AEROSPACE & DEFENSE

Sea, Land, Air, Know-how, Quality, Products
The rugged systems are used for mobile applications such as ground mobile vehicles, portable shelters or various aircrafts.

They are also used in a variety of rugged commercial and industrial applications. These applications have to be compliant to extreme environmental conditions such as extended temperature ranges, sand/dust, vibration/shock, high-altitudes and unusual power input sources.

**INDUSTRIAL**
Secure communications, satellite communications, public security systems, energy management systems, transportation systems

**SECURITY**
Transportation platforms, power management, communications control, computer and information systems

**DEFENSE**
Radar applications, ground vehicle systems, data management systems, energy management, communication systems

Systems for armored and unarmored vehicles, control stations, transport industry, transport rail networks, oil industry.

Conduction cooled ½-ATR back load system with cold plate

Robust ½-ATR chassis with conduction cooling according to ARINC 404A standard for rear mounting

Conduction cooled ½-ATR short chassis with mounting from above
Besides standard sizes from ½-ATR to 1½-ATR, POLY-RACK also offers customer specific solutions with various backplane slot counts for CompactPCI, VME/VME64x, VPX/OpenVPX or custom designs.

The ATRs are designed for harsh mechanical, climatic, chemical and electrical stresses and comply with MIL-STD-810 for shock and vibration and MIL-STD-461 for EMC.

The ATRs are available with convection cooling and fan assisted air-flow, conduction cooling and hybrid versions including liquid or air cooling.

**INDUSTRIAL**
Power management, avionics, communication and navigation

**SECURITY**
Commercial aerial surveillance, surveillance and communication systems, navigation and mission computers

**DEFENSE**
Airspace surveillance and control, command and control, communication systems, avionics, fire control and navigation
The systems for marine applications are prepared with special attention to water and salt resistance as well as shock and vibration. For demanding salt-spray environments bronze MIL-DTL-38999 III connector systems are used supplemented by electroless nickel plating for below-deck applications.

Zero halogen wires and cables ensure the required level of performance for naval applications.
CUSTOMIZED SOLUTIONS

Starting with individual components, all the way to a completely assembled, fully functional product, we guarantee comprehensive quality.

CASTINGS & ROBUST CASES
Enclosures for ruggedized applications are designed and made to customer specifications considering demands for IP/EMI protection, environmental concerns and heat dissipation aspects.

CasTEC
The CasTEC case series was specifically introduced for use in harsh industrial environments. The case consists of two parts made of die-cast aluminum. The sealing gasket required for IP65 compliance is recessed positioned inside the cover. The possibility of unintentional damage is thus practically excluded. This guarantees the reliability of the case, even when it is frequently opened and closed. A mounting plate can be positioned in the base of the enclosure. Easy-to-mount and retrofittable brackets enable wall mounting.

RUGGEDIZED SOLUTION
System enclosures in a material combination of sheet metal bending technology, aluminum extrusion process and aluminum die-casting suitable for VPX-custom-backplanes.

CUSTOMER-SPECIFIC DIE-CAST CASE
Castings can be made for individual use. The expertise includes design, development and production throughout all mechanical and electronic tasks considering the original specifications.
PRODUCT HIGHLIGHTS

We guarantee comprehensive quality from the individual components right up to the fully assembled and fully functional product.

BACKPLANES & PRINTED CIRCUIT BOARDS ASSEMBLED

Our product portfolio follows a continuous development with a range of backplanes according to different industry standards or completely customer-specific designs such as:

- VME64x
- CPCI
- CPCI-Serial
- OPEN VPX

Open VPX backplanes are seen as the direct successor to the well-known VME64x and are used in a wide range of variations. For every system developer this includes the pass-through VPX backplane in 3 U and 6-slot configuration. Individual high-speed serial point-to-point connections on the backplane are freely definable and allow the creation of a flexible slot profile. Open-VPX sets new standards in terms of data transfer rates and is far superior to its predecessor in this respect. It is particularly used in VPX development systems.

