Why is MPL the right partner for Maritime applications?

TEN Reasons to buy MPL Products

1. **Continuity**
   Since 1985, MPL has been the industry leader in developing and manufacturing rugged, fanless electronics, and embedded systems for customers demanding best quality. MPL's commitment to design, high reliability, low power consumption, extended temperature, and long-term available products are the cornerstones of our success.

2. **Innovation**
   MPL products differ clearly from other products on the market. Most other products are cost optimized, but neglect the quality in design control, life cycle management, low power consumption, and MTBF optimization found in each MPL product. MPL maintains special agreements and relationships with the major chip suppliers who offer MPL early access to the latest technology developments.

3. **Unmatched Quality**
   MPL products are designed from inception to insure high reliability when operating in rugged and tough railway environments. A further development focus is to produce consistent, stable, long-term available products, helping to reduce our customers TCO.

4. **Low power Design increases MTBF**
   We design products and solutions that have the lowest possible power consumption in the industry. They generate less heat, less stress, and therefore a higher MTBF value with a better reliability rate as the proven result.

5. **Extended Temperature Range (-40°C up to +85°C)**
   Each standard MPL product withstands operating temperatures of -20°C to +60°C. Products with the extended temperature option receive additional specific product tests and test cycles in our environmental chambers. Test reports are delivered with each product. Wherever possible, components with a temperature range of -40°C to +85°C will be selected.

6. **Long-term available Solutions**
   Our main target is long-term availability, as this is a major cost reduction factor for our customer. Whenever possible, MPL uses products out of the embedded road map from various suppliers. MPL maintains end-of-life stock to ensure longevity of supply and longevity of repair. Typical long-term availability is 10 years after introduction, and repairs over 20 years.

7. **Highly Ruggedized**
   MPL products are specifically designed to withstand harsh environmental operations. In numerous Marine applications, MPL products have proven their ability to withstand extreme temperatures, thermal cycling stress, high shock, and vibration conditions. They have been used worldwide on Ship or Naval applications meeting the IEC 60945 / IACS E10 as standalone or as 19" rack solution.

8. **Reliable Partnership**
   MPL offers to its customers and business partners a long-term, cooperative engagement. Our financial strength and independence is important to sustain MPL's growth and future.

9. **Closeness**
   Our distributors are near you! To serve our customers the best, we maintain a global distributor network which will handle your local pre- and post sales support.

10. **MPLcare**
    MPLcare is a system which is maintained by design engineers, management, and the MPL administration team. MPLcare is provided to each customer free of charge and includes technical support questions answered in less than 24 hours by the product design engineering team.

Think Long-Term – Think MPL
Shipboard Power Control
Control of complete power distribution on marine ships. In addition on ship failure simulation for crew with Xeon server. The systems are IEC60945 qualified and certified. The units have been approved for ship board operation.

Features
• Systems and board ground are separated (isolated)
• Removable drives
• IEC 60945 approved
• Three application areas
  - PIP32 as Human Machine Interface (HMI)
  - PIP38 as Enhanced Performance Data Recorder (EPDR)
  - MXCS1548-CA failure simulation and crew training

Tough Open Frame Solutions
Open frame firewall/router with 3 GigE ports (copper & fiber), using OpenWRT firewall SW incorporated in a larger environment. Solution is built into an existing cabinet on the ship.

Features
• GUARD open frame firewall
• On board soldered Flash
• On board soldered RAM
• SFP multi-mode & single-mode (-40°C to +85°C)
• Each unit tested in climate camber at -40°C to +85°C
• Sustains toughest environment (shock & vibration)
• Designed to meet IEC 60945

User training on the Ship
Description
On board U.S. Navy ships to conduct user training sessions during sailing.

Features
• Rugged server with embedded Xeon CPU with 8 cores
• 2U rack mount chassis
• Multiple Ethernet ports
• 10GigE ports for fast data transfer
• Compatible with VMware, EXSi
Remote Maintenance Monitoring

**Description**
To eliminate unexpected down times of the drives, a remote maintenance and monitoring device is installed on steel plant, ships, tunnels, to name just a few.

**Features**
- Used worldwide on small and large drives
- Customized CEC and specific housing
- Integration of MPL firewall (GUARD), fiber optical IO distribution of the customer and loading customer application software
- Reliability, modularity, compactness
- Wide temperature range
- Withstand the humidity and tough environment on sea
- IEC 60945 certified

Boat Navigation with MPL Embedded Computer

**Description**
Main computer on single handed offshore Race Sailboat. Responsible for navigation, positioning, speed, wind angle, depth, temp. of water and air, analyzing collision risk, optimizing trimming, collecting weather forecast, ...

**Features**
- PIP32 serial ports for navigation
- Sound and WiFi
- Key points: low power consumption, withstands humidity, shock & vibration resistant
- Excellent experience with former MPL PIP since 2008
- Free of charge support over the years

Navigation & Information System on Research Ships

Electronic Chart Display and Information System (“ECDIS”) used for nautical navigation that complies with International Maritime Organization (IMO).

**Features**
- Use of PIP10, PIP20 & PIP30
- Multiple IOS (VxWorks - Linux)
- 4x RS232 port additional
- 2 x LAN ports
- 2 x display ports
- Designed to meet IEC 60945
- Fanless and vibration resistant
- Long-term availability
- At least 10 years supply and repair
Remote Control of Unmanned Surface Vessel (USV)

Redundant system with 2x PIP39. The redundant PIP39 are responsible for remote controlling the boat. All data is analyzed, calculated and displayed by the PIP39.

