We protect **IT**

- Headquarters in Wallmenroth (Germany)
- Subsidiary in Austria
- 190 employees, with more than 50 engineers and technicians of more than 25 years experience in planning and realization of Data Centers
- Comprehensive and professional knowledge in analysing, planning, the construction and operation of Data Centers and Server Rooms
- Our philosophy is to define individual, customized solutions for our customers in the field of Data Center environments

DATA CENTER GROUP

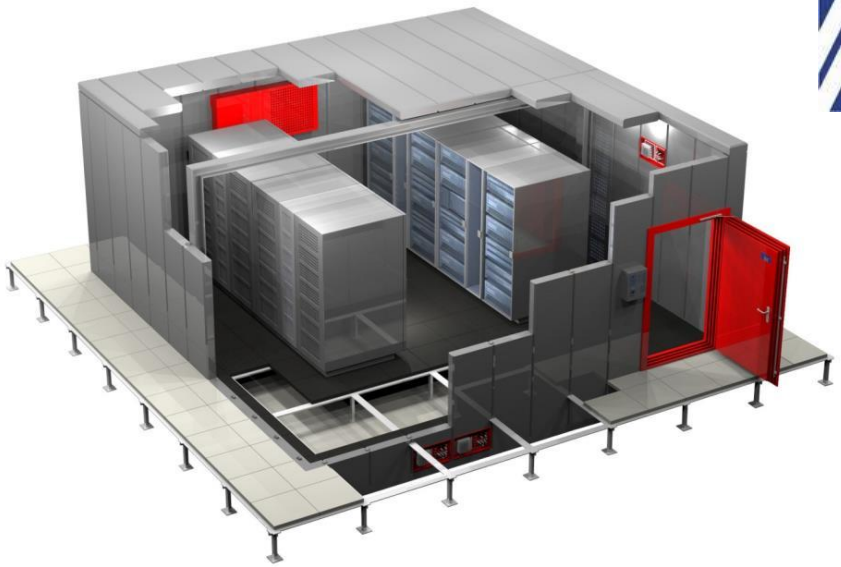
DATA CENTER GROUP

RZproducts

Modular – Certified – Highly available

DATA CENTER GROUP

DC-ITRoom GranITe



ECB·S

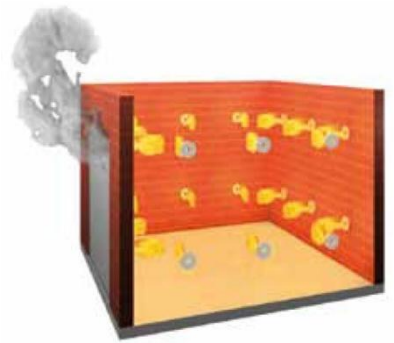
Worldwide the first
IT-Room System
tested acc. to EN 1047-2:2009
(amendment 2010)

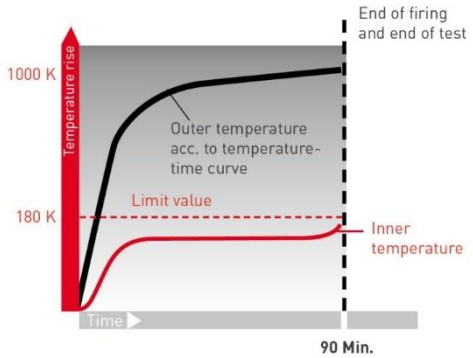
TYPE TESTED

MADE IN GERMANY

Fire protection of building components according to EN 13501

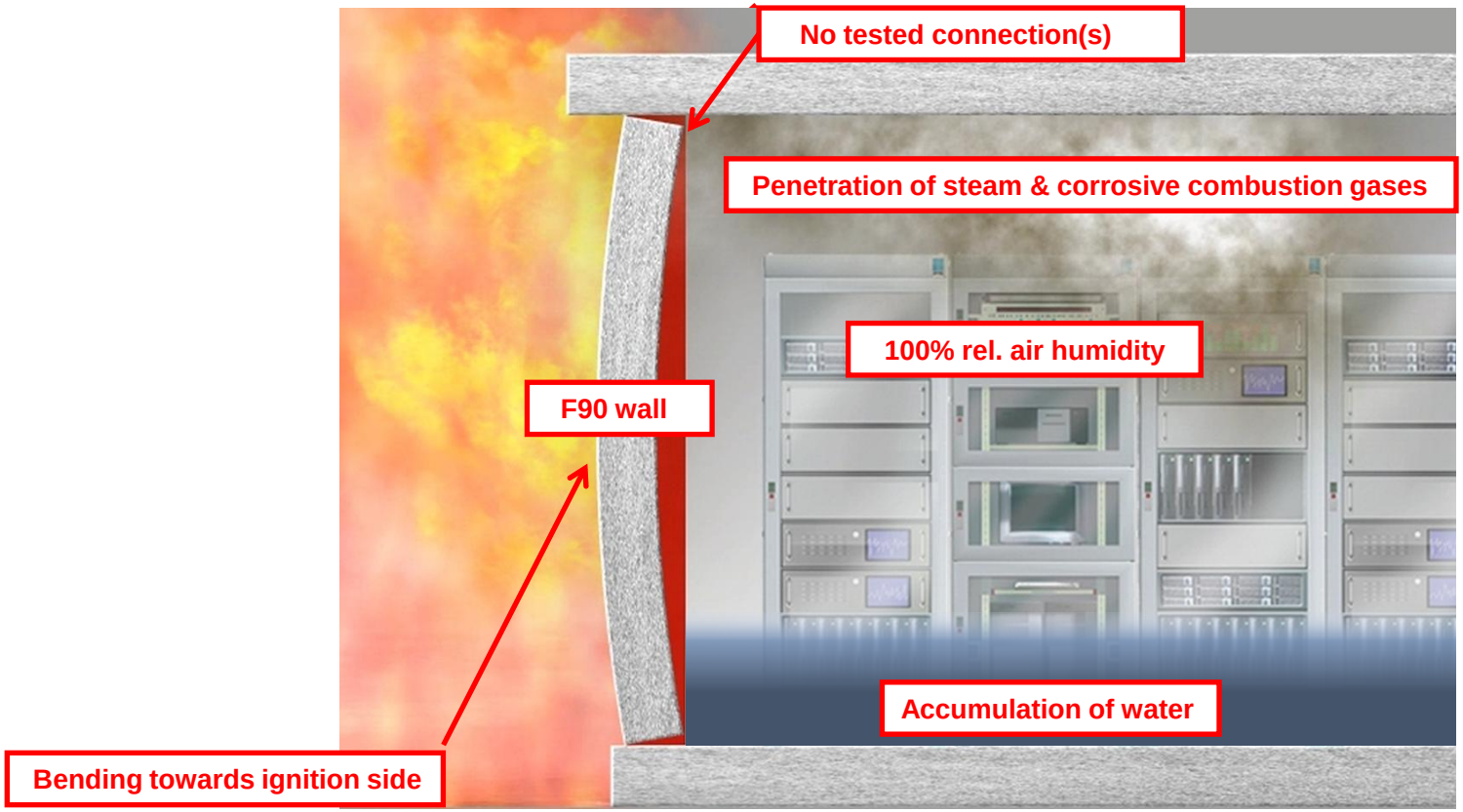
- In these standard technical terms, requirements and tests regarding fire prevention are defined for **building components** such as walls, ceilings, pillars etc. …
- Fire resistance classes from EI30 to EI180 for fire resistance periods from 30 to 180 minutes.
- Temperature increase on measuring points on the unexposed side of the specimen may not exceed an **average** of **140 K from starting temperature (20°C) during a fire test acc. to EI90.**
- Temperature increase on measuring points **must not exceed 180 K at any time**.





