

An aerial photograph of a green roof. A central paved walkway, made of grey rectangular tiles, runs diagonally from the top-left towards the bottom-right. On either side of the walkway, there are several raised garden beds filled with green plants. Small white square markers are placed at regular intervals along the edges of the paved path. The surrounding roof area is covered in green grass.

DATACENTER CAMPUS FRANKFURT

Plan for Every Second

We Give All Our Energy
and Dedication to Create
Safe Environments by
Making Risks Manageable

Contents

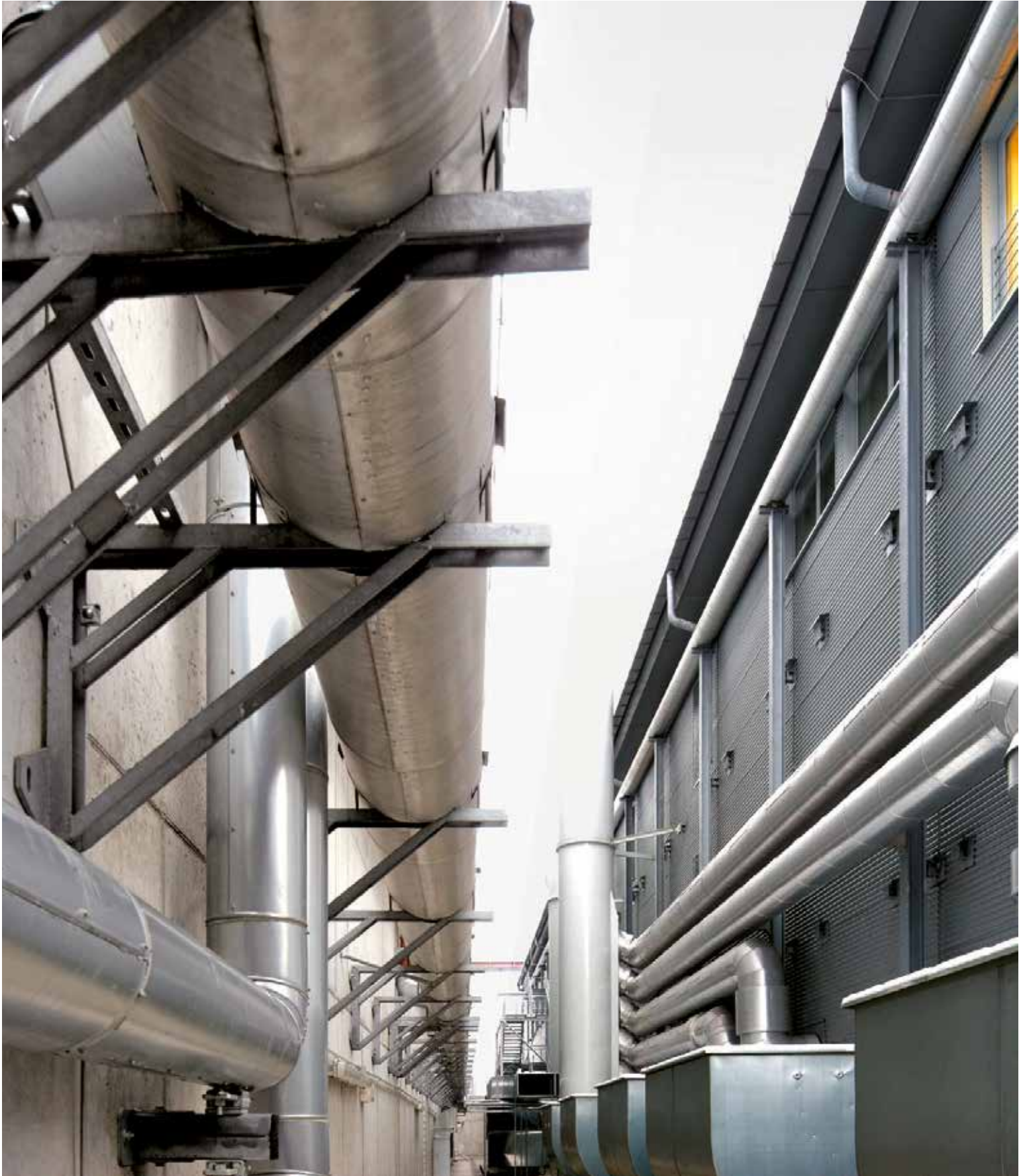
Your Goals	2
Compound and Buildings	4
Security	6
Infrastructure	8
Free Choice	14
Good Reasons	16
Our Additional Solutions	18

Being Aware of the Risks Today

The challenges for IT are continuously changing through new technical developments and the new possibilities which are offered by the communications and network infrastructure – and therefore the requirements and goals of your organisation. To be able to achieve these goals, not only are financial means required, but also adequate planning to be well positioned for the future. That is why recognising, evaluating and minimizing risks is vital.