Features
• Remote Control of an Unmanned Surface Vessel (USV)
• Redundant system with 2x PIP39
• Convection cooled (fanless)
• Shock and vibration proof
• Operation at extended temperature
• Systems and board ground are separated (isolated)

Remote Control of Unmanned Surface Vessel (USV)

Redundant system with 2x PIP39. The redundant PIP39 are responsible for remote controlling the boat. All data is analyzed, calculated and displayed by the PIP39.

Features
• Remote Control of an Unmanned Surface Vessel (USV)
• Redundant system with 2x PIP39
• Convection cooled (fanless)
• Shock and vibration proof
• Operation at extended temperature
• Systems and board ground are separated (isolated)

Rugged Controller on Sea

Controlling on-board welding process of oil pipelines on Pioneering Spirit offshore vessel (largest ship in the world)

Features
• Compact Atom computer
• Humidity, shock & vibration resistant
• Extended temperature capability -40°C to +85°C
• Long term availability
• IEC 60945 certification
Network Security on Ships
Providing best secure protection of the ship network during communication with the base.

Features
- Used worldwide on ships & oil platforms
- GUARD firewall with OEM housing
- OpenWRT OS for firewall flexibility
- Firewall setup according customers requirement
- Reliability, temperature range, compactness
- Coating

Interface Controller in Oil & Gas Industry
PIP used as universal Interface switch for different field buses on oil and gas platforms

Features
- Customized PCIe and PCI adapter card
- Customized mechanics for 3x PCI and 1x PCIe cards matching a 19" rack
- Long-term availability (frustrated from earlier supplier with constant EOL)
- Extended temperature
- Easy maintenance
- Easy to install on oil & gas platforms all over the world

CPU Control of Sonobouy Launcher System
The system drops Sonobouys into the ocean to passively and actively detect targets that are below the surface.

Features
- Semi-customized PowerPC board
- VxWorks as OS
- -40°C to +85°C
- Coating and bonding
- Long-time availability (15 years since first design-in)
- Rugged & reliable design
Maritime, Communication

Rugged managed 14-port 1 Gbit switch is operational at 1000 under sea level

Features
- Built into self-contained, battery powered remotely operated vehicle
- 10x copper ports
- 4x fiber ports
- Solution is extremely flexible and universal
- Extended temperature requirement
- Low power consumption

Design
All MPL Embedded Computers meet or even exceed the IEC 60945 / IACS E10 maritime standard and are the ideal choice for long-term offshore applications. The unique rugged design, combined with the best industrial-grade components, offer high reliability and long-term performance. MPL products are 100% designed and manufactured in Switzerland by MPL AG. All our products are fanless, shock and vibration proof, low power, rugged, and long-term* available. The perfect solution for a system to be used in maritime applications and rugged environments.

* Typically 10 years or more after first introduction, 20+ years repair-ability

Standards
All MPL products are designed to meet or exceed the most common standards. This includes maritime certification IEC 60945, but also railways certifications EN 50155, defense certifications MIL-STD-810, EMI certification, as well as other certification that might be required.

ISO Certification
MPL AG is an ISO 9001 certified company since 1995. The ISO 9001 quality standard ensures that the products and services are of consistently high quality.

References
Worldwide, MPL has more than 1000 companies which use our reliable products on a daily basis. Our applications are based in the industrial control, medicine, military/aerospace, traffic, transport, and food service industries. A partial list of trusted Maritime application customers are:

<table>
<thead>
<tr>
<th>ABB</th>
<th>ALLSEAS GROUP</th>
<th>BAE SYSTEMS</th>
<th>GENAVIR/IFREMER</th>
</tr>
</thead>
<tbody>
<tr>
<td>BEL</td>
<td>BOEING</td>
<td>DCNS</td>
<td>GENERAL DYNAMIC</td>
</tr>
<tr>
<td>EDO</td>
<td>FRAUENHOFER</td>
<td>L3 HARRIS</td>
<td>LARSEN &amp; TOUBRO</td>
</tr>
<tr>
<td>L&amp;T MARINE</td>
<td>MILCOTS</td>
<td>OCEANEERING</td>
<td>LEONARDO FINMECCANICA</td>
</tr>
<tr>
<td>RAYTHEON</td>
<td>RHEINMETALL</td>
<td>ROLLS ROYCE</td>
<td>LOCKHEED MARTIN</td>
</tr>
<tr>
<td>SAAB</td>
<td>SIREHNA</td>
<td>THALES</td>
<td>NORTHROP GRUMMAN</td>
</tr>
<tr>
<td>WOODWARD</td>
<td>YOKOGAWA</td>
<td>NAVAL</td>
<td>THYSSEN KRUPPS</td>
</tr>
<tr>
<td>KROHNE OIL &amp; GAS</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

If you need additional information do not hesitate to contact us.
WORLDWIDE DISTRIBUTOR AND SUPPORT NETWORK FROM MPL

Local sales support
Our distributors are near you! To serve our customers best, we have a worldwide distributor network which will handle your local pre and post sales support.

Technical support from the engineer
Our customers get direct access to our design engineers to assist with initial product function and operation. We do not work with call centers or large support teams, but we rather rely upon our prompt and courteous service, while giving customers direct access to our design engineers to resolve any support issues.

MPLcare
is provided to each customer free of charge and includes technical support questions answered in less than 24 hours by the design engineering team.

MPL – The Company You Can Trust

MPL AG Elektronik-Unternehmen
Täfernstrasse 20
CH-5405 Dättwil
Tel.: +41 56 483 34 34
Email: info@mpl.ch
www.mpl.ch