DATA CENTER GROUP

Conventional construction in the event of fires …

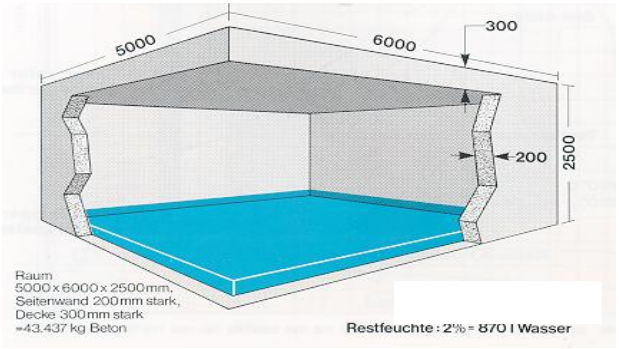


Risk factor of water content in concrete

After about 15 minutes
Appearance of hot steam

After about 24 minutes
Beginning of water increases

After 90 minutes
Large water collection



In case of fire:

About 870 liters water will collect

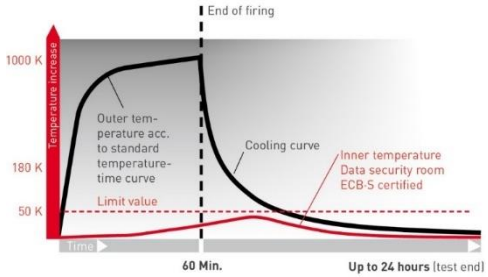
inside a room 6 x 5 x 2.5 m.

System tests according to EN 1047-2

- **Conventional fire protection stipulations regulates the protection of people and buildings but not the protection of IT infrastructures!**

- **The solution is system tested for the complete Data Security Room, including doors, slides, cable ducts and the support construction, according to EN 1047-2 for an ECB•S certification**

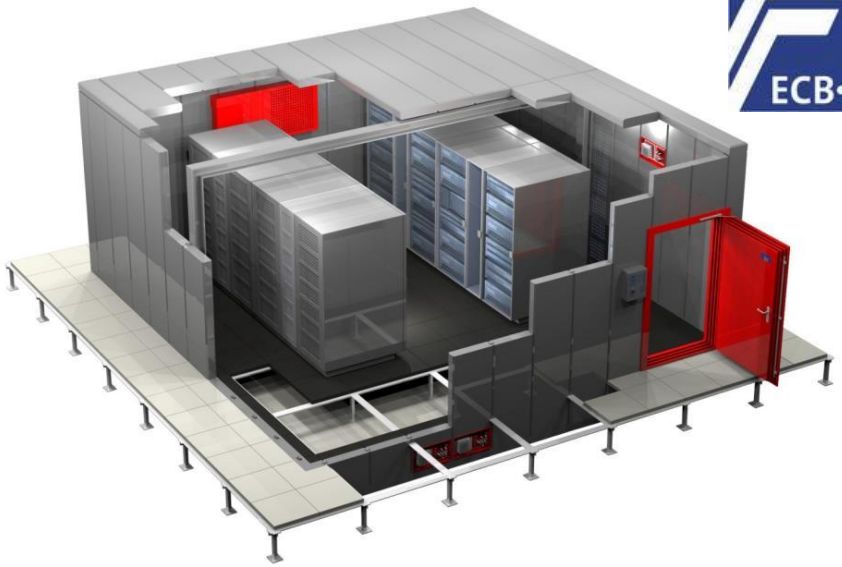
- **Measuring of temperatures and humidity for max. 24 hours**
  - **Max. permitted temperature increase 50 K**
  - **Max. permitted relative air humidity 85 %**



DATA CENTER GROUP

Modular - Certified - Highly available

DC-ITRoom GranITe



ECB·S

Worldwide the first
IT-Room System
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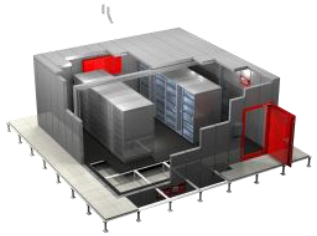
(amendment 2010)

TYPE TESTED

MADE IN GERMANY

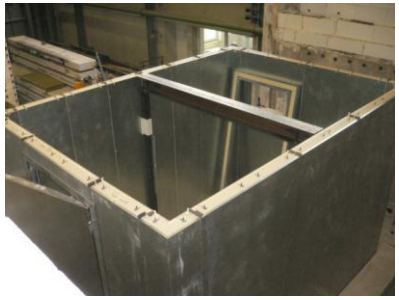
Product Details

- Modular construction (wall, ceiling and floor elements)
- Steel elements, filled with highly efficient insulation materials
- High security door system with 6-point interlocking, monitoring contacts,
  mechanical key-lock and sliding door closer
- Innovative cable duct solution (round cable duct DN200)
- High carrying capacities by load carrying ceiling
- Independent of location
- (Re)movable during running IT operations
- Low static floor loads



Photos of a type test according to EN 1047-2

https://www.youtube.com/watch?v=RHFLfBk9EIc

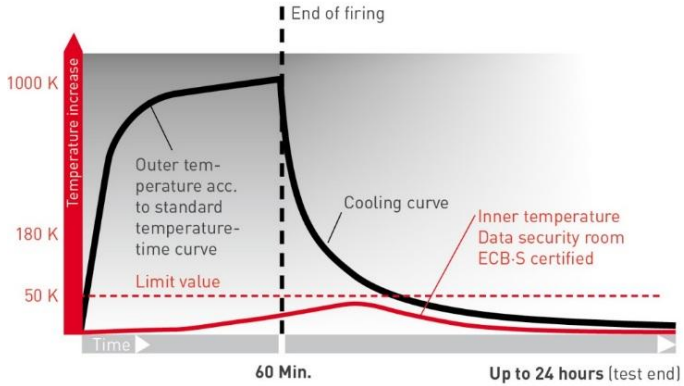


Test specimen before…

…during

…and after the test!

