



KProtector

Operation, shipping and storage for IT critical equipment
High resistance to mechanical stresses and extreme environments



KP 1 - Operation, shipping and storage for IT critical equipment

Ensures EMI/EMC protection against vibration and shocks and allows the cooling of the equipment rack during operation, shipping and storage.

The equipment is part of the shipping rack and will remain permanently attached.

KACU - Air conditioning installation for cooling the operation, shipping and storage of critical IT equipment

It is destined to cool the operation and shipping systems used for the IT critical equipment, as it is fully protected against vibration and shocks.

The AC installation is part of the transport case and it remains permanently attached to it.

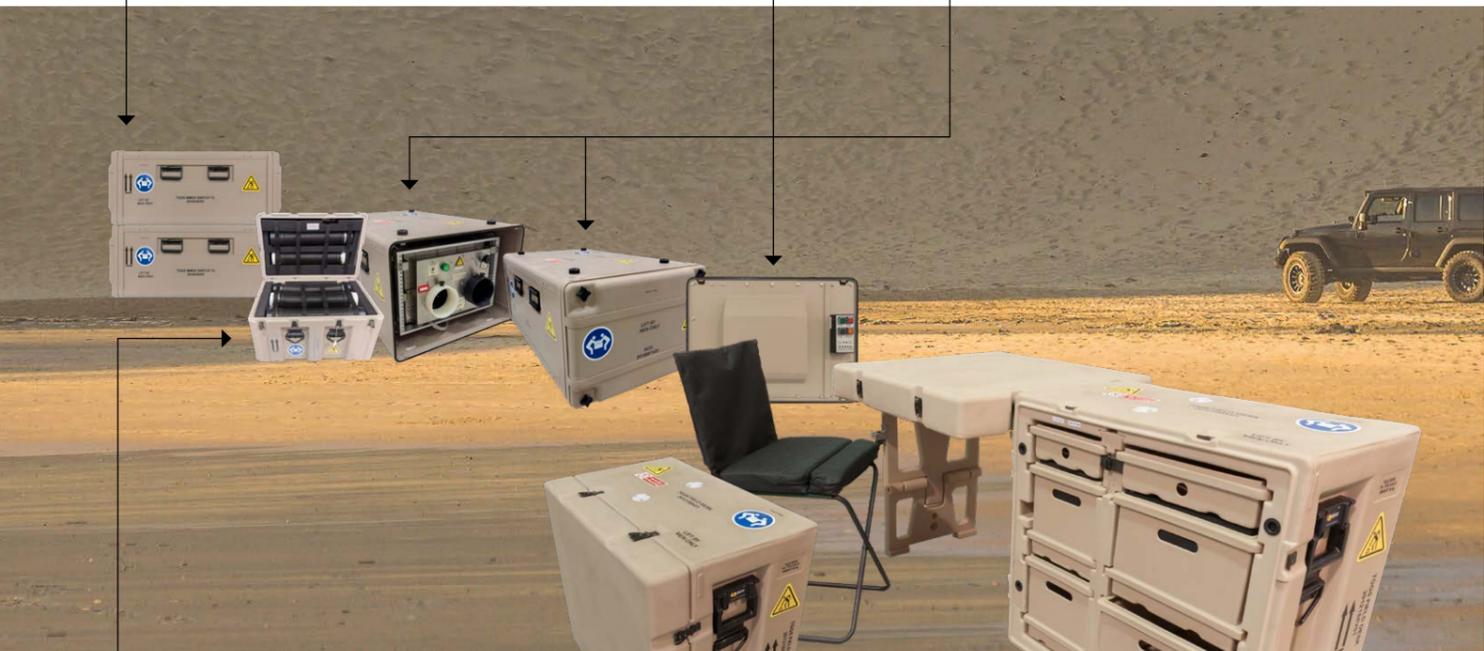
KP 2 - Transport and storage for IT equipment and accessories

Systems that ensure the equipment protection to vibration, shocks and environment factors, during the shipping and storage.

In order to operate the equipment, first pull it out of the case.

Foldable and adjustable field desk

During the shipment, the desk can be packed, becoming a transport case with all the necessary accessories.



