fluiobuild®

Your visions.
Fluently implemented.
For more comfort, efficiency
and reliability in architecture.

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fluiobuild®
Form follows flow.

Plan with the natural flow of air, water, light and heat. Because it pays off.

Whether it is about the ideal indoor climate or reliable fire protection: the flow conditions of air, water, light and heat play an essential role in efficient and successful building planning.

However, these components are often considered far too late and inadequately – as they are usually based on standardised methods and not on the big picture of your individual building plans. It has been shown that the earlier and more precisely you take air flows into account in your building projects, the higher will be your sense of achievement.

We would be pleased to support you in this. With **fluiobuild**, air flows in and around buildings can be precisely recorded, mapped, analysed and optimized. This saves you a lot of time, money and trouble in advance – and brings the necessary "flow" into your plans.

Build on perfect groundwork.

fluiobuild is the ideal solution for:

Owners who do not want any nasty surprises and who want to ensure optimal building operation with comparatively low economic costs.

Municipalities and urban planners who have sustainability and environmental protection in mind when planning urban schemes.

Project developers who want to guarantee their investors the highest planning dependability and cost efficiency.

Project planners who aim for maximum comfort and optimum functionality even with demanding building concepts.

Building services planners who can use their knowledge of air and heat flows to optimise their systems.

Structural engineers who strive for optimised use of materials with realistic wind effects.

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Thinking ahead
pays off.

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Draw on 30 years of experience in your plans.

With **fluiobuild**, we offer you a development method that incorporates more than 30 years of experience and our cumulative aerophysics know-how. This enables you to visualise in early planning phases how fluid-physical processes will affect your building planning.

Benefit from the forward-thinking advantage of our tailor-made **fluiobuild** service package: flow simulation in combination with our analytical competence and field-proven experience provides you with creative and individual solutions that secure investments and reduce costs.

Thanks to **fluiobuild** you can identify problem areas in advance. Or explore hidden potential for optimized energy efficiency and savings in investment and operating costs. In addition, you will receive reliable proof of compliance with building codes and regulations regarding room air-conditioning, ventilation, air pollution control, fire protection or wind loads.

Make visible what brings benefits

Complex air movements can only be described using modern virtual simulation methods. Already in the planning phase, physical quantities such as air velocity, temperature, particle distribution and more can be calculated on a sound basis. In comparison to measurements, flow and temperature conditions are not only displayed at selected points, but for the entire room. This knowledge often opens up undreamt-of solutions.

Experience it for yourself –
with **fluiobuild.**

Consultation
Goal & Strategy

Calculation
Modelling &
Simulation

Evaluation
Analysis &
Validation

Invention
Optimization
& Innovation

Open to new ideas.
Create the perfect climate for people's free development.

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Comfort is calculable.

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Light, open spaces. Air to breathe again. Not too hot in summer. And warm and cosy in winter. Even the most modern architecture should, in the end, fulfil one purpose above all else: that the people who live and work there should feel comfortable.

In this context, qualitative and energy-optimised building air-conditioning plays a key role. In order to ensure that you can rely on an even distribution of air and heat with maximum resource conservation, **fluiobuild** predicts at the beginning of the planning how the air flow influences the ventilation concept and which measures are advantageous.

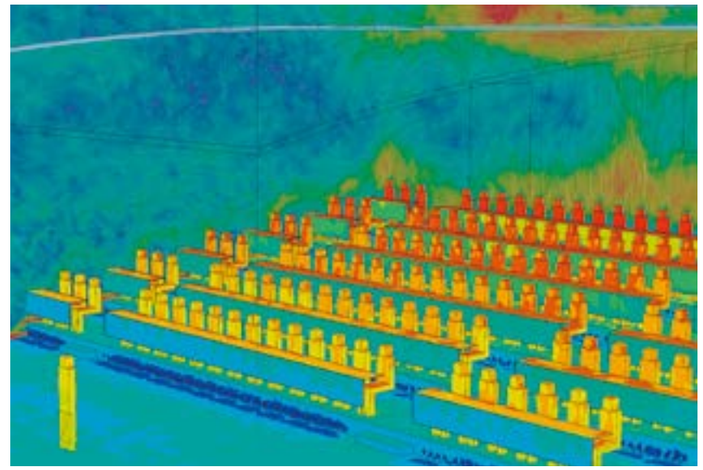
In doing so, the aerophysics in the building as well as the interaction of individual architectural forms, building services components and environmental influences are taken into account in detail. This allows you to detect critical zones in time before they become a problem.

fluiobuild assures you:

- Optimum building climate control
- High air quality
- High energy efficiency
- Reduced investment and operating costs

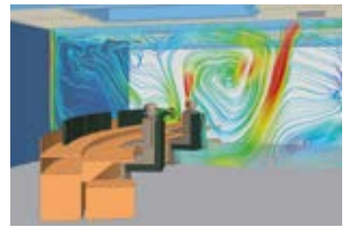
Are all seats in the Audimax supplied with fresh air? Or are people freezing down at the front and sweating up at the back?