Type test according to EN 1047-2



TYPE TESTED

System tests according to EN 1047-2

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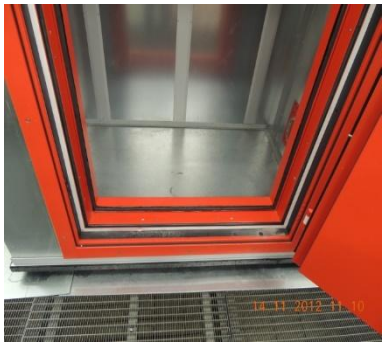
Burglar resistance according to EN 1627-1630:2011
Dust- and water protection according to EN 60529

Test specimen…

…burglars in action…

…dust deposits after the test …

…Water jet test …



…successfully passed!

We operate on the basis of national and international quality standards because this is the only way to fulfil the requirements of today‘s IT infrastructures.

Explosion test according to EN 13123-2 / 13124-2

Test preparation EXR 2…

…test…

after the test…

Test preparation EXR 3…

…test…

after the test…

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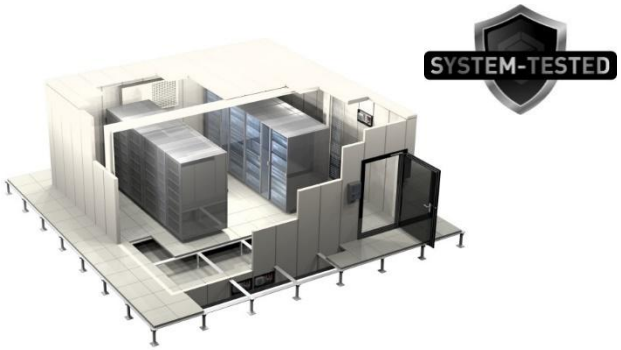
Explosion test according to EN 13123-2 / 13124-2

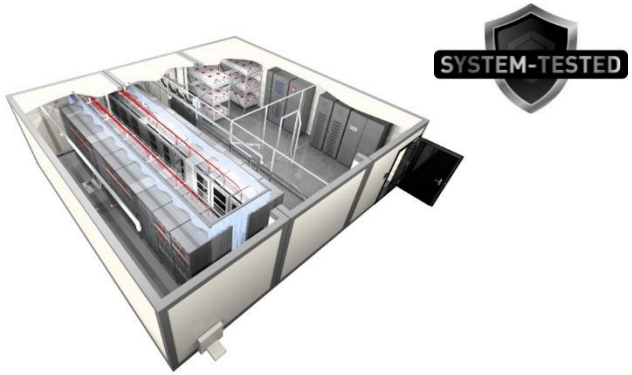
DATA CENTER GROUP

Product Portfolio of RZproducts

MADE IN GERMANY



DC-ITRoom QuartzITe



DC-ITContainer

DATA CENTER GROUP

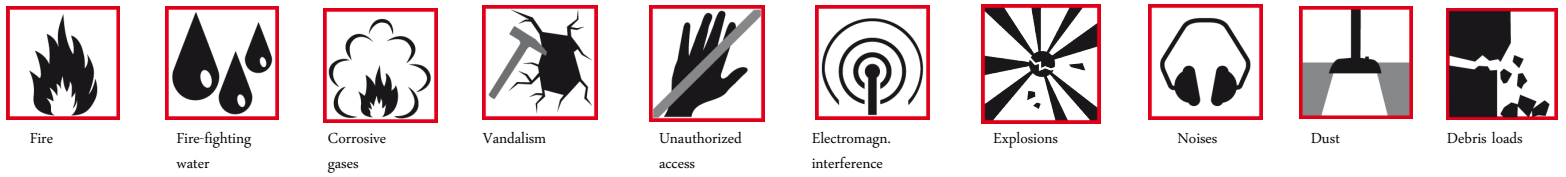
RZproducts

IT-security against Every physical risk...

DATA CENTER GROUP

SYSTEM-TESTED

MADE IN GERMANY



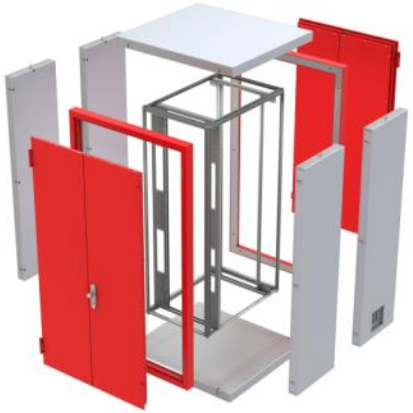
We protect IT

Product description DC-ITSafe

- Modular high available compact datacenter according to **TÜV Level 3 Plus**.
- TÜV-certificated protection against fire, unauthorized access, water, dust, smoke gases, debris, EMP and explosion.
- TÜV-quality control of the entire product.
- 100% redundant cooling solution with energy-efficient inverter technology.
- 19“ early fire detection and extinguishing system.
- Redundant power supply (A/B).
- Monitoring and energy efficiency system.
- Plug & Play compact datacenter from a single source.
- Extremely short delivery times – standard version available ex stock.