Any operation and shipping mission involving IT critical equipment generates high risks that need to be addressed: information protection, proper functioning of the equipment at the destination following the shocks and vibration during the shipping and the adaptation to the climate conditions within the mission area.

Whether we talk about armed forces that are in theatres of operations, intelligence, gendarmerie or emergency intervention teams, specialists operating on oil platforms or researchers gathering information in subpolar regions, they all need a system that ensures their IT equipment integrity.

UTI developed a customizing algorithm for the shipping, storage and operation of the IT critical equipment that meets exactly these needs.

According to the physical and operational features of the equipment that needs to be integrated, our algorithm implies the creation of a theoretical model of the system, on which a development specification will be made.

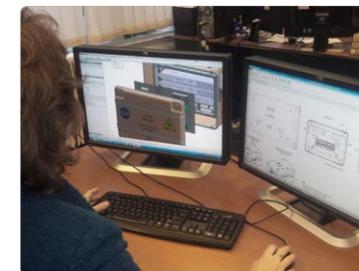
During the design process, our specialists create a 3D model (using SolidWorks or CATIA), as well as the associated operating documentation.

Where necessary, the model is submitted to the test of the finite element (using NASTRAN PATRAN) from a mechanical and/or thermal perspective.

The physical prototype is manufactured based on the optimized operating documentation. Then, the prototype is submitted to different tests, according to the development specifications and the standards in force.

The tests to which the prototype is submitted to, are:

- Mechanical: shocks and vibration, constant acceleration, stacking, dropping
- Environmental: extreme temperatures, altitude, saline mist, dusty rain, dust, icing/de-icing, thermal shock
- Shielding: Compatibility and electromagnetic immunity, protection of the intended use of data (TEMPEST)
- Thermal