How do you ensure maximum room comfort without draughts when constructing a new nine-storey building with 35,000 m² of floor space and many glazed atriums? **fluiobuild** was used in the planning phase of such a building: the Frankfurt School of Finance & Management. Here, the effectiveness of the planned ventilation system in the entire building and the auditorium could be tested in advance.

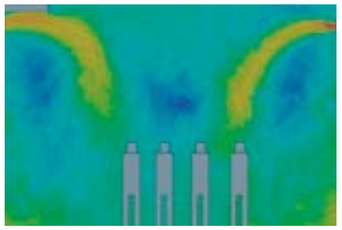


What are the obstacles to efficient building services planning?

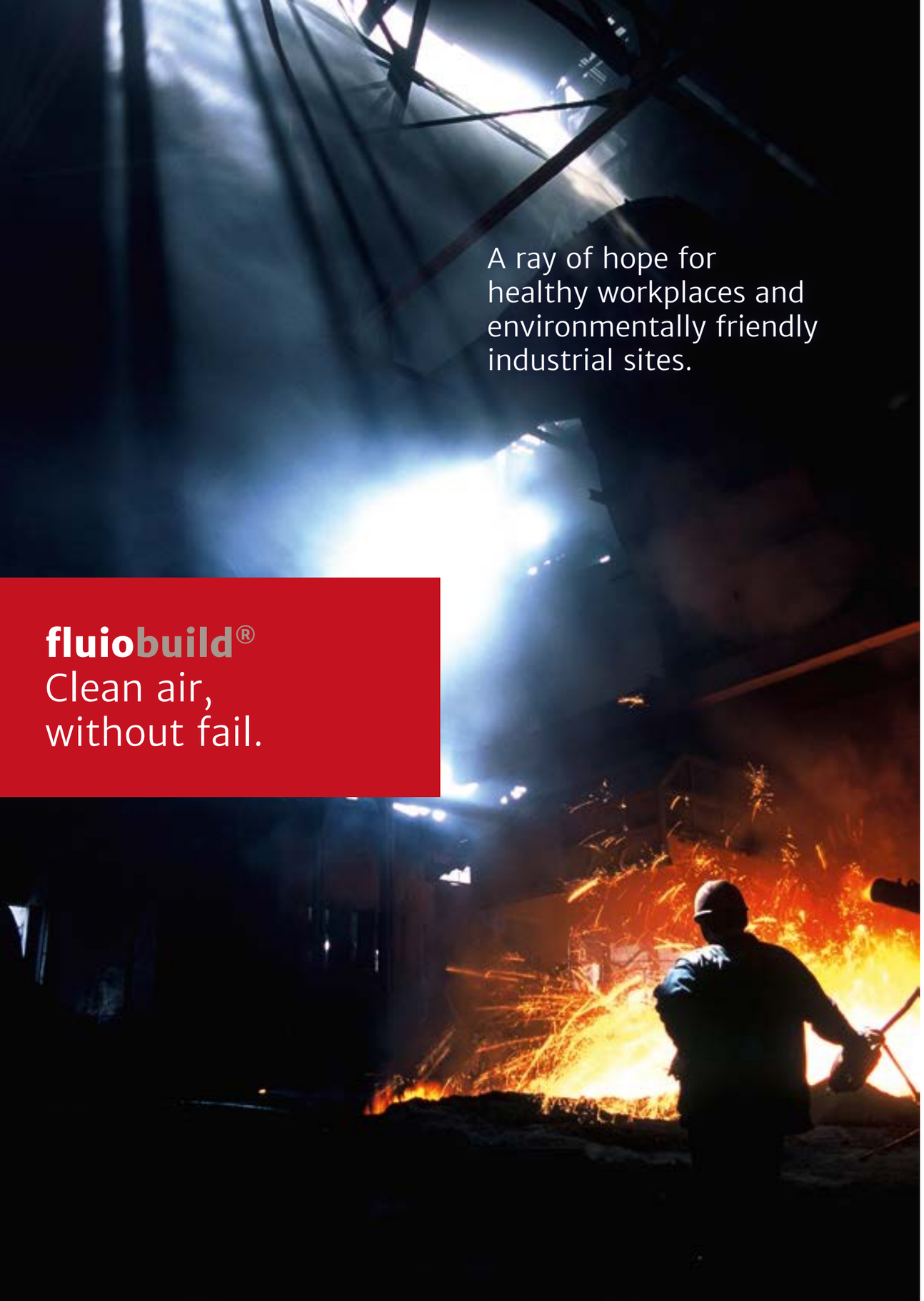
Heat intensity in case of solar radiation behind glazed surfaces, which demands cooling technology.