We can offer you the possibility of ensuring your IT systems are continuously available in an optimum environment – whether for short term projects or for a scheme that will be implemented in a few years' time. This brochure shows the possibilities and advantages of outsourcing IT and network systems to an external data center, whilst retaining full control of your IT – we simply provide the best possible environment.

The Frankfurt Campus Datacenter is the key location of e-shelter, which, at a secure location, offers the highest capacity data center site at a single location as well as a dedicated security and command control center. Further e-shelter locations are situated in Berlin, Hamburg, Munich, Rüsselsheim, Vienna and Zurich.



Built on Solid Ground

Offering 60,000 sqm of data center space, the e-shelter Campus in Frankfurt is the highest capacity data center location in Europe. The free-standing buildings that are situated on e-shelter's approx. 54,000 sqm plot were built and configured for the sole use as a data center. The site was selected on the basis of a comprehensive risk analysis in order to satisfy the demanding requirements surrounding the safety and availability of the infrastructure. In this context we paid special attention to the provision of electricity, connections to the data networks as well as protection against environmental risks.

When planning the e-shelter data centers we draw from our more than 15 years experience in the field of managing data centers:

- The planning by our in-house planning department is based on the experience and know-how we have gained from the daily operation of over 90,000 sqm of data center space in the e-shelter portfolio
- The buildings are planned and built for use as data centers only
- We use proven technologies to enhance our levels of energy efficiency and develop these ourselves in cooperation with the manufacturers
- The planning follows the principle of attaining the correct balance between availability and energy and cost efficiency
- The basic concept of the building is flexible to be able to respond to the requirements of changing future circumstances and to be able to guarantee scalability
- All external and internal installations are completed with high quality materials in accordance with industry standards
- The structural and technical security are tailored to meet the high security demands of our tenants. Even special requirements for your IT areas can be considered



Security and Operations in the Best of Hands

The security of the buildings and systems is one of the key risks that need to be managed properly. For this reason, we do not entrust this task with anyone but our own operations and security personnel. Around the clock e-shelter technicians and security personnel manage our data centers on-site. 24 hours a day, 7 days a week.

OVERALL PERFORMANCE FEATURES

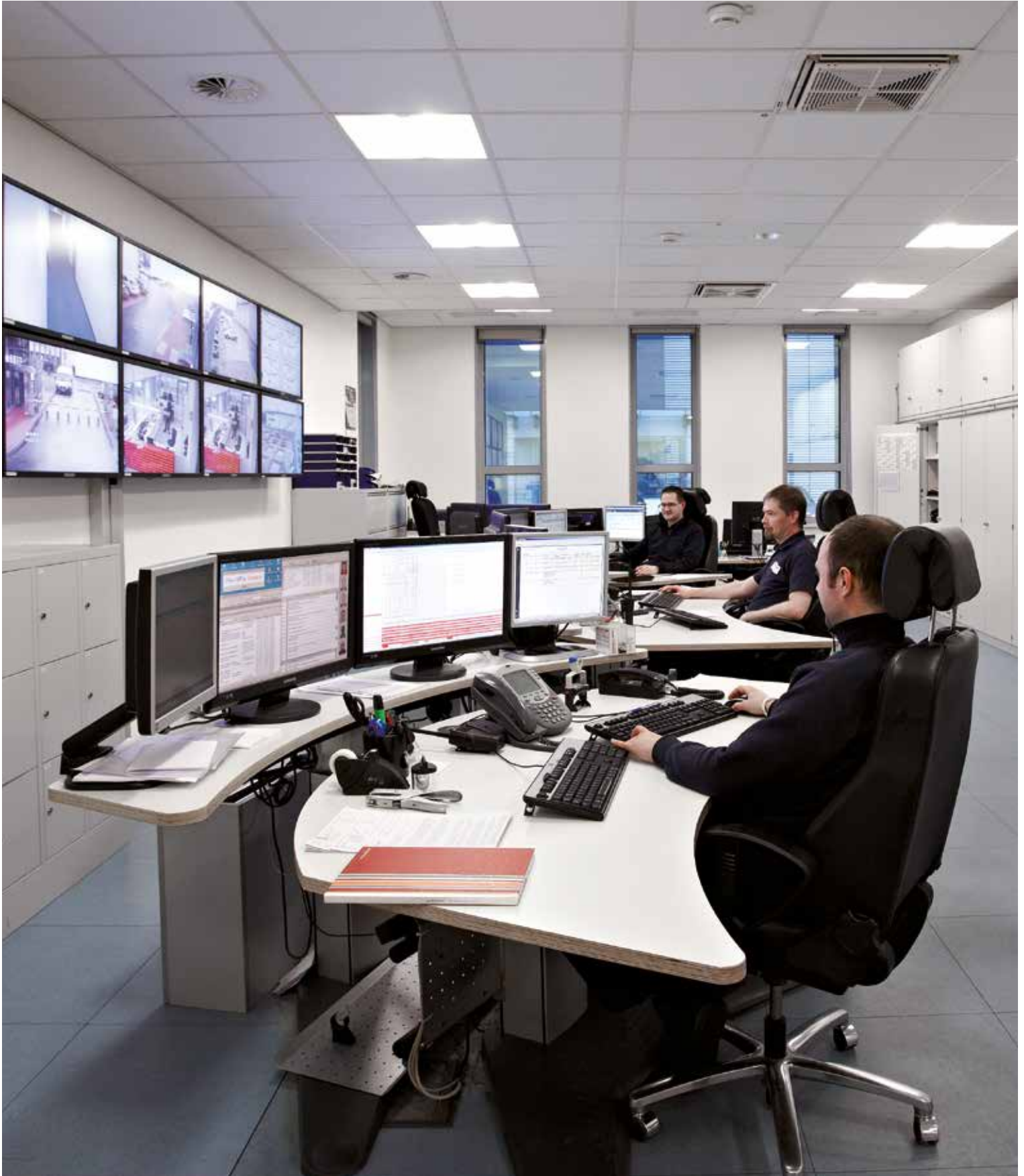
- Monitoring by e-shelter own 24/7 control centers
- Security staff from e-shelter security GmbH
- Redundant monitoring of all critical functions
- Risk management for all critical processes
- Four-eyes-principle for all critical and security relevant processes