Armed forces in theatres of operations



Intelligence teams

Gendarmerie teams



Emergency situations teams

Specialists operation on oil platforms

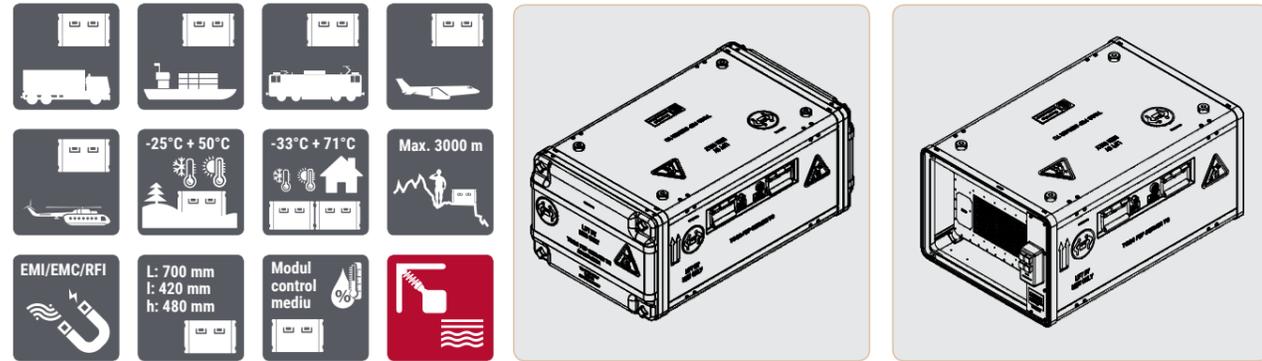


Researchers in subpolar regions

SYSTEM ARCHITECTURE

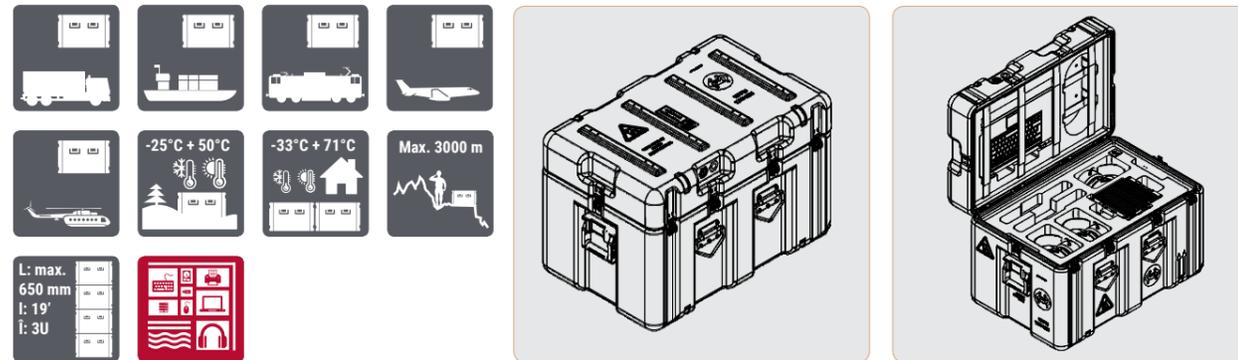
A. Operating, shipping and storage systems for IT critical equipment

They are provided with shock absorption systems and are EMI/EMC shielded, they are thermally conditioned and allow the operating of IT critical equipment.



B. Shipping and storage systems for IT and accessories equipment

These transport racks are coated with polyethylene foams and allow the safely shipping and storage of equipment.



C. Air conditioning installation for the cooling of operation, shipping and storage systems of critical equipment

In particular circumstances, if the registered parameters within the operation, shipping and storage racks of the IT critical equipment are exceeded, they can be connected to the rackable air conditioning unit, that has the following performances:

Cooling capacity	2000 BTU
Temperature of the outdoor environment	from - 25°C up to + 55°C
Air flow	140 mc/hour

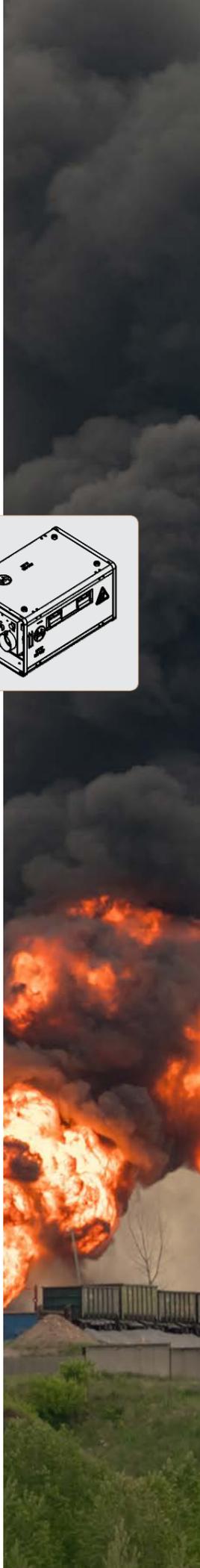
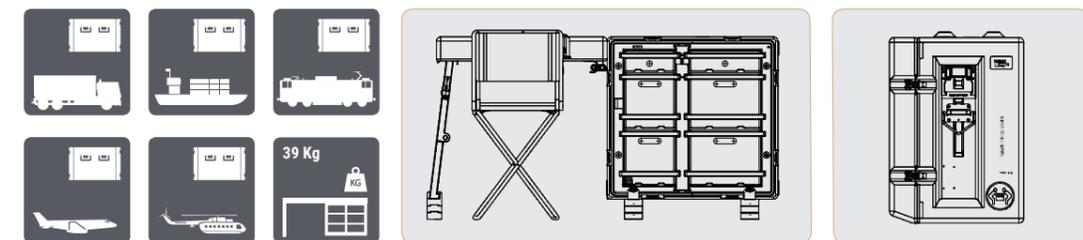
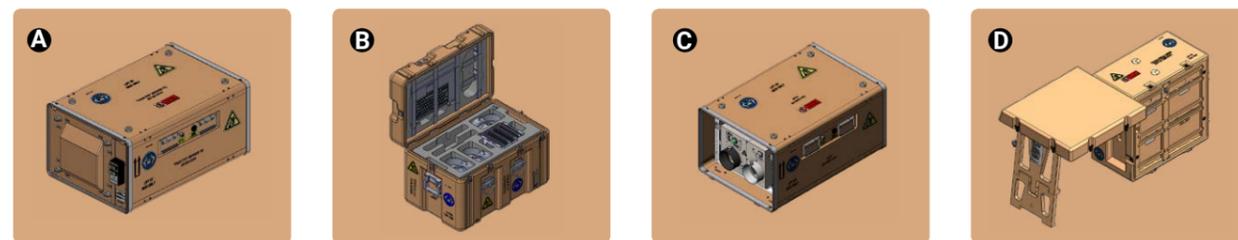


D. Field desk

In the operational state, the field desk is used by the personnel of the command units, supplying the necessary working conditions.