Draughts and uneven heat distribution, which impair comfort and health.



Down draughts due to opposite-facing outlets, which reduce efficiency of ventilation.



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Clean air, without fail.

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High levels of heat, dust and harmful substances are almost unavoidable in production and storage facilities. In order to keep this as low as possible, however, strict requirements for air pollution control have to be met in the planning permission. Good for the environment and health, but sometimes tough on the wallet.

To ensure that you don't pay more than necessary for your ventilation and filter systems in terms of investment, operating and retrofitting costs, **fluiobuild** supports you in your planning.

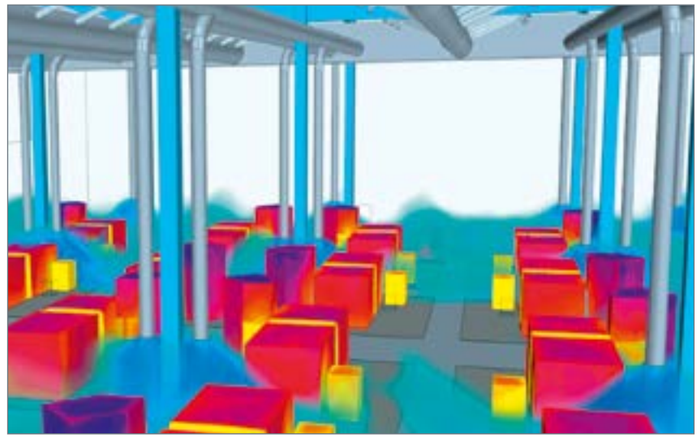
In this way, we determine the exact pollutant concentrations and heat distributions in advance and use this knowledge to optimize ventilation technology and prevent malfunctions or over-dimensioning. In addition, it is also possible to provide evidence for the planning permission.

fluiobuild stands for:

- Less heat load
- Controlled dispersal of pollutants
- Reduced environmental impact
- Providing emissions evidence for planning permission

How can heat and pollutant dispersion in industrial high-temperature processes be controlled?

In order to ensure the operation of the planned ventilation concept of a foundry hall in advance, **fluiobuild** was used to investigate the behaviour of supply air, exhaust air and additional thermal convection through the hot furnaces and castings. This enabled the concept to be optimized even before construction work began and significantly increased the efficiency of the plant.



How can a warehouse with hazardous goods areas and truck operation provide proof of sufficient fresh air supply for the planning permission?

A **fluiobuild** analysis was carried out to optimize the ventilation components and their arrangement in such a way that only 30% of the originally planned air volume could be used to achieve a perfect removal of the pollutants. The result: An innovative ventilation concept with considerably lower fan output and thus significantly reduced costs.

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Discover quickly –
act with purpose.

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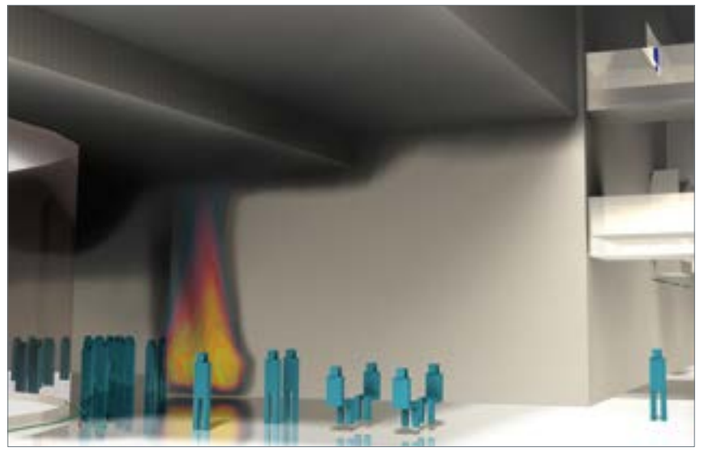
When it's burning, good advice can be hard to find. It's a good thing that **fluiobuild** enables you to find out about fire safety regulations at an early stage in order to create the greatest possible safety for people and valuables.