PERFORMANCE FEATURES OF TECHNICAL OPERATIONS

- Standardized operation processes with amplified technical systems redundancy in order to ensure maximum reliability
- Preventive risk evaluation as well as continuous examinations and training of the e-shelter operations staff
- Monitoring of all critical breakdown infrastructure systems

PERFORMANCE FEATURES OF SECURITY

- e-shelter standardized security processes and a multi-level security concept secure the tenant's zone and the technical operations
- Integrated alarm management
- Consistently documented access management
- Access control via non-contact chip and PIN or optional biometrics signature
- Video surveillance of all access points
- Secured perimeter zones with electronically monitored security fencing system, incorporating anti-climb and anti-tunneling protection
- Vehicular access through hydraulic barrier system incorporating gates and barrier pass-through



Systems that You Can Count on

The technical infrastructure, particularly the power supply, is the heart of every data center. e-shelter has developed and implemented a comprehensive concept to ensure the highest degree of availability of the power supply facilities.

POWER SUPPLY

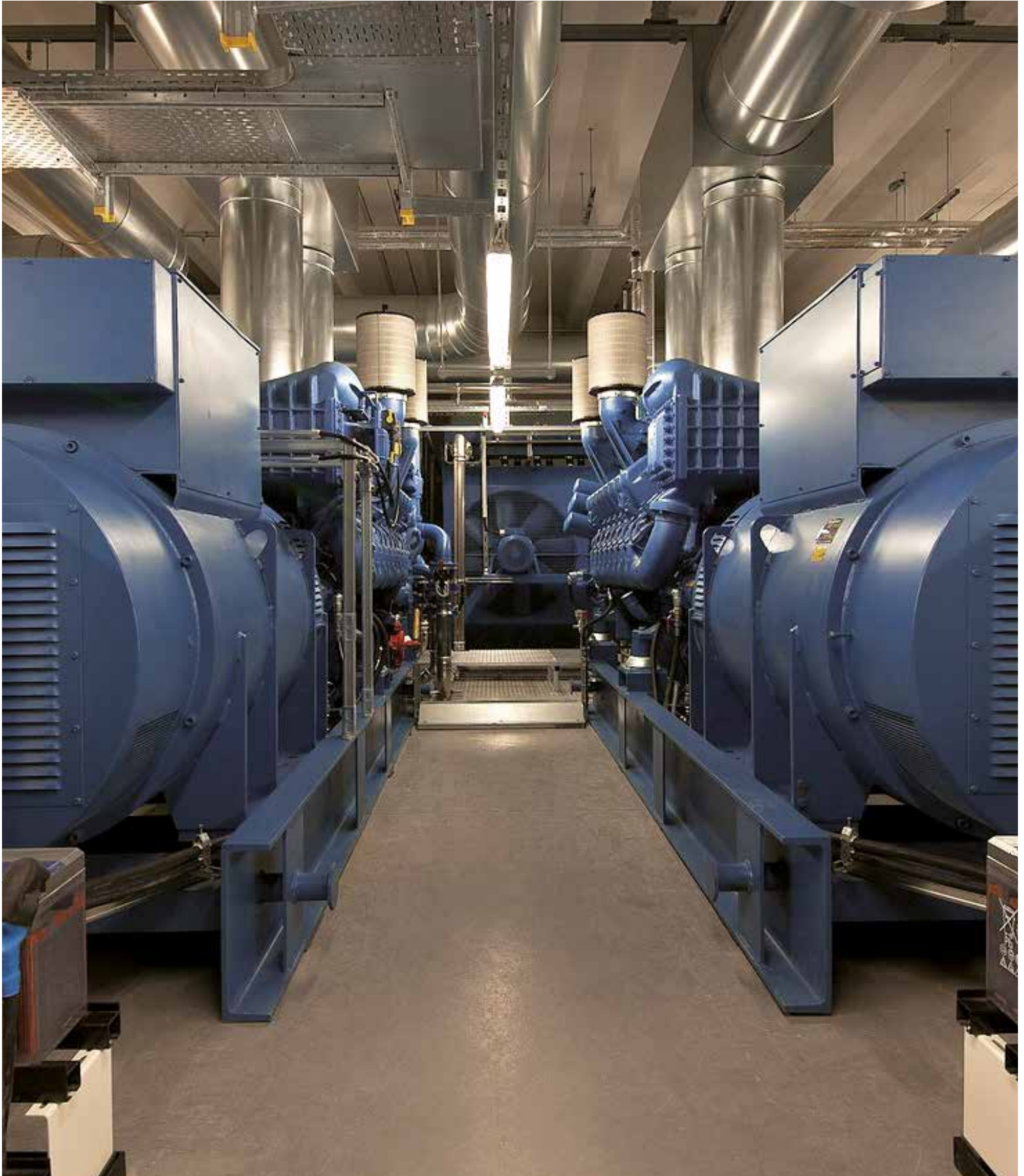
The entire power supply to the campus is designed as a dual power and emergency power supply with uninterrupted A- and B-power supply for the tenants' IT systems and an additional redundant supply for all critical building engineering systems such as air-conditioning, cooling, ventilation and security systems. In addition, e-shelter has its own redundant 110 kV substation with 2+1, 63 MVA transformers. The power supply for the tenants' IT systems is ensured by an active A- and B-power supply from the substations to the server racks. Maximum reliability is guaranteed by providing A- and B-UPS-systems in 2(n+1) configuration. Both sides can therefore assume 100 percent of the load, independent of each other. All the critical building engineering systems