UTI improved the basic model, by adding the following accessories and facilities:

- Tie point chains for anchorage
- Stacking interfaces
- Cable roller interfaces attached to the field desk
- Ergonomic kit for the adjustment of the operator posture
- Attached connectors for the plug-in to working units and to the Command Center data network
- Improved balance through the finning of the fixing flange in a foldable position



SYSTEM FEATURES

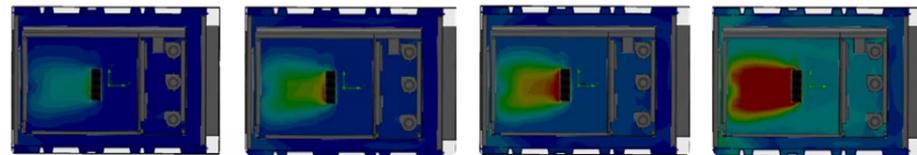
The system can be shaped for a wide range of cases, according to the transport or transport and operation conditions. The cases can be manufactured of composite materials, as well as aluminum or polyethylene.

They are of the highest quality and are produced by reputable brands:



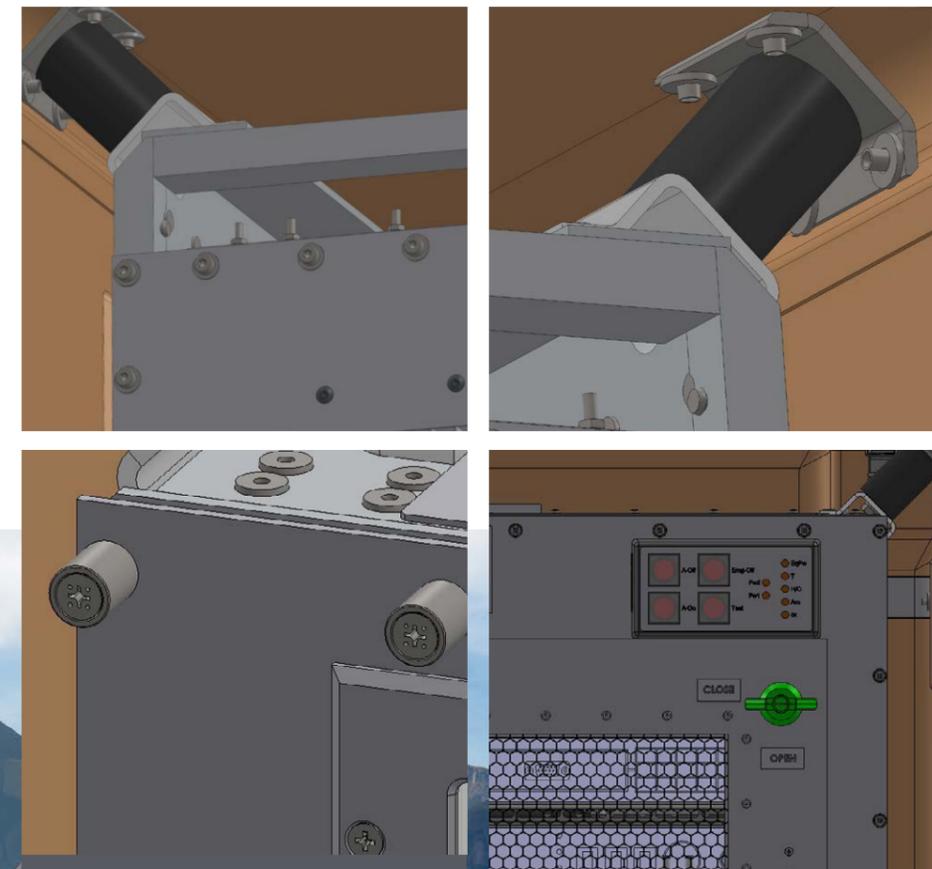
The resistance to hostile climate factors has been proven during the following tests:

	Windy rain: rate of rainfall of 0,8 - 1,8 mm/min, duration of 4 hours and wind speed of 12 m/sec. (according to AECTP 300/method 310)
	Saline mist: concentration of salts: 5%, duration: 8 days, temperature: +35°C (according to AECTP 300/method 309)
	Thermal shock: extreme temperatures, T1 (low temperature) - 33°C, T2 (high temperature) + 71°C (according to AECTP 300/method 304)
	Freezing: at least 6 mm on the exposed surfaces (according to AECTP 300 - method 311)
	Moist heat: 4 consecutive 24 hour cycles under extreme conditions (according to AECTP 300 - method 306)
	Low temperature: - 25°C up to - 33°C cycles, for a period of 1 month (according to AECTP 300 - method 303)
	High temperature: + 33°C up to + 70°C cycles for a period of 1 month (according to AECTP 300 - method 302)



In consistency with the masses of the hosted equipment and the specific features, the systems are provided with shock and vibration absorbing materials (KP2 Systems) and mechanical devices (KP 1).

	Vibrations: 2-5 GRMS (according to AECTP 400, method 401)
	Road transport (regular trucks or tactical ones)
	Air transport (jet and propeller-driven aircrafts, helicopters)
	Naval transport
	Rail transport
	Shocks: terminal Peak Sawtooth 30G terminal - 18ms and Half Sine Shock Waveform 8G - 11 ms (according to STANAG 4370 AECTP 400, method 403)
	Drop test: drop acceleration of 20 g - 40 g, done at a drop height of 61 cm (according to AECTP 400 - method 414, STANAG 4370)



SYSTEM FEATURES

During shipping or storage, the systems tightness is ensured at level **IP 64**, according to **IEC 60529**.

During operation, the racks that host the IT critical equipment are sealed according to IP 64.



Indicator umiditate
Valvă automată de presiune

The cases are provided with automatic pressure valves (**0.5 psi supra-pressure, 0.5 psi vacuum**) that prevent the risk of blocking the caps after the air transport, according to **STANAG 4370, AECTP 300, method 312**.

Optionally, the cases can be labeled to inform the user about their resistance to extremely aggressive environments.



The cases storage can be done vertically, in a stack of maximum 6 m, according to **STANAG 4370, AECTP 400, method 410**. For this purpose, the systems are provided with stacking interfaces.

The anchorage can be done with straps or using as interface the cases handles for the systems that host IT critical equipment, with anchorage rollers for the systems that are shipping equipment and accessories or for the field desks, according to **STANAG 4370, AECTP 400, method 407, as well as by using anchorage nets**.

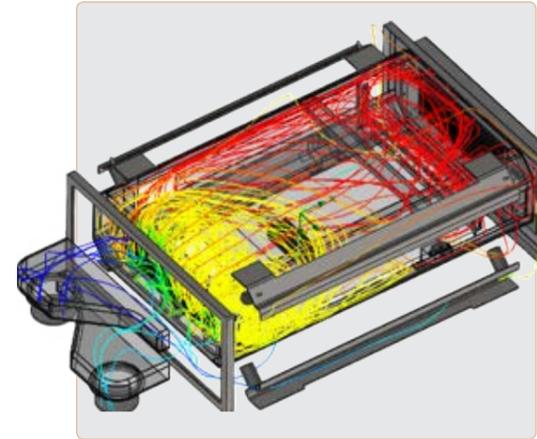


The operation, shipping and storage system of IT critical equipment are provided with 19-inch racks, with a height between 1 and 4 U and a maximum length of 700 mm.

They are designed and manufactured according to the size and mass of the hosted equipment, ensuring a better allocation of masses and airflows for the cooling/heating process.

The premises hosting the equipped rack ensures **EMI RFI** electromagnetic protection, according to **SR EN-50561-1:2014 and SR EN-55022:2011/AC:2011** standards.

The hosted equipment are protected against unintended information leakages, according to **DIP 27**.



