the first letters of the terms building, antenna, span and earth.

Source:
TAKE OFF Fallschirmsport GmbH, Flugplatzstr. 3, 16833 Fehrbellin
We would like to sincerely thank „Mühle" Mühling and Hannes Kraft for their support as well as the photographers Frank Petrikat and Sasafly

AirBeam.

Hadi Teherani, the architect and designer who hails from Iran but has lived in Hamburg since he was six, studied at Technische Universität Braunschweig from 1977 to 1984. His first professional experience was acquired in the studio of Professor Joachim Schürmann in Cologne, from 1984 to 1987. From 1989 to 1991, he held the Professor Volkwin Marg Chair at the RWTH Aachen University and, at the same time, worked as a freelance architect and fashion designer in Cologne. In 1991, Hadi Teherani founded the architectural firm "BRT Architekten" in Hamburg, together with Jens Bothe and Kai Richter. Since 1999, Teherani is a member of the Hamburg's Academy of the Arts (Freie Akademie der Künste). His most famous buildings include the ICE train station at Frankfurt Airport, the Deichtor office building in Hamburg's port – where you will also find the office of BRT Architekten – and Zayed University in Abu Dhabi.

Today, Hadi Teherani is considered one of our most influential contemporary designers and he has offices in Moscow, Dubai and Abu Dhabi. His design company Hadi Teherani AG, which can be found in the Hamburg inner-city district of Hafen City, has given rise to the product and interior design of renowned companies like Behr International, Busch-Jaeger, FSB, Interstuhl, Keramag, Kiton, Poggenpohl, Thonet, Walter Knoll, Vorwerk and Zumtobel. More recently, Hadi Teherani has just developed a multifunctional active chilled beam for TROX. In an interview at the BAU Trade Fair, he talks to TROX life about his latest project.

Mr Teherani, they say you are a perfectionist through and through, someone who works with integral concepts.

Yes, that's right. To me, creation is a complete craft, which transcends the different artistic disciplines. I consider architecture and design to be inextricably linked. As an architect, I don't think that my task stops at the structure of a building. If you want to achieve perfection, you have to see how all the different parts connect, from the layout of the room to the colours and materials of floors and walls, and even down to individual pieces of furniture and door furniture.

You also have a reputation for being a technology freak, for being very interested in modern building technology.

In these times, when we really have to think about how to achieve a responsible use of energy, and sustainable construction is becoming essential, I think it goes without saying that I should take care in understanding building technical equipment. However, for a long time now, what I've seen of the traditional building techniques of Arabic countries has made me realise that, at the same time, we can learn a lot from the architecture of the past and its tried-and-tested low-tech solutions.

How do you mean?

Let me give you an example: in the past, the buildings had thick walls that stored heat during the day and released it at night. It is something that we use as a model today: instead of covering up the cement, we use it to store heat or cold. TROX is thinking along the same lines and is experimenting with using so-called phase change materials for thermal storage in air conditioning.

Your most recent project is to do with in-door ventilation and air conditioning. Isn't the subject of air a far cry from the work of a designer?

Not at all. At the heart of any design is the human being and his well being; even in air conditioning. The most important task of an architect is to make sure that people feel comfortable and at home in the spaces that he creates, emotionally, but also with regard to the in-door air quality. Apart from that, it is important that all visual objects which supply a room with air satisfy the aesthetical requirements of the architect who does the planning and creating.

In your opinion, what was the hardest part of this job?

Air flows are really complex. Basically, they can be compared to the aerodynamic requirements on a car. In other words, the air must be supplied correctly and in varying quantities. It is a huge challenge and a great responsibility for the designer. The task was handled in close consultation with the TROX airflow experts, who helped us a lot, for instance, with simulations and 1:1 models.

The new active chilled beam SMART BEAM is exceptionally multifunctional.