The optimal positioning of smoke detectors is crucial for rapid detection of fire risks, which should also work perfectly with the ventilation system.

With **fluiobuild**, the propagation of smoke and heat can be accurately predicted and the heat resistance of room elements and building materials can be tested. On this basis, fire protection engineering and evacuation plans can be optimally coordinated.

fluiobuild allows:

- Reliable fire detection
- Efficient smoke extraction concepts
- Safe evacuation measures
- Proof of compliance with fire protection regulations

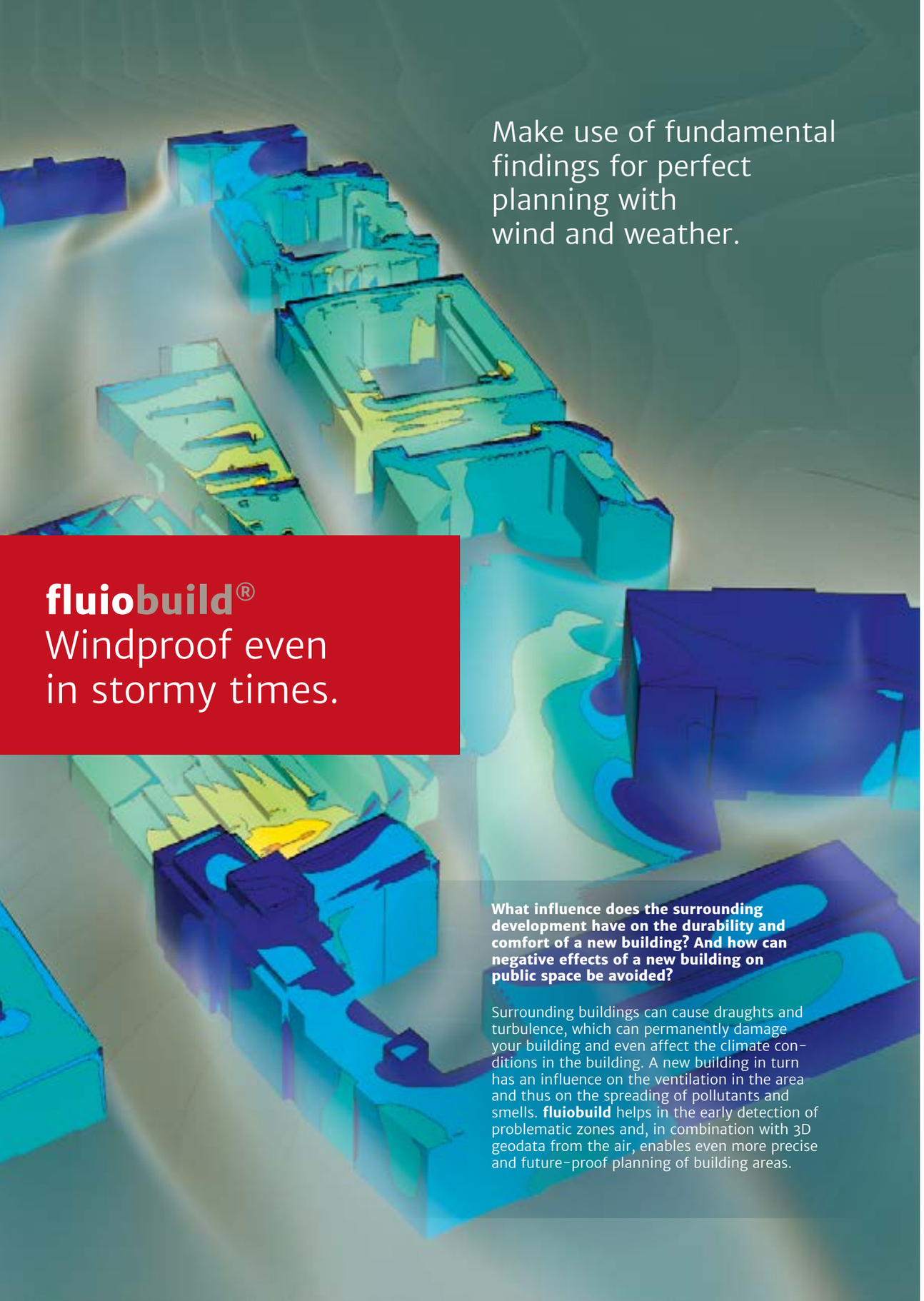


How can people be evacuated safely and quickly in the event of a fire?