The environment characteristics during the operation inside the premises are temperature and humidity monitored, by using an electronic device (Environmental Module), designed and manufactured by UTI.

The ensured parameters are:

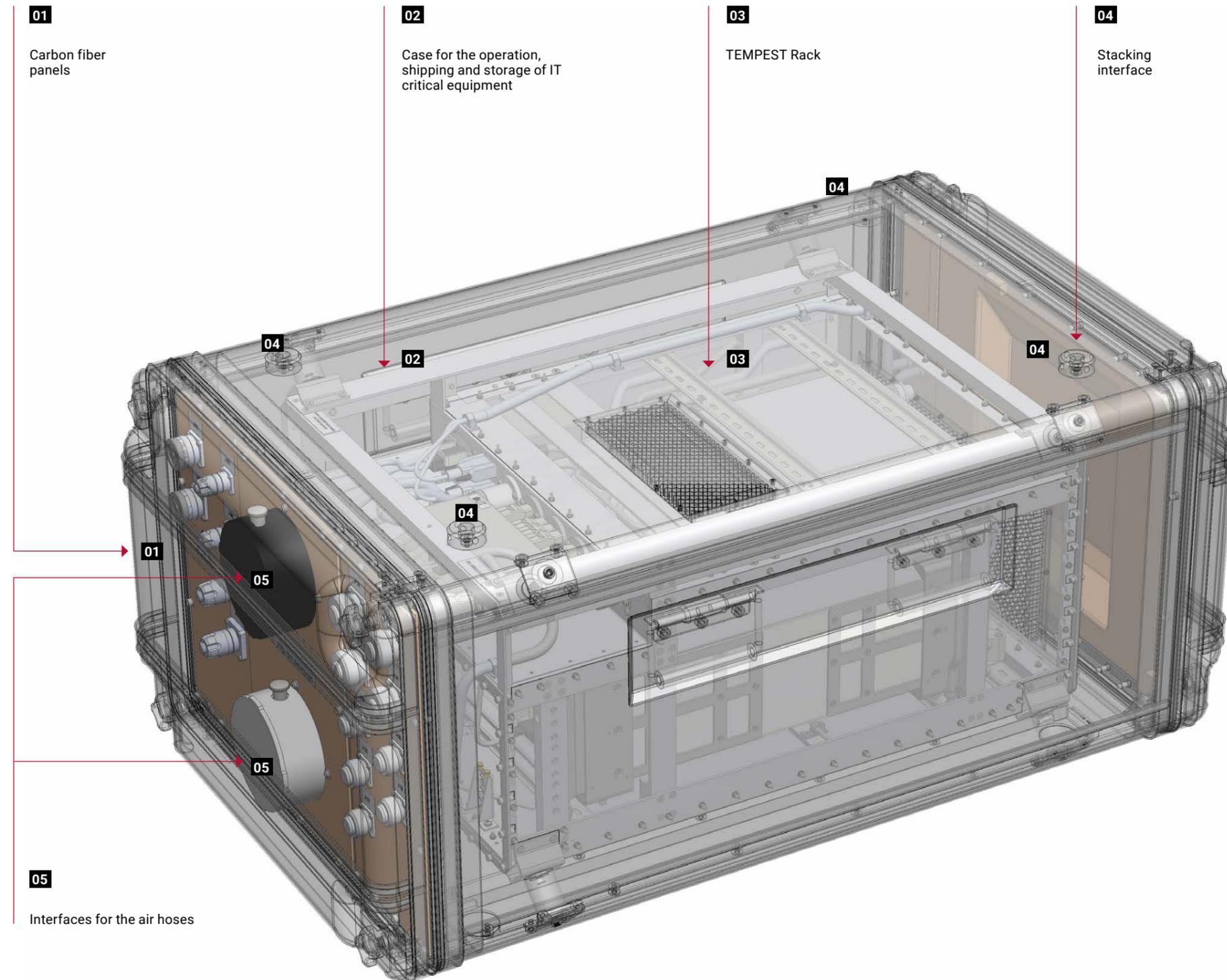
	Range of operation temperatures: from -15°C up to +50°C, adjustable
	Operating humidity: from 15% up to 95%, adjustable



The system is provided with connector panels, ensuring the equipment interfacing with the external data and power networks, thus allowing an easy change from the transport status to the operation one and the other way around.

