

# Rolling Stock

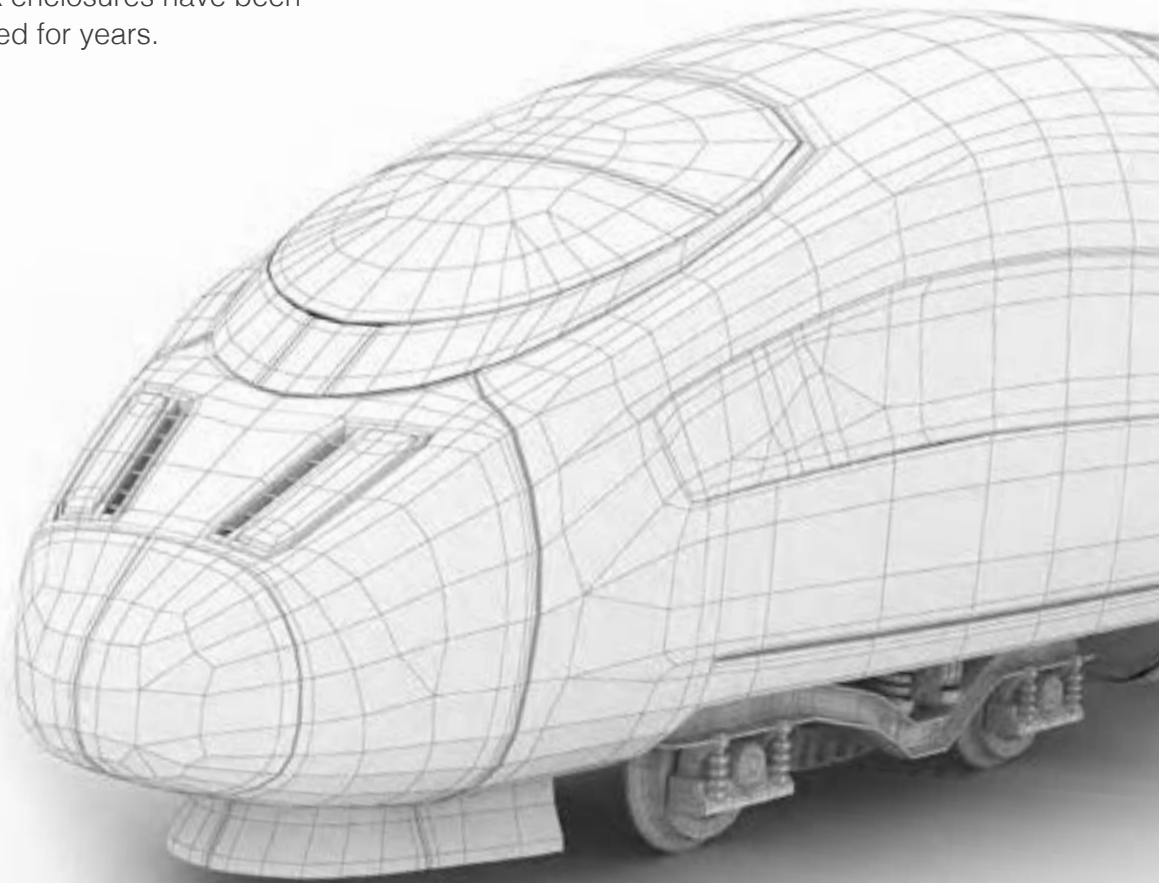


## Enclosures for rolling stock

In the construction of rail vehicles, where strict fire protection and safety requirements are imposed, **swibox** enclosures have been successfully positioned for years.

## Corrosion protection

High humidity, extreme temperature differences: **swibox** enclosures are designed to function safely even under the harshest environmental conditions. They protect electrical systems in tunnels as well as in rail vehicles.



Switzerland is a country of mountains and tunnels. More than 600 kilometres of rail and road tunnels can be found there. So it goes without saying that **swibox** has acquired the greatest expertise in equipping tunnelling projects.

The “Lötschberg Base Tunnel” and “Gotthard Railway Tunnel” are the references with which **swibox** has set standards in the execution of such construction projects.