Whether in a car park, nursing home or wide-body aircraft: every second counts when it comes to saving lives. With **fluiobuild** you can ensure the fastest possible detection. Since **fluiobuild** takes into account the respective architecture and the special spatial and usage conditions, it is possible to predict the spread of the fire more accurately, which enables the derivation of reliable evacuation plans.

How can fire protection technology become even faster and more reliable?

fluiobuild integrates many years of know-how from the research and development of innovative fire detection technologies. With our specialist knowledge of the sensitive flow and temperature behaviour inside fire detectors, we are able to make decisive progress in the design optimization of classic smoke detectors and the development of new types of fire gas detectors.



Make use of fundamental findings for perfect planning with wind and weather.

fluiobuild®
Windproof even in stormy times.

What influence does the surrounding development have on the durability and comfort of a new building? And how can negative effects of a new building on public space be avoided?

Surrounding buildings can cause draughts and turbulence, which can permanently damage your building and even affect the climate conditions in the building. A new building in turn has an influence on the ventilation in the area and thus on the spreading of pollutants and smells. **fluiobuild** helps in the early detection of problematic zones and, in combination with 3D geodata from the air, enables even more precise and future-proof planning of building areas.

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fluiobuild delivers:

- Static analysis without wind tunnel testing
- Realistic wind load values for optimum material usage
- More comfort in public spaces

Wind and weather have a fundamental influence on the stability and comfort of buildings. Strong gusts and air currents can damage roofs, facades, sun blinds or solar panels.

Critical wind situations can cause problematic vibrational excitations or disturbing noises and unpleasant draughts, especially in exposed building structures.

fluiobuild solves these problems by analysing the actual wind loads on and around the building. This provides you with an accurate and reliable basis for optimizing the building design as well as precise safety checks for the static of particularly wind-prone parts.

How do you optimize extremely protruding structures to minimize critical vibrations?

An unconventional canopy was planned for the Helmholtz Research Centre in Dresden. Detailed **fluiobuild** analyses revealed the problem areas and enabled design optimization. In addition, the engineers responsible had precise static safety evidence in their hands - without the need for cost-intensive wind tunnel tests.

How can you save money when renovating a building?

The modern DIN standards for the determination of wind loads must be taken as a basis for the renovation of historic buildings.
In order to avoid excessive renovation measures, which often collide with the requirements of monument protection, **fluiobuild** helps to calculate realistic wind loads and to take special building shapes into account. At Schloss Friedenstein, a **fluiobuild** wind analysis showed that the roof renovation could be carried out with less material than specified by the standard.

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Far more than just a façade. Bring the necessary transparency and foresight into your building plans.

Modern façades are nowadays individual architectural design elements. They enable extraordinary architectural solutions through innovative materials and systems. But a beautiful appearance alone is not enough. Today's façade has to do much more: maximum energy efficiency, visual and thermal comfort should go hand in hand with a minimum consumption of resources.

fluiobuild reconciles aesthetics and efficiency. Our flow and heat analyses help to check the functioning of façade components and systems:

How should air flow through ventilated façades in order to efficiently dissipate heat and prevent soiling?

Can the planned natural ventilation provide the building with sufficient fresh air?

What effect do wind forces have on the façade construction, shading system and natural ventilation?

What influence does solar radiation have on room climate and façade materials during the day and year?

How do the façade components behave when exposed to strong heat from the sun or from fire?

fluiobuild answers your questions in advance.

fluiobuild®
Fully thought through.