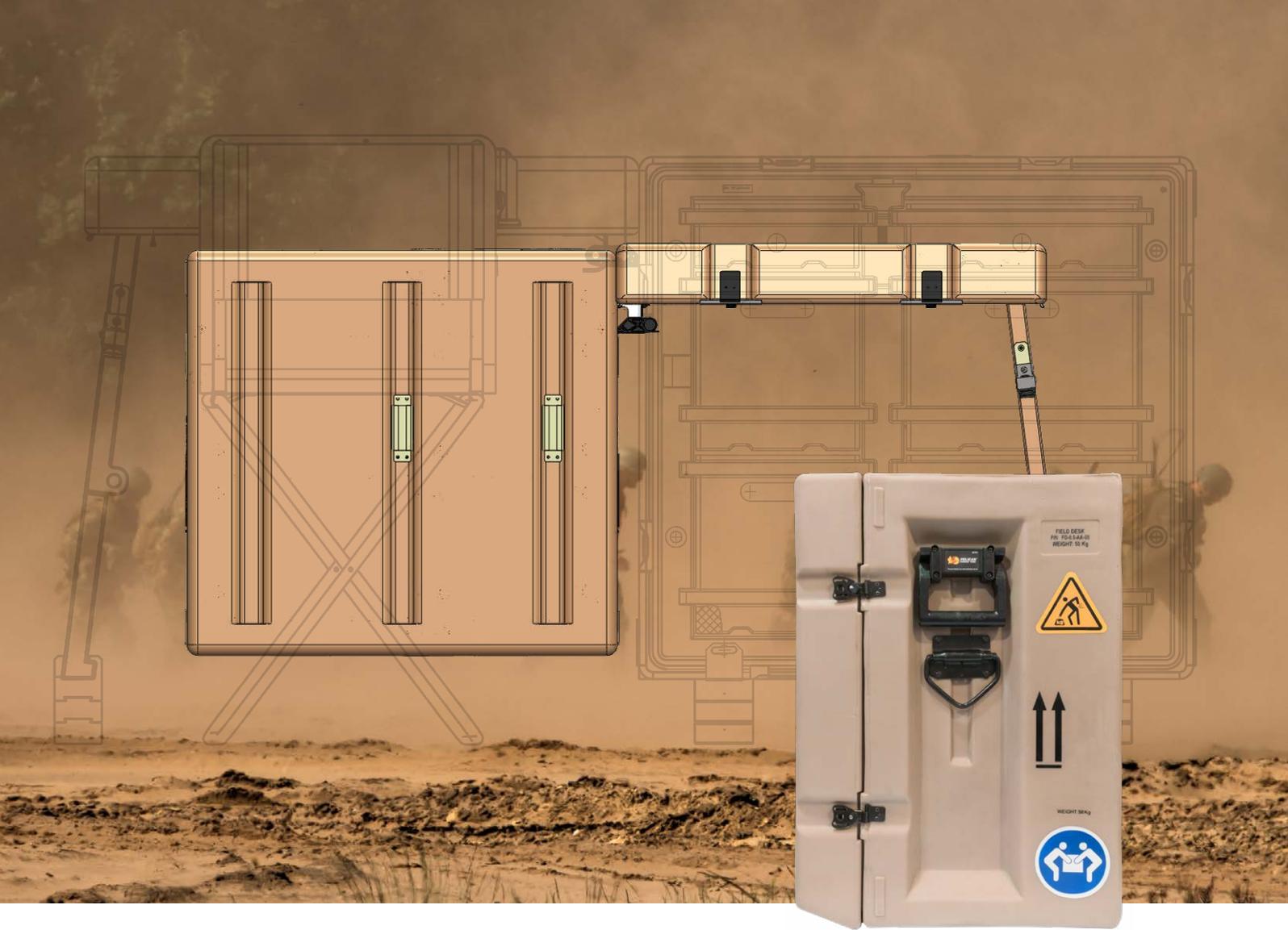


MAIN MANUFACTURING ELEMENTS



ADVANTAGES





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