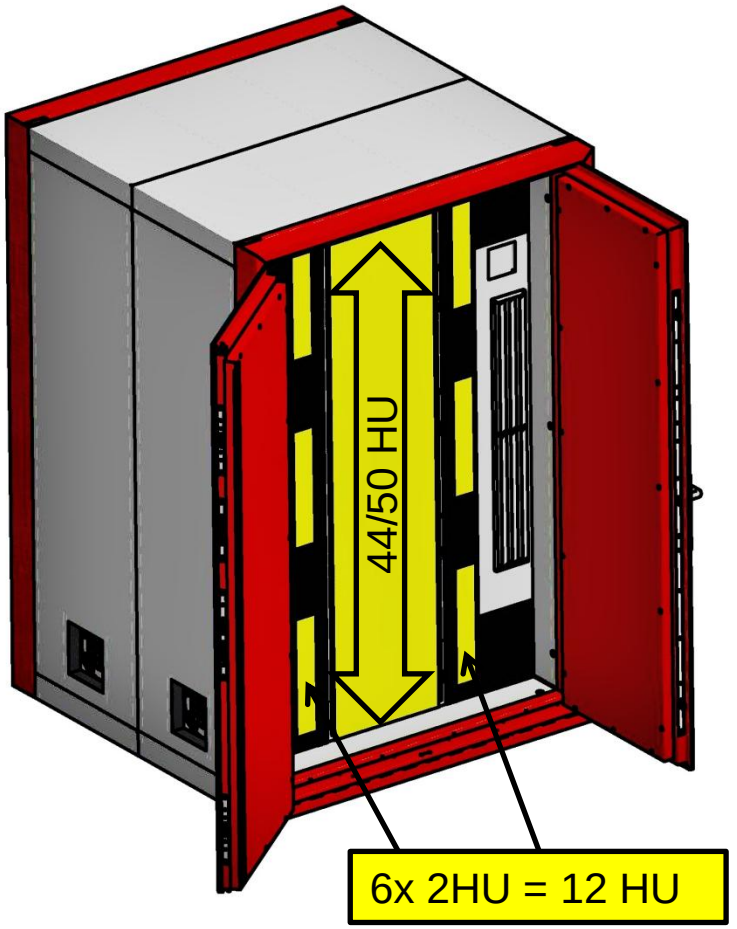
Design features DC-ITSafe

- Modular compact datacenter.
- Made of sheet steel cassettes, finish RAL 9006 (aluminium white), doors RAL 3020 (traffic red).
- Removable, replaceable and expandable (interlinkage).
- Patented, interior “click“ assembly method.
- Self-locking, automatic multiple locking with best quality swing bolts and seal elements.
- Increased insurance cover by automatic multiple locking of VdS class B.



Design features DC-ITSafe

- Dimensions:
  - W 1452 x H 2185 (56HU) x D 1470 mm
  - W 1452 x H 2425 (62HU) x D 1470 mm
- For rack dimensions WxD: 800 x 1200 mm:
  - 44 HU horizontal + 12 HU vertical = **56 HU**
  - 50 HU horizontal + 12 HU vertical = **62 HU**
- Space-saving double-door system.
- 4 pcs. Soft ducts, hard ducts DN 200 as option.
- Access control.
- Expandable by interlinking modules.
- Special dimensions and options upon request.



Interlinkage DC-ITSafe

Test certificates DC-ITSafe

DATA CENTER GROUP

- **EI 90 as free-standing system test fired from 5 sides according to EN 1363 with at least 40 minutes compliance within limit values (50 K temperature increase and rel. humidity <85%) according to EN 1047-2.**
- Burglar protection RC 2 following EN 1627.
- Dust and water protection IP 56 according to EN 60529.
- Smoke and gas protection following EN 1634-3.
- Explosion protection.
- Protection against debris.
- Basic EMP protection.

SYSTEM-TESTED

As option:

- Burglar protection RC 3 or 4 following EN 1627.
- Professional EMP protection.