are also based on UPS. In addition, there are emergency power systems available for each component with diesel generators to bridge any long-term power failures, which are designed in n+2 and take over the data center's entire supply. The diesel provision is designed for 72 hour autonomous operation.

Overall, the e-shelter power supply system meets all requirements of high availability:

- Power supply at 110 kV level from two substations from two separate feeds
- Additional supply by second provider (100 percent diverse network) at 10 kV level
- Own substation with three 110/20 kV transformers n+1
- Two separate UPS systems (A- and B-supply)
- Redundant emergency power system with diesel generators

CARRIER CONNECTION

The e-shelter data center is connected by at least 13 carriers from several, redundant feeds. It has two Carrier-Meet-Me Rooms (CMMR), from which you can use the redundant services of the carrier of your choice. There is an intersection-free A- and B-duct system for fiber optic cabling on the premises and in the building. Cross connects from the carrier rooms to your equipment can be realized in accordance with your requirements via dedicated, redundant pipelines. Internet connections from 1 up to 10 Gbit/s can be provided as an additional service.



FIRE SAFETY AND FIRE EXTINGUISHING SYSTEMS

Physical fire protection, fire detection and fire extinguishing systems are designed for the greatest level of safety. For the interior configuration of the rental units, specialist non-combustible and/or fire-resistant materials were used only. The individual data center areas are divided into separate fire safety zones.

Comprehensive fire protection and fighting systems are installed in each tenant zone.

Early smoke detection systems (smoke extraction systems), which are integrated into the fire alarm system, guarantee the earliest possible detection even before fire and smoke fumes or fire develop. The fire fighting system is based on an argon gas extinguishing system.