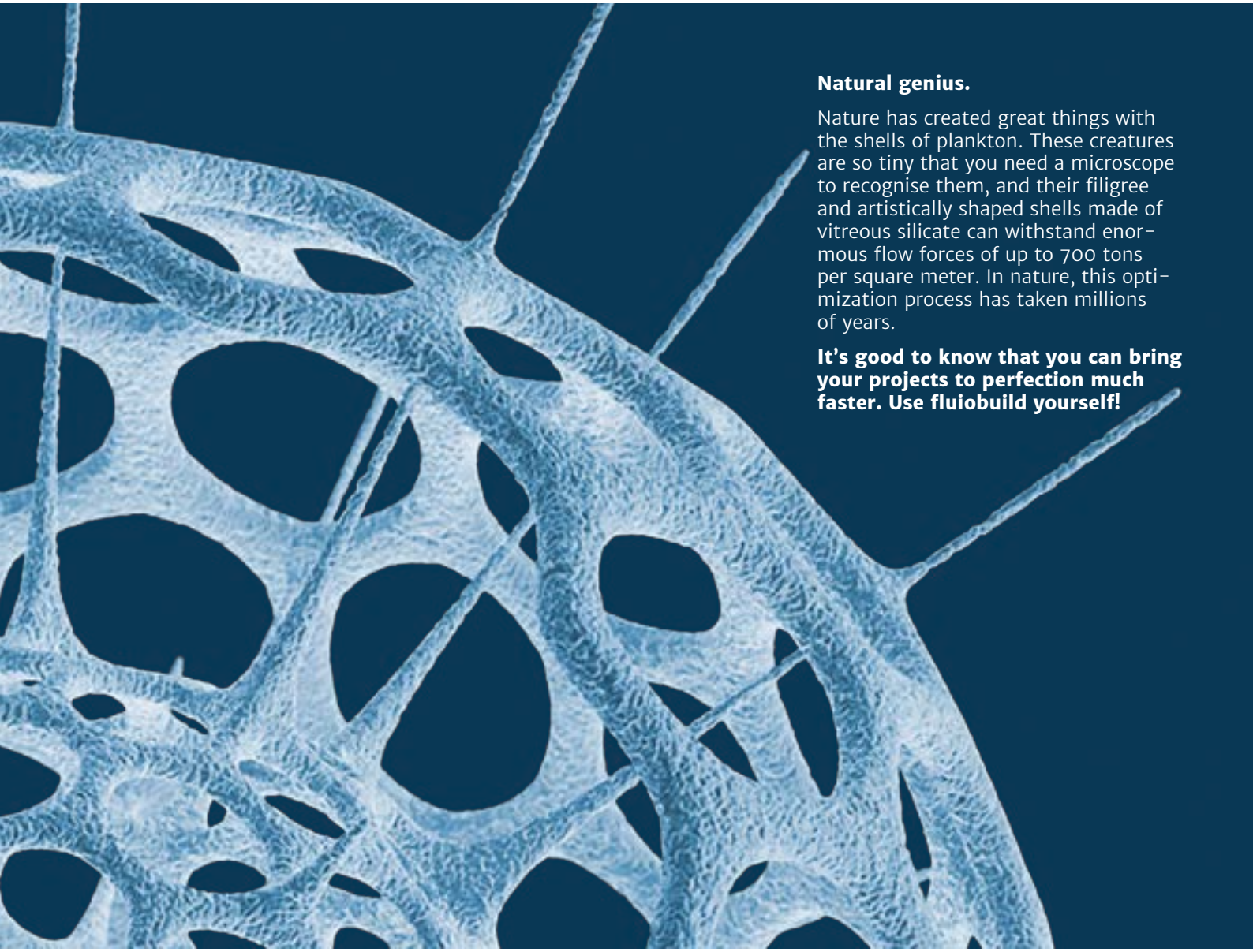
Saving energy with high-tech façades

fluiobuild accelerates the research and development of innovative façade technologies and finds intelligent solutions for sustainable building envelopes. Within the scope of the EU-funded project InDeWaG, **fluiobuild** supports the industrial development of energy-active façades with fluid through-flow elements.

These have the ability to heat and cool directly and optimally with solar energy. This means that considerably less energy is consumed for air-conditioning and lighting than before. At the same time, investments for complex air-conditioning technology can be saved.

fluiobuild thinks it through for you

- The optimal function of façades and components
- Comfort behind glass façades
- The feasibility of individual façade concepts



Natural genius.

Nature has created great things with the shells of plankton. These creatures are so tiny that you need a microscope to recognise them, and their filigree and artistically shaped shells made of vitreous silicate can withstand enormous flow forces of up to 700 tons per square meter. In nature, this optimization process has taken millions of years.

It's good to know that you can bring your projects to perfection much faster. Use fluiobuild yourself!

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HTCO GmbH
Rabenkopfstraße 4
D-79102 Freiburg i.Br.
T +49 761 409 88 83
info@htco.de
www.htco.de