Clearly, it is important to concentrate as many functions as possible in this type of ceiling element, so as not to encumber the room with technology. But this is nothing new. The novel idea is to think of this element as an integral part of the architecture. We wanted the air conditioning components to fit into the ceiling and form an aesthetical unit together with the room, instead of looking like a separate box, which has nothing to do with the ceiling. Whilst the beam is suspended from the ceiling, due to the clever aesthetic design, it does not stand out but effectively merges, almost invisibly, into the overall ceiling design. It combines all services components that would otherwise be spread throughout the ceiling in a single device: diffusers, lighting, sprinkler system, loudspeakers, sound absorption components and so on. This harmonises the appearance of the ceiling and turns the climate components into an aesthetic design element in the room.

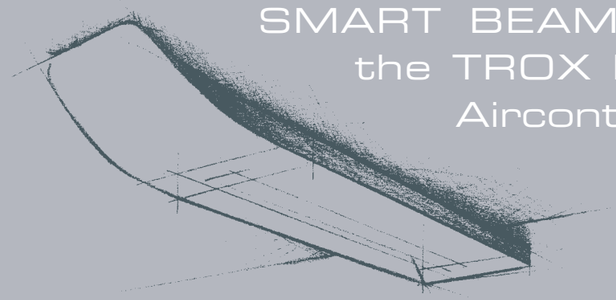
Will we see the SMART BEAM in a building planned by you soon?

Of course! To put it simply, our objective can be summarised in one sentence: Air conditioning is only perfect if you cannot see it, hear it or feel it. Together with TROX, we have achieved this principle in an impressive manner.

Mr Teherani, thank you for speaking to us.

SMART BEAM designed by Hadi Teherani.

Munich, 17 – 22 January 2011:
The Bau Trade Fair in Munich saw the premiere of Hadi Teherani's TROX SMART BEAM, which proved to be a tremendous success. The new concept that will see chilled beams being more effectively integrated into architecture was met with great acceptance and approval from consultants and architects alike. It goes without saying that SMART BEAM will also be one of the TROX highlights at the ISH Aircontec in March 2011.



The world of air conditioning.

See the latest TROX new developments live at the ISH in Frankfurt. From 15 to 19 March, you will be given a chance to see all the latest new products and systems at the TROX Stand B51 in Hall 11 under the maxim „Evolution X“.

The focus of the ISH – reflecting the current emphasis on worldwide resource conservation – is on the issue of energy efficiency and sustainability. This is according to the Frankfurt Trade Fair director Wolfgang Marzin, who is delighted with the huge interest being shown from experts around the globe in the run-up to the world's leading Trade Fair.

„What do future-oriented buildings look like? In the wake of rising energy prices and taking environmental protection aspects into consideration, there is only one correct answer here: such buildings combine energy-efficient technologies with renewable energies. Primarily in air conditioning, cooling and ventilation systems, the energy savings potential in the non-residential sector is immense.

We would like to cordially invite you to come and take a breath of fresh air at the ISH and witness the world's largest offering of pioneering building technologies. Held every two years, our ISH is the world's leading Trade Fair for efficient air conditioning and heating systems as well as for innovative bathroom design and sustainable sanitary solutions. It will offer you inspiration for countless new ideas on all aspects of air conditioning, cooling and ventilation.

Wolfgang Marzin
Chairman of the Frankfurt Trade Fair board of management

A total of 2,300 manufacturers including market and technology leaders around the world will present their innovative new products on Trade Fair grounds that have been completely booked out. The ISH brings together energy and water in a manner that is entirely unique. The strength of this alliance becomes particularly clear when looking at resource conservation – the primary focus of the Trade Fair. This is because energy saving in buildings is most effective if services work together.