The building fire zones are configured to fire resistance class F 90, and all technical hardware locations feature:

- F 90 fire-fighting sections
- Fire protection walls to fire resistance class F 90
- Monitoring with automatic digital fire alarm system

CLIMATE CONTROL AND AIR CONDITIONING

Increasing energy costs and customer demand for high energy efficiency of the cooling and climate control infrastructure are the reasons why the optimization of these elements has become increasingly important – especially for facilities with a high level of availability. This is why e-shelter has developed new systems to save energy in the cooling systems. The programming of these systems are coordinated in-house to ensure high availability and optimal performance.

- Utilization of adaptive reciprocating chillers with superior control as “Cooling Manager”
- Innovative chilled water distribution and transport systems such as stratified storage tanks and special hydraulic points, pump management systems and automatically adjusted hydraulics
- Free cooling with integrated EC fans and own-programmed, weather-dependent energy management systems
- Peripheral ventilation and de-ventilation systems with energy-optimized operating points (rotation speed control, humidity-dependent control etc.)
- Peripheral humidifying and de-humidifying systems with low energy expenditure managing the humidity of IT areas
- Adiabatic support of cooling and air conditioning (humidification and condensation)
- Heat recovery for heating (pre-heating) the emergency standby power system, use of rainwater and chemical-free hot-water treatment of all air-conditioning units
- Own programming and visualisation of building management systems and electrical infrastructure to determine the detailed consumption data and the targeted energy management



▼ Bottom view of recoler's technic grid





A Solution for Every Requirement

Your requirements are the most important aspect of our service offering. We offer space that ranges from commercial property to completely configured, high availability data center space as well as all the services for planning, design, operation and security. You choose, we deliver. Whether you choose a building shell which you configure yourself, or which we configure according to your brief, or you decide on a fully configured suite with pre-installed racks: we will ensure the space is available to you on schedule and at consistently high standard of quality.

Overview of main e-shelter's product offerings:

Fully fitted:	e-rack™ e-power-rack	Separate space, Server and network cabinet including infrastructure
	e-cage™	Separate lockable space from 20 sqm
	e-suite	Separate locked room with a size from 300 sqm
Shell and Core:	e-area™	Provision of constructed shell and core space from 1,000 sqm
Land:	e-site	Provision of land with upstream grid connection and planning

e-rack™/e-power-rack

Lockable 19" standard server and network cabinet, 800 x 1,200 mm, 47 height units, including redundant power connection (A- and B-supply). Standard server power available from 2 to 6 kW per e-power-rack.

e-cage™

Lockable steel mesh security unit. The individual steel mesh units are equipped with sneak-by protection in the raised floor. Available space from 20 sqm to be built according to your individual needs and operated within a larger data center space with other e-cages™.

e-suite

Self-contained, locked and monitored space with an area from 300 sqm. Each e-suite represents a separate fire fighting section in the F 90 class. Layout, operational parameters and security features can be customized to your needs.



Good Reasons for Security with e-shelter

e-shelter currently employs over 350 staff. They are drawn from an exceptionally wide range of sectors and they all have one goal: finding the best possible solutions for your challenges at all times.

SUSTAINABILITY AND ENERGY EFFICIENCY

We continually strive to enhance the energy efficiency of our data centers. We gain the know-how to master these challenges from the empirical analyses of existing data centers. We familiarise ourselves with the latest technologies on the basis of a close collaboration with research institutes and industrial associations. We already use optimised and coordinated cooling technologies such as free cooling, newly developed high temperature heat pumps, adiabatic cooling and cold aisle containment systems. Exhaust heat is used to heat the adjacent buildings.

EXPERIENCE AND SUSTAINABILITY

With 15 years of experience operating data centers that run over approx. 90,000 sqm of space, our engineers have considerable experience in the development of new, and always more efficient, systems. You will benefit from the know-how and experience of our specialists: we plan, build and operate data centers using all of our energy and dedication.

e-shelter is certified according to DIN EN ISO 9001 as well as to DIN ISO/IEC 27001.



Additional Services at the Frankfurt Campus Datacenter:

To ensure the on-time and cost-effective configuration of your rental units, and that your relocation proceeds smoothly, we offer you a range of additional services at the Frankfurt Campus:

BUILDING MANAGEMENT SERVICES

- Technical operations management
- Infrastructure services (cleaning, moves etc.)

TECHNICAL SERVICES

- Maintenance and installation services (“24/7 Remote Hands and Eyes”)
- Cross Connect
- 24/7 helpdesk

CONSTRUCTION OF DATA CENTER SPACE

- Consulting and analyses for development concepts
- General and execution planning
- Project management
- Construction work
- Quality control

SECURITY SERVICES

- Building security
- Specialized security services

LEASING OF OFFICE SPACE

- Emergency workplaces
- Regular office space



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