DEVELOPMENT PLATFORMS

Even the longest journey starts with the first step. This also applies to the system environment. With our 3 U / 6 U 19” development chassis we offer a solid development platform as a basis for hardware and software developers.

ASSEMBLY SYSTEMS

Premium-quality systems need a stable basis to build on. With its assembly systems of the MPS family, POLYRACK has for years offered many different solutions in the area of 19” systems for a wide variety of applications and markets.

Open VPX backplane
3 U or 6 U 19” Development Chassis
Customized ATR-System
Technical Highlights

Freed mind sets, promoting developments and accompanying innovations are fundamental components to constitute the future.

**ATR (Air Transport Rack)**
Highly complex system architectures like ATRs are designed and manufactured based on the latest technological requirements for extreme conditions offered as standard platform, modified standard or on customized demand.

**System Platforms**
- Tailor-made and robust system platform integration in various selections of enclosures covering IP65+ protection, optimized heat dissipation and suitable to MIL grade standards.
- Rugged MIL grade backplanes for CPCI, VME/VME64x and VPX/OpenVPX applications for extreme environments.
- Multiple power supply options are available according to MIL-STD-704 and MIL-STD-1275.
- Design and integration of customer specific I/O connector boards to reduce cabling complexity.

**Mechanical Parts**
- Precise machined compact and lightweight aerospace grade aluminum alloy EN AW-6061-T651/EN AW-6082-T651 housings with shaped internal structures or mechanical components.
- Laser cut, formed and/or welded robust lightweight aluminum alloy EN AW-5052-H32 enclosures for installation in harsh environments.
- The housings can be built as screw fixed, dip-brazed or vacuum-brazed version according to ARINC 4044/800. The construction withstands extreme mechanical shock and vibration stresses according to MIL-STD-810 and DO-160 as well as ensuring MIL-STD-461 compliance for EMI/EMC against environmental impacts.
- The housings carry advanced thermal management, including conduction, liquid, hybrid or fan assisted cooling considering the highest possible heat load of the plug-in boards.
Due to the technology crossing company concept POLYRACK distinguishes itself from the market and combines all different fields that are shown below.

**CROSS TECHNOLOGICAL SYSTEMS PARTNER**

**PROCESS DEVELOPMENT**
- Plastic solutions
  - Tool construction, injection molding

**PRODUCT & SYSTEMS DEVELOPMENT**
- Mechanical production
  - Welding, laser robot, CNC punching, milling, etc.

**TECHNOLOGY & MATERIAL CONSULTING**
- Excursion solutions, cast
  - Aluminum, zinc, magnesium casting

**Electronics**
- Development and layout of circuit boards
- Interface connection test for backplanes
- Partially and fully assembled systems
- Cable assembly

**Surface Treatment**
- Wet painting
- Powder coating
- Silk screen, pad printing, HD printing
- Electroplating

**Mounting and Assembly**
- ESD-compliant assembly
- Function and final testing
- Quality control
- Software installation and testing

**Logistics**
- Packaging concepts
- Global inventory support
- Individual logistic concepts
Our group of companies – POLYRACK Electronic-Aufbausysteme GmbH, RAPP Kunststofftechnik GmbH, RAPP Oberflächenbearbeitung GmbH, Metalle in Form Geräteeteile GmbH, and their subsidiaries abroad – offers an innovative and comprehensive range of products that are manufactured in high-end quality and with the economical benefits of series production. Our focus is particularly dedicated to the development and manufacturing of customer-specific products and solutions. Extensive consultancy in the conception stage, right at the start targeted and reliable development, production and assembly combined with on-time delivery are characteristic of our service offering.

**POLYRACK TECH-GROUP**

- **+2000** customers worldwide
- **+8** locations
- **+70** million € turnover
- **+450** employees worldwide
- **+40** years of experience
- **+30** trainees

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