The home of air conditioning, cooling and ventilation systems under the brand „Aircontec“ is the ISH – Trade Fair and magnet for decision-makers all over the world. This year, you can expect a change of air at the ISH. For the first time, Aircontec will be represented in the new Hall 11 – something that offers two immediate benefits: a range of exhibits that is even more clearly arranged, as well as direct proximity, and thus faster accessibility, to building engineering and energy services in Halls 8, 9 and 10. You will be shown Aircontec solutions that combine efficient air conditioning components and system solutions with renewable energies – alongside heat pumps for heating and cooling, solar air conditioning and heat recovery systems, these also include free cooling and indirect evaporative cooling systems.

The world of air conditioning

This year, TROX will impressively give proof of its innovation capacity. The guiding maxim of the fair “Evolution X” indicates this effectively and raises the interest in the numerous new developments that TROX will present on the ISH.

New system technology:
By entering the sector for central plant air handling units, TROX is moving from a components manufacturer to a complete supplier of efficient and pioneering air conditioning systems.

New products:
Along with SMART BEAM, which was designed by the renowned architect Hadi Teherani and brings the concept of chilled beams to a whole new dimension, you will see a whole range of other new products.

New markets:
TROX is forging ahead internationally and penetrating new markets in all 5 continents. And for us, the ISH will be the forum for a communication on an international level.

New technologies:
Entering new dimensions in terms of performance will place innovative plastics technology at our fingertips.

Main Tower Frankfurt am Main

The height of pleasure in Frankfurt.

Eating at lofty heights.

While visiting the ISH, take advantage of the unique opportunity to experience the metropolis from above. Some of Frankfurt's high-rise towers are home to the city's finest restaurants offering breathtaking views of the city.

Frankfurt was still regarded as one of Europe's most beautiful cities up until the last century. After the reconstruction of the city, which had been almost completely destroyed by the war, the construction of high-rise buildings marked the beginning of a break away from the standards of European urban history on the Main. The city planner at the time, Adrian, referred to the emerging skyline as erections of urban development. High-rise buildings were considered to be expression of prestige and virility - qualities that emanate from the companies within their walls. And this was something of particular importance for the banks, who were the main source of funding.

Very interesting from this perspective from above: if you look at Frankfurt's inner ring, you can see where the city wall used to stand during the Middle Ages. At any rate, the urban towers of ‚Mainhattan' offer a thrilling view of the city, its surroundings and the Main river. The best views can be enjoyed from the following recommended restaurants and lounges:

Main Tower Restaurant Frankfurt / Main

Main Tower
Neue Mainzer Straße 52-58, 60311 Frankfurt / Main
Tel: 0 69 / 36 50 47 77

BUMB JUNIOR Finest Catering (on 25th floor of the Japan Tower)
Taunustor 2, 60311 Frankfurt / Main
Tel: 0 69 / 95 44 00 - 0

Tower-Bar and Restaurant
im Eschenheimer Turm, 60318 Frankfurt / Main
Tel: 0 69 / 29 22 44

INNSIDE Eurotheum 22nd Lounge & Bar
Neue Mainzer Straße 66-68, 60311 Frankfurt / Main
Tel: 0 69 / 2 10 88 - 0

Manager magazin confirms TROX as world market leader.

An endorsement for the location of Germany, the „manager magazin" study

German companies are global market leaders in one third of sectors. 750 of these companies have now been included for the first time in the „Lexicon of German global market leaders". TROX GmbH is one of these companies. Publishers Dr. Florian Langenscheidt and Professor Dr. Bernd Venohr will present the more than 700 pages of this major reference work in the Würth Kunsthalle. „Even more impressive is the fact that it is medium-sized companies that are laying the foundation for German export success", said Dr. Florian Langenscheidt.

The lexicon offers a unique insight into the elite of German industry – from the automobile business to renewable energies through to the pharmaceutical and medical sector. Together, with their innovative strength and process quality, they stand for the internationally recognised seal of quality „Made in Germany".