## Fire protection

What to do when there's a fire? **swibox** answers this question with its innovative sandwich construction. Standard and special enclosures made of aluminium, steel and stainless steel guarantee protection from EI30 to E60.

## EN 45545 certified

Electrical systems on and in rail vehicles are subject to special requirements.

**swibox** meets these strict standards and supplies enclosures made of plastic, aluminium, steel and stainless steel that are safe.



A fire in a rail vehicle is extremely unlikely. Nevertheless, compliance with the necessary safety standards is still a key aspect in the design and construction of rail vehicles.

**swibox** easily fulfils these requirements and is one of the guarantors today that rail transport is and will remain safe tomorrow.



# When it gets hot inside, swibox stays cold

**swibox** enclosures with fire load insulation protect the environment from fires that can occur within electrical systems, for example.



The innovative systems from **swibox** meet the requirements for tunnelling and building construction as well as those for safety enclosures in rail vehicles in accordance with EN 45545.



**swibox** enclosures are available with Roxtec cable entries and meet the requirements according to EI30 - E60.

## „E“ classification

- Room closure for a certain time
- No passage of flames from the side facing the fire to the side facing away from the fire
- The flame is applied according to the standard temperature curve. The entire test is carried out in accordance with EN 1363
- Example: “E”: The body withstands the test for 60 minutes



## „EI“ classification

- Room closure as for the test criterion “E”
- Additional insulation
- The temperature must not exceed 200°C (180°C above room temperature)
- Example: “EI”: The body withstands the test for 30 minutes



Photo documentation of fire tests with **swibox** enclosures

# Fire load insulation

EI30	E60	CE	FE
 ALU	IP66	IK10	
EN 45545	PA±		

Wall-mounted enclosure EI30

- Empty fire protection housing as electrical distribution board
- Weight reduction through innovative **swibox** sandwich construction
- Available in aluminium, steel or stainless steel
- Certified according to EN 45545
- Flame treatment from the inside in accordance with DIN EN 1363
- Classified according to EI15, EI30 to E60
- Cable entry with the same fire resistance possible
- Suitable for the installation of electrical components in accordance with EN 62208
- Designed as a 1-leaf floor-standing enclosure
- Painted or powder-coated according to customer requirements
- Locking with hinge or screw connection possible

**swibox** enclosures are successfully "E" and "EI" tested and certified on the basis of tests in accordance with DIN EN 45545-3:2013-08 and DIN EN 1363-1:2012-10.

# Safe is safe

The rail-based transport of people and goods is a central element of European transport policy and should be further expanded in the future for climate policy and environmental reasons. The safety of passengers and staff is always a priority, especially in the unlikely event of a fire on a train.

Alongside heat and direct flames, toxic gases are the greatest source of danger that must be avoided. The EU standard DIN EN 45545 regulates how to deal with sources of danger in rail transport in order to ensure maximum safety. The standard differentiates between operating and design classes.

## Operating class

The operating class determines WHERE a component is installed in rail transport. It considers how easily and quickly a possible evacuation can take place.

1 = above-ground operation

2 = Tunnel < 5 km

3 = Tunnel > 5 km

4 = no lateral evacuation possible

## Design class

The design class considers the rail vehicle itself and weights possible hazards.

N = Normal-/standard operation

A = Automatic operation (no staff for emergencies)

D = Double-decker vehicles with increased passenger volume

S = Sleeping car

## Hazard class (HL, Hazard Level)

DIN EN 45545 defines three hazard classes, from HL1 (simple) to HL3 (complex)