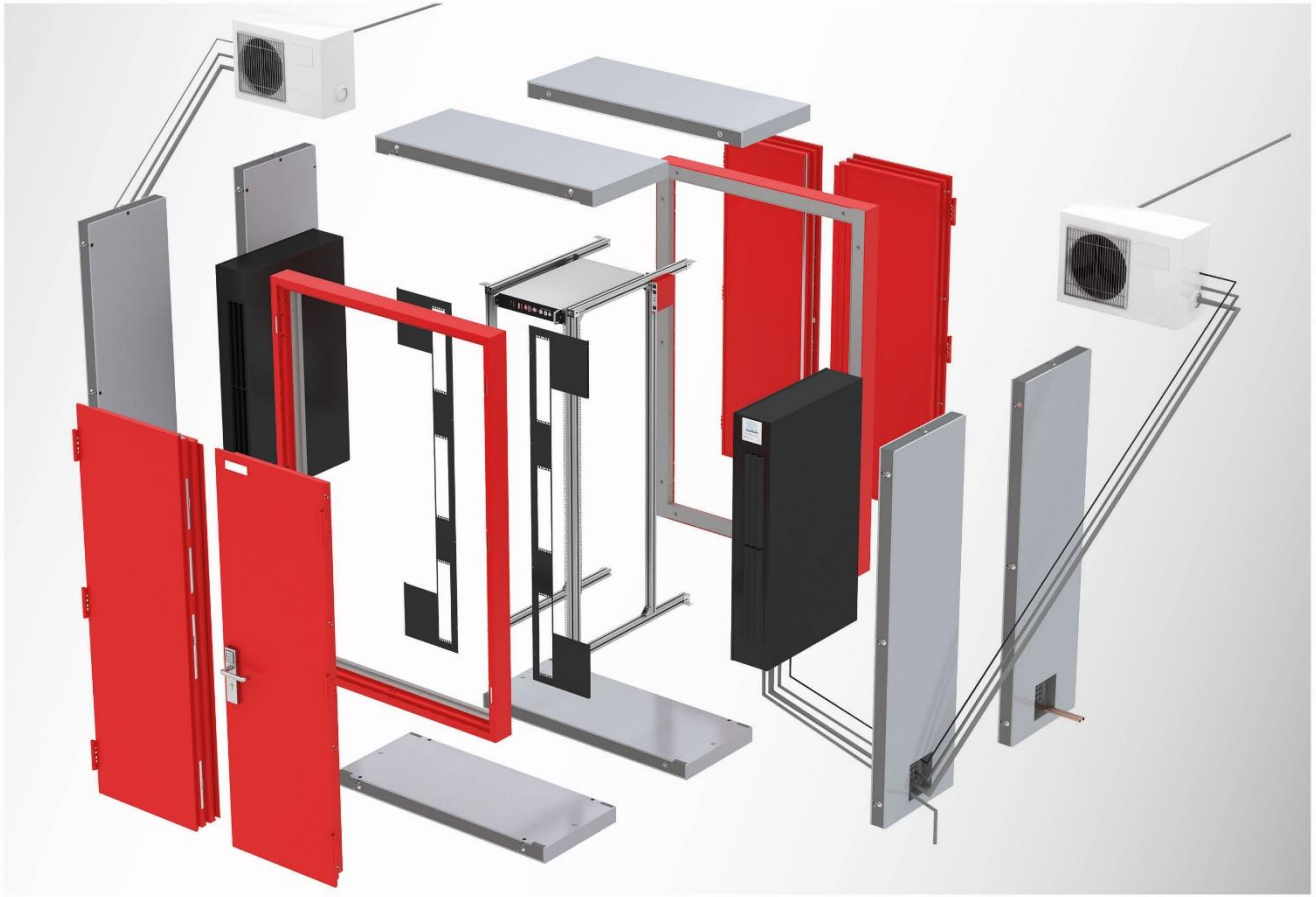
Video fire test DC-ITSafe

Equipement and options DC-ITSafe

DATA CENTER GROUP

RZproducts
DC-ITSafe

Equipment and options DC-ITSafe



early fire alarm system

monitoring

482,6 mm (19")rack

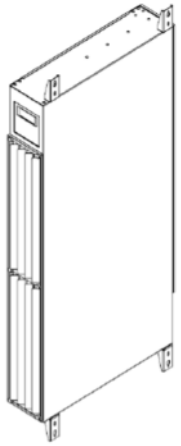
access control

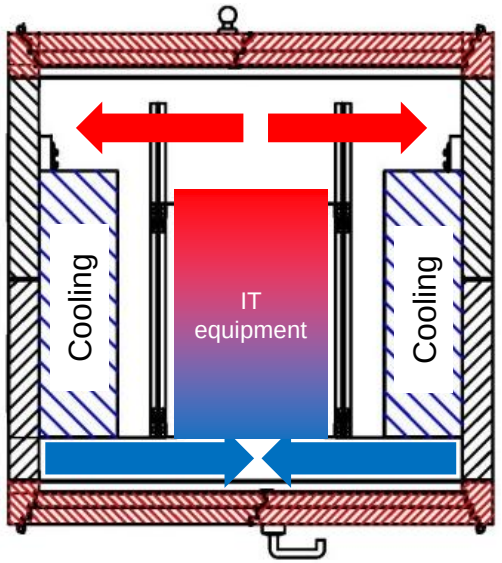
compact split cooling unit

hard/soft cable duct

Cooling system DC-ITSafe

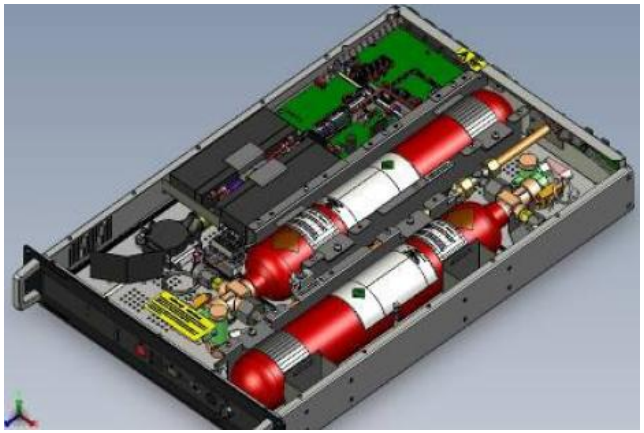
- Compact split cooling units consisting of one internal unit within the ITSafe and one external unit for outdoor positioning.
- 100% redundancy by 2 internal and external units for rack widths 800 mm possible.
- DX-Inverter technology, refrigerant R410A.
- Improved isolation enabling directed air flow – cold and warm side.
- Energy-efficient, power savings of 20 – 30 %.
- Cooling capacities:
  - 1,6 kW – 4,5 kW
  - 2,7 kW – 6,7 kW
  - 3,3 kW – 8,1 kW
- Special solutions or capacities (e.g. DX/CW side cooler).





Early fire detection and extinguishing system

- Early fire detection and extinguishing system just requiring 2HU.



- 3-step security concept:
  1. Early, highly sensitive smoke detection
  2. Automatic system shut-down
  3. Extinguishing

- Extinguishing medium: Novec 1230.

- Units incl. Power supply and battery buffer.
- Master slave for extinguishing capacity of up to 4,4 m^3.
- Modular, expandable with slave units (max. 4 pcs. per master) ea. with 4,4 m^3 extinguishing volume.

UPS and battery in ITSafe

DATA CENTER GROUP

Function and structure:

- 19“-UPS placed horizontal in 19“-rack.
- Batteries placed below the inner air conditioning units.
- All batteries are connected by hose system for gas extraction via duct.

Variant 1: UPS – 3300 for ITSafe Single:

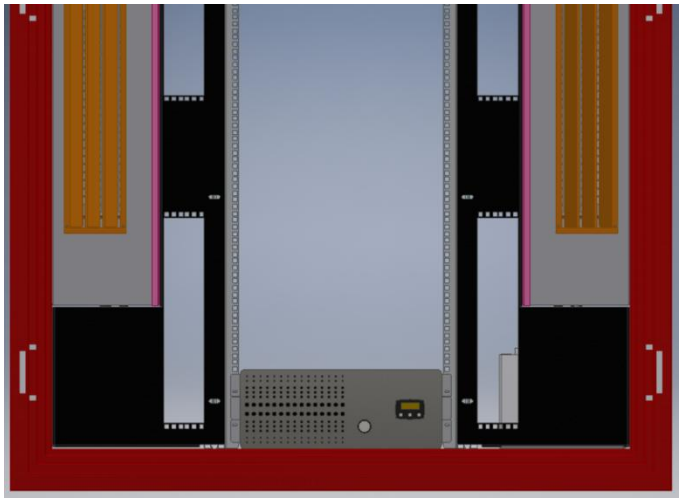
- Power: 2300 Watt
- Dimensions: W=483 x D=520 x H=4 HU
- Weight of UPS: 38 kg
- Autonomy time: around 90 minutes
- Quantity batteries: 9 pcs.
- Wight per battery: 17 kg

UPS and battery in ITSafe

DATA CENTER GROUP

Variant 2: UPS – 6000 for ITSafe Single/Duo:

- Power: 5400 Watt
- Dimensions: W=483 x D=660 x H= 4HU
- Weight: 64 kg
- Autonomy time: around 60 – 70 minutes
- Quantity batteries: 16
- Weight per battery: 17 kg



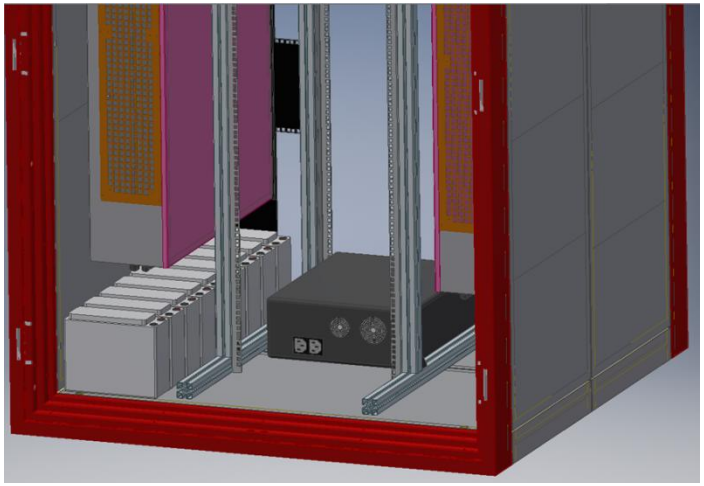
Variant 3: UPS – 8000 for ITSafe Duo/Triple:

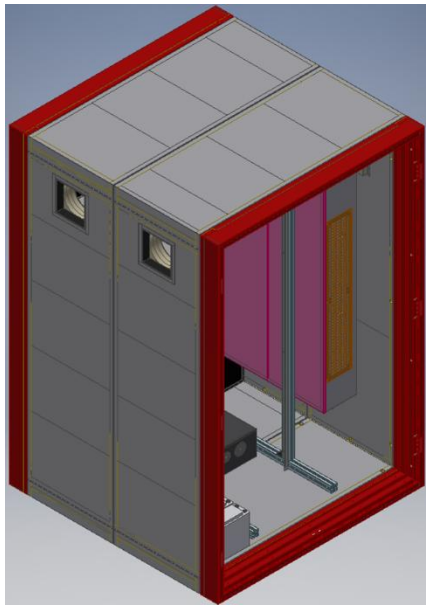
- Power: 7200 Watt
- Dimensions: 2x (W=483 x D=660 x H=4HU)
- Weight: 94 kg
- Autonomy time: around 45 – 70 minutes
- Quantity batteries: 20
- Wight per battery: 17 kg

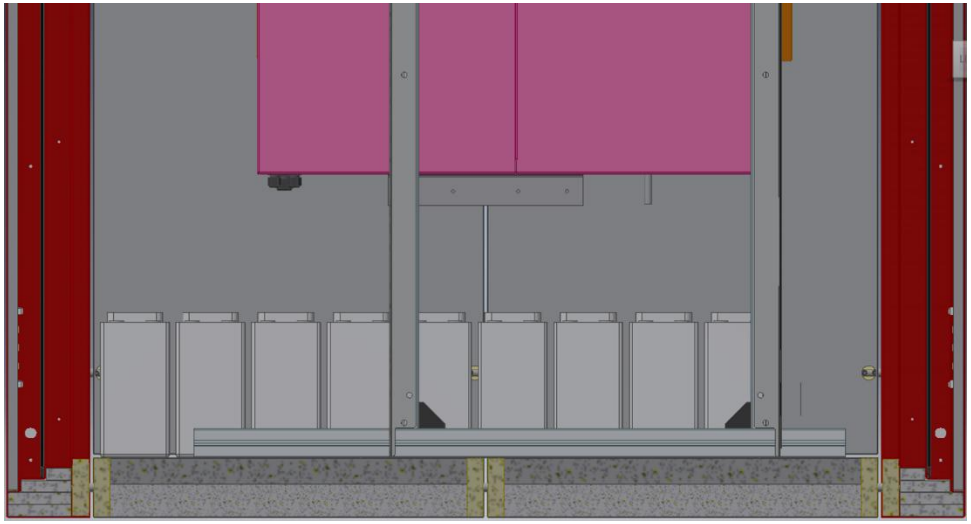
UPS and battery

Project planning:

- Cable ducts have to be on the battery side.
- Piping for the air conditioning in the internal unit upwards.
- Piping through ducts upwards.
- Batteries and UPS have to be installed before server equipment.







Additional options…

- Monitoring and energy management system
- 482,6 mm (19“) uninterruptible power supply (UPS)
- 482,6 mm (19“) Power supply
- Power distribution units (PDU‘s)
- 482,6 mm (19“) rack accessories

DC-ITShielding for DC-ITSafe

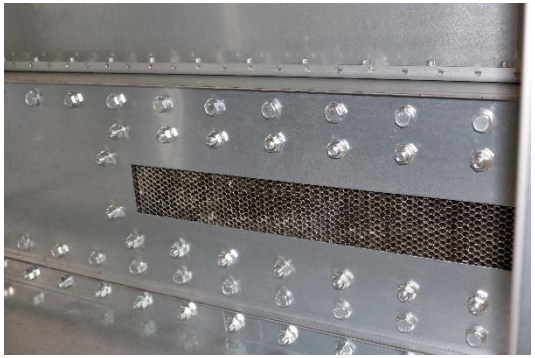
DATA CENTER GROUP

DC-ITShielding for DC-ITSafe

- Worldwide first shielding solution in the field of mini data centers and IT-security safes
- Shielding attenuation of 80 dB
- Compliant with Tempest, NSA 65-2, IEEE 299, newest NATO-Standards
- EMP protection acc. to EN 50147-1, NSA 65-6, IEEE-STD 299 /MIL-STAD 285)

DC-ITShielding for DC-ITSafe

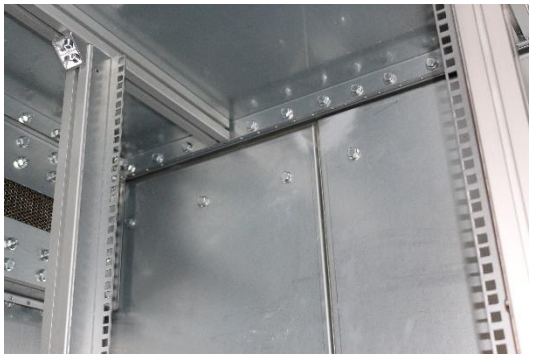
DATA CENTER GROUP



The radiation of IT equipment is reduced by the factor:

DCS 80
High availability protection

10.000



Unique selling points DC-ITSafe

DATA CENTER GROUP

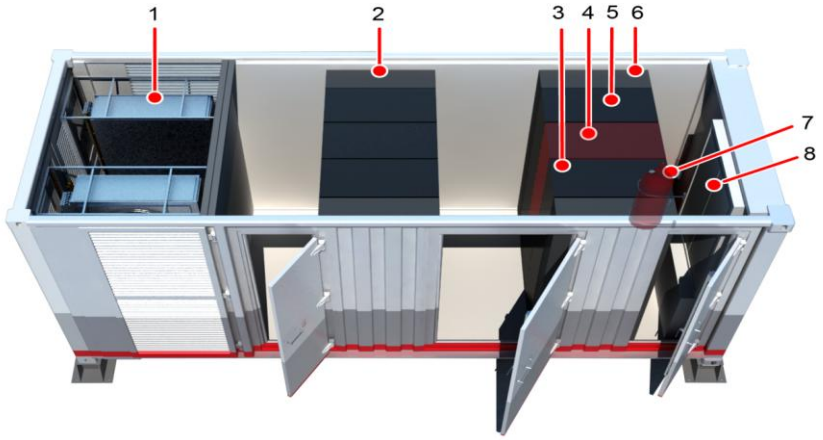
1. Modular, expandable, removable and replaceable ITSafe.
2. System tested! Free-standing system test fired from 5 sided!
3. 40 minutes compliance with the limit values according to EN 1047-2!
4. Standard double-doors!
5. More high units (HU) available compared to competitors!
6. 100% redundancy air conditioning by 800 mm rack widths possible!
7. 1200 mm rack depth standard!
8. Air conditioners comply industrial standard, designed for permanent operation!
9. Extremely fast realization = „Time is Money“!