The book is based on a study by ‚manager magazin', something which is carried out in regular intervals under the direction of Prof. Venohr. The 2010 study revealed that TROX is seen as a global industry leader. Coming 303rd in the ranking, not only does the air conditioning specialist belong to the top one third of leading companies in Germany, but it is also one of the few companies that enjoys a place in the overall ranking in the area of building services equipment. Dr. Langenscheidt and Prof. Dr. Venohr presented Heinz Trox with the coveted award during an official ceremony.

Global market leader: On 24th January 2011, Heinz Trox receives the award from the lexicon's editors Prof. Dr. Bernd Venohr and Dr. Florian Langenscheidt at the World Market Leaders' Conference.

Laying the foundation stone for new facilities in Anholt.

TROX invests 20 million € in Anholt.

Anholt 08.12.2010: The laying of the foundation stone for the new production facility by Heinz Trox has paved the way for a new „era" in the corporate history of the global market leader. In this production facility measuring 15,500 m², TROX will manufacture central plant air handling units in the future, the core component of modern air conditioning systems. „With these central plant air handling units, we are moving from being a manufacturer of components to a complete systems provider, thus giving ourselves a unique selling advantage in this sector of industry," Heinz Trox commented on the strategically important step towards securing a promising successful future.

Heinz Trox (middle) together with Lutz Reuter (left) and Udo Brinkmann, both CEOs of TROX GmbH, lay a miniature central plant air handling unit in the foundation stone.

The production of central plant air handling units will begin on 13 October 2011 and create 150 new jobs for the region. To this end, the company is investing 20 million € in a location in the lower Rhine area, the largest single investment in a corporate history spanning 60 years.

3D image of the new production facility in Anholt, Germany. 150 new jobs will be created here.

Types of Trade Fair visitors

Trade Fairs are like tax returns. They are unpopular, involve a lot of work, and for some people there is a question mark over how useful they actually are – however, in spite of this, everyone visits them. Diehard critics often see them as a beauty contest for companies or as an all-you-can-eat buffet. Optimists simply see them as a market forum.

How worthwhile a Trade Fair actually is can be analysed by the visitors to a stand. The psychology of people interested in Trade Fairs is ‚fairly' immense – how can you distinguish between the various types of people that will inevitably appear at the exhibition stand?

Dirk Trusheim, gb-report

The most frequent type of visitor is the hunter gatherer.
Distinguishing features: *plastic bags with an enormous amount of literature. He comes to the stand, takes a quick look, sets eyes on the brochures and moves in for the kill. One swipe and he's gone. This type of visitor can be classed as a non-visitor, someone who collects for the sake of collecting.*

The second most frequent type is the Am-I'm-not-really-sure visitor.
Distinguishing features: *shifty eyes, panics and runs for cover when approached. This person has actually only come to the Trade Fair to get information. The range of equipment and systems is, however, too much for him and he leaves again without having acquired any noteworthy cognitive value from the fair.*

The brash visitor: You will, without a shadow of a doubt, also come across this species.
Distinguishing features: *He goes straight to the biscuits and finger food. Looks as if he plays golf with the Chairman of the Board on a weekly basis. Makes a valiant effort at the buffet and is still chewing while you try and explain the company to him. But you can be sure that this conversation will be the last the company will hear of him.*

Specialist visitor: This type of visitor comes to you.
Distinguishing features: *he has a folder under his arm, takes a brief but focused look, and then approaches you directly. He is a member of a dying breed of Trade Fair visitors, someone who wants to hear about your offering straight away. He asks specific questions, looks for more detailed information, leaves his business card and asks about the possibility of meeting after the Trade Fair.*

The-with-an-appointment visitor: This is where it really gets good.
Distinguishing features: *He comes to the stand, and looks at his watch. „My name is Smith, is Mr Taylor around?" This guest puts in the least preparation and comes away with the most success.*

So, as you can see, there is something for everyone at a Trade Fair – and this will also be the case at the ISH.

TROX® TECHNIK
The art of handling air

Flag

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