Type class

N A D S

Operating class 1 HL1 HL1 HL1 HL1

Operating class 2 HL2 HL2 HL2 HL2

Operating class 3 HL2 HL2 HL2 HL3


Operating class 4 HL3 HL3 HL3 HL3

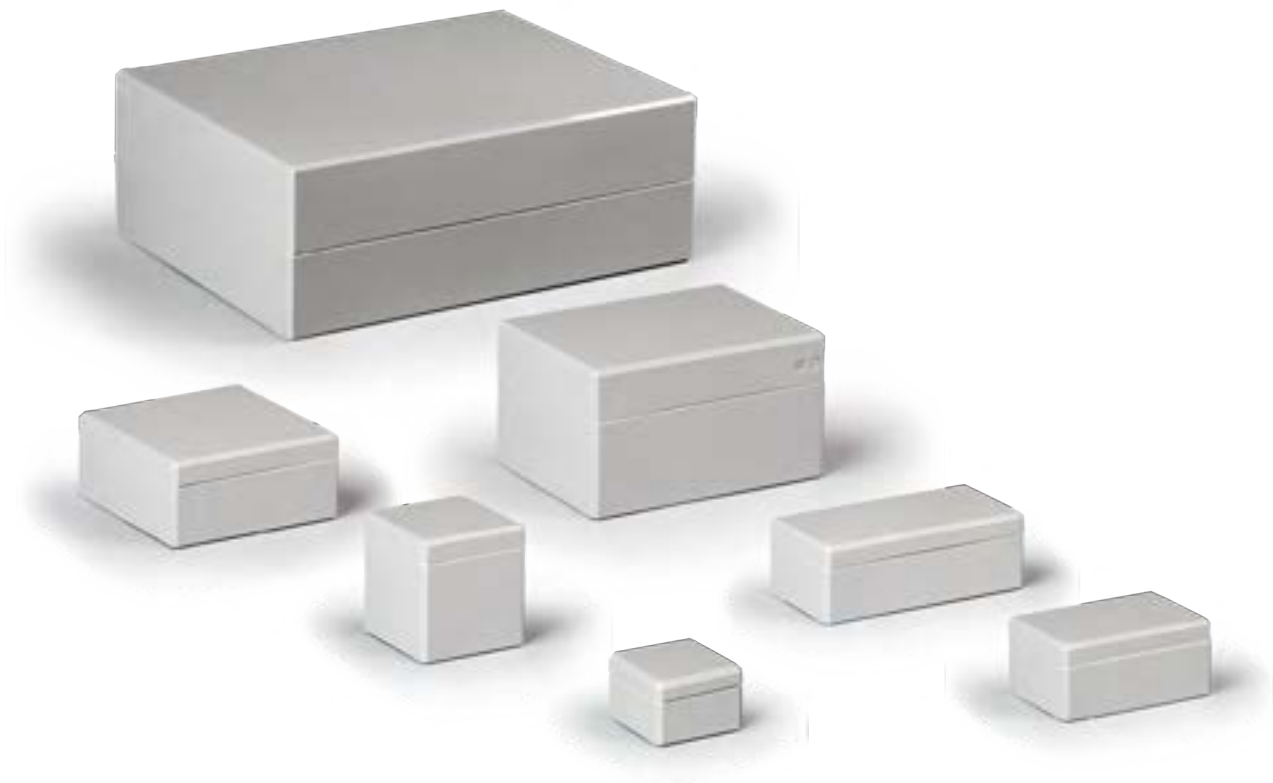


swibox RSE enclosure



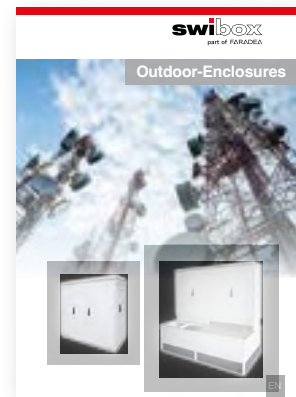
# swibox RSE enclosures

E10	HL3	CE	PC	FE
	ALU	IP66	IK10	EN 45545



The **swibox**-RSE enclosures are extremely resistant and have been specially designed for use in rail vehicles. They are certified in accordance with DIN EN 45545-2 and fulfil the requirements for hazard classes up to HL3.

- RSE empty enclosures as electrical distribution boards
- Self-extinguishing according to UL94V-0/5 VA
- Enclosures available in aluminium, stainless steel and polycarbonate
- Better resistance to corrosion in the polycarbonate version
- The seamlessly encapsulated 2-component polyurethane seal guarantees IP66/IP69
- Ideally suited for use in rail vehicle and tunnel construction



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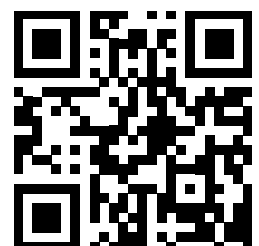
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