DATA CENTER GROUP

RZproducts

DC-ITContainer ITC

DC-ITContainer ITC 20



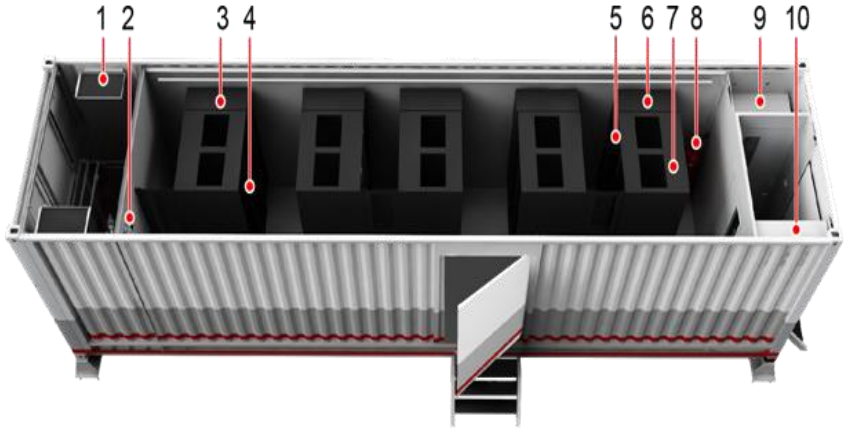
Dimension	Length	6058mm
	Width	2438mm
	Height	2896mm
Weight	Full-load (only infrastructure)	5.5t
	Max. load	16t

1	Air conditioner outdoor unit	5	IT cabinet
2	Air conditioner indoor unit	6	Tools cabinet
3	Battery cabinet	7	Gas tank
4	UPS cabinet	8	UPS input PDB

DC-ITContainer ITC 20

Key Parameter		20ft
Cabinet	IT cabinet	4
	Cold aisle width	890mm
	Hot aisle width	610mm
IT Load	Power density	6kW/Rack
	Total IT load	24kW
Power	UPS capacity	60kVA
	UPS redundancy	2+1
	Battery backup	10min.
Cooling	Cooling capacity	60kW
	Cooling Redundancy	2+1

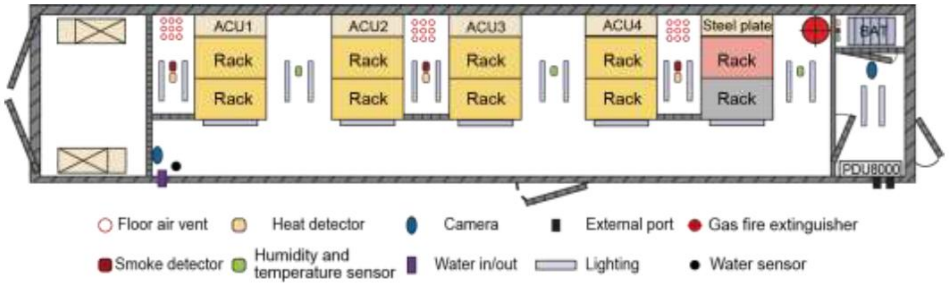
DC-ITContainer ITC 40



Dimension	Length	1292mm
	Width	2438mm
	Height	2896mm
Weight	Full-load (only infrastructure)	12.9t
	Max. load	32t

1	Air conditioner outdoor unit	6	Tools cabinet
2	Emergency light	7	Cabling cabinet
3	Air conditioner indoor unit	8	Gas tank
4	IT cabinet	9	Battery apartment
5	UPS cabinet	10	UPS input PDB

DC-ITContainer ITC 40



Key Parameter		40ft
Cabinet	IT cabinet	8
	Cold aisle width	890mm
	Hot aisle width	610mm
IT Load	Power density	6kW/Rack
	Total IT load	48kW
Power	UPS capacity	80kVA
	UPS redundancy	3+1
	Battery backup	7-10min.
Cooling	Cooling capacity	80kW
	Cooling Redundancy	3+1

DC-ITContainer ITC

Enhanced Container Features Increase Reliability

Standard ISO Container

•Standard ISO shipping container. It's easy to transported, hoisted, so as to save much transportation cost

Standard shipping container

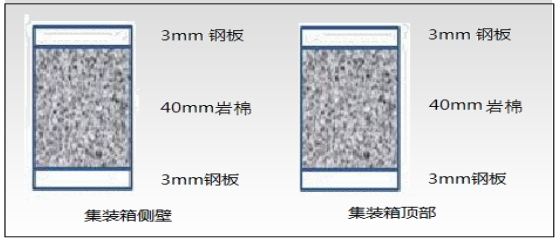
•All interfaces are embedded on the container, easy to move, hoist and install

Good thermal isolation

•Rock wool insulation layer built into container wall

•Rock wool ceiling: 40 mm

•Rock wool walls: 40 mm



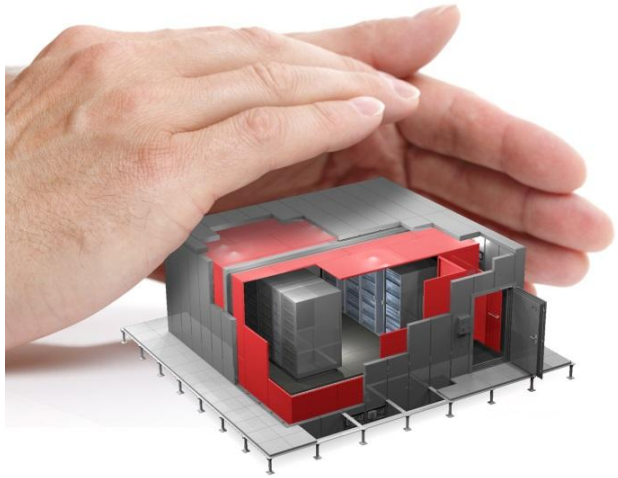
Reliable protection

•Power input interfaces configured with waterproof socket

•External protection level meets **IP56** standard

•Container structure can withstand **9** intensity earthquake

Product Portfolio of RZproducts

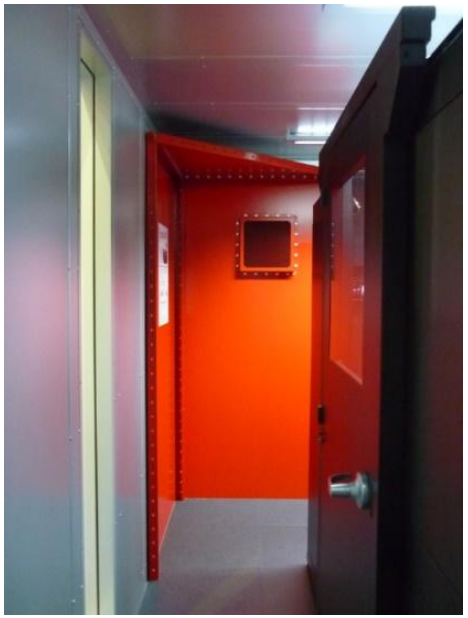


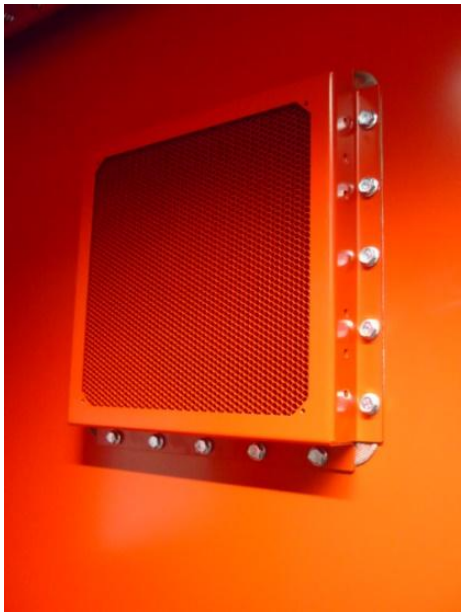
DC-ITShielding
MADE IN GERMANY

EMP protection acc. to EN 50147-1,
NSA 65-6, IEEE-STD 299 /MIL-STAD 285)

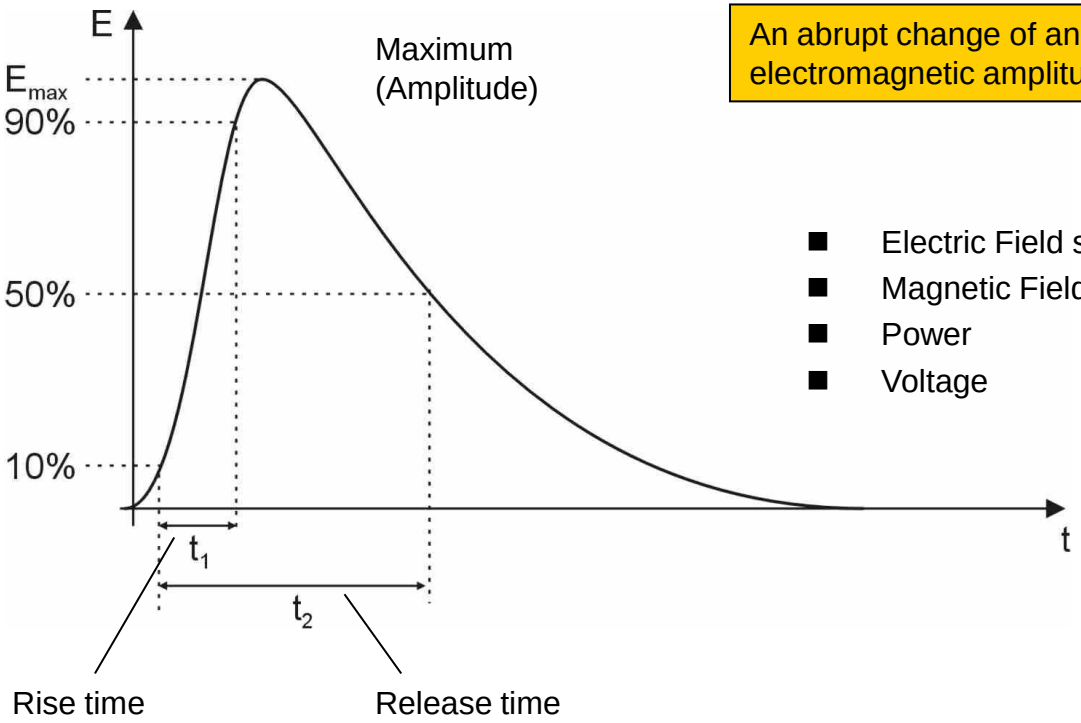
DATA CENTER GROUP

DC-ITShielding





What is Electro Magnetic Pulse (EMP)?



An abrupt change of an electromagnetic amplitude

- Electric Field strength
- Magnetic Field strength
- Power
- Voltage

Reasons of Electro Magnetic Pulse EMP

Switching operation in an electro energy system

- Closing of switches
- Switched inductive
- Voltage pulse as a travelling wave on the line
- Normally no problem

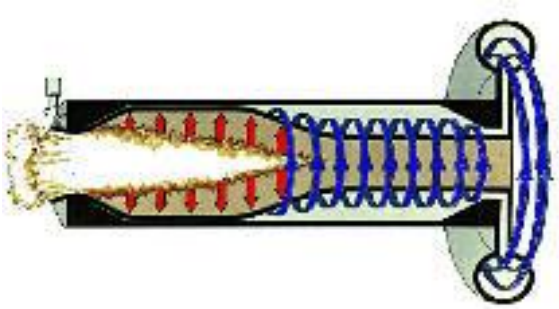
Reasons of Electro Magnetic Pulse EMP

Lightening

- Rise time in
  µ- Seconds
- Power-Amplitude approx. 20 kA
- Propagation of an
  electromagnetic Wave LEMP
- High induced voltage

Reasons of Electro Magnetic Pulse EMP

HPM-Generator/Weapon



Flux-Compression-HPM-Generator

- EMP-Generators produce synthetic electromagnetic Impulse
- Impulse radiated electromagnetic wave
- Rise time approx.
  < 4ns: EMP
  < 1ns: UWB
- Modern Microelectronic is sensitive for radiated UWB-Frequencies (100 MHz – 1 GHz)

Product features

- Shielding attenuation of 60, 80 or 120 dB
- Compliant with Tempest, NSA 65-2, IEEE 299, newest NATO-Standards
- Guaranteed shieling attenuation up to 40 GHz
- Prefabricated steel sheet panels
- Panel dimensions W x H: 1.500 x 3.000 mm
- System tested acc. to EN 50147-1, NSA 65-6, IEEE-STD 299 (MIL-STD 285)