



PMA AG - Leading the World in Cable Protection Systems



Thomas & Betts

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From Pioneer to Market Leader

PMA has been developing, producing and selling top quality polyamide cable protection systems since 1975. Our high quality Swiss products have rapidly earned us an excellent reputation worldwide and established us as the market leader. Our range of more than 6,500 products gives customers the protection they need in railway, mechanical engineering and shipbuilding applications worldwide. PMA products are also the solution of choice in automation, building installations and other projects where power and data cables require dependable protection.

Customer needs are a top priority at PMA, and we work every day to ensure all our customer requirements are met in our products. We offer cable protection systems and services that are tailored to meet requirements in every type of application. Our range extends from basic items right up to the most demanding high-tech products. In addition we design system solutions and special customer specific products on request. Our intensive research and development activities, which include the field of new materials, are a major reason why PMA continues to set new standards and trends in the cable protection marketplace. These efforts together with excellent quality and service have helped us build up an outstanding reputation with leading corporations around the world.

**Setting new Standards
and Trends**



A Swiss Company with a Global Presence



PMA headquarters is located in Uster close to Zurich the largest city in Switzerland. The majority of what PMA produces for the world market is made at this location and it is also the home of our intensive research and development activities. PMA has distribution centres and subsidiaries in Germany, the UK, France, Spain, Austria, Italy and the USA. PMA has around 170 employees worldwide.

Together with our large network of distributors and professional partners in all of the major industrialized countries, we are always in a position to offer our customers excellent advice, optimal service and fast delivery.

Headquarters and manufacturing facility, PMA AG, Uster/Switzerland



We continue to expand our distributor base, and PMA products are already sold in more than 45 countries.

The PMA Group is owned by the Thomas & Betts Corporation, a leading designer and manufacturer of electrical components, headquartered in Memphis, Tennessee.

A Large Network of Distributors Offering Expert Advice

Headquarters and manufacturing, PMA AG, CH



PMA Germany



PMA England



PMA France



PMA Spain



PMA Italy



PMA Austria



Take Advantage of Our Know-how

State of the Art Production

PMA develops and manufactures cable protection systems to meet current and future market needs, and this is how we do it:

- We carry out intensive R&D activities
- We use the latest production technology
- We maintain the highest possible quality standards
- Our production operations are very flexible

We can produce both large and small batches and are able to manufacture special products at any time at short notice.

Research and Development

Intensive research and development activity is a top priority at PMA every day. To us, this means:

- Intensive, focused research
- Product development based on market needs
- Development of more than 300 customer-specific products and 130 recipes annually
- An in-house test lab
- Intensive product testing:
(dynamic reverse bending, impact, system pull-out strength, peak load, self-extinguishing, thermal aging, cold bending, etc.)



From basic items to high-tech articles, all of our products meet the most stringent quality requirements. Some of the outstanding features of our products are:

- Resistance to temperature, weathering, UV radiation and chemical agents
- High system pull-out resistance
- Excellent fire protection characteristics
(flammability, smoke density and toxicity)
- Excellent system ingress protection up to IP68 and IP69K – static und dynamic
- Extremely long service life
- Quality Management System certified to both
 - EN ISO 9001:2008
 - IRIS

High Quality Products from A to Z



Advice and Service

Advice and service are very high on the priority list at PMA.

Our services include:

- The best possible support we can provide, from the various project phases right up to complete application solutions
- Services designed to give customers what they really need
- Services on the Internet: current product information, e-shops, download area and much more
- Free download of 2D/3D product drawings in more than 40 file formats
- Ongoing training for technical staff and distributors
- A test lab designed specifically to meet customer needs
- Continual expansion of the sales network to give you fast, optimal delivery

Conformance to standards: Additional services to benefit you

PMA products conform to worldwide standards and regulations. As a pioneer in the field of cable protection, we have always given high priority to our own testing facilities, and we have consciously introduced stringent in-house standards. This approach has enabled PMA to exercise a significant influence on the development of international standards. Standards committees with responsibility for cable systems regularly ask our company to provide advice or participate as an active member.



Service to the customer is what motivates us. In addition to series production, PMA can build fittings and conduits to meet individual requirements as a special service to our customers. This service includes planning and engineering support as well as detailed design.

PMA products give you a number of unique advantages. Because our research and design activities are firmly focused on the needs of the market and our customers, we can always offer you state-of-the-art solutions that give you a crucial advantage in your application, for example:

- A safe, reliable system that is easy to install
- Vibration-proof connections
- System connection strength
- Ingress protection conforming to recognized test methods
- High impact strength even at low temperatures
- High compression strength (peak load)
- Long-term reversed-bending resistance
- Good chemical resistance
- Fire protection (flammability and smoke generation)
- Good weather resistance
- Long wearing

...and much more

Unique Benefits of PMA Products



Railway Construction around the World

PMA products have proven their dependability in railway construction projects around the world. This is the reason why large corporations including Siemens, Alstom, Bombardier, Deutsche Bahn and SNCF have chosen us as supplier over a period of many years. Our special railway engineering product line provides protection and safety on signalling systems, couplings, trucks and gangways as well as roof and underfloor equipment. The range of applications is very extensive. PMA products contribute to the safe operation of trams, locomotives, freight cars, highspeed trains and even roller coasters.



Modern cable protection today guarantees fault free operation of safety and power supply systems in the railway business. More and more frequently polyamide cable protection systems are used to ensure reliability and long system life while saving time and cost in assembly. Polyamide conduits and railway specific accessories have successfully won recognition in many applications.

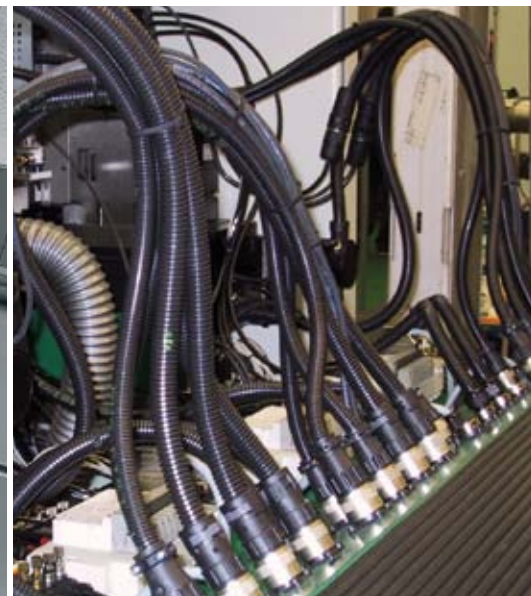
Numerous products from PMA are approved by the German Railways (Deutsche Bahn) for use in the track bed. Above all the PMAFLEX conduits and the PMAFIX terminations have now been applied in countless applications.

In Railway Infrastructure



A Solid Footing in Mechanical Engineering

A considerable number of PMA cable protection systems are used in mechanical engineering. A few examples illustrate how varied the range of mechanical engineering applications is. You will find our products in machine tools, packaging machines, printing machines as well as heating, ventilation, conveyer and filling systems. PMA products also make a vital contribution to the smooth operation of high voltage and emergency power systems, can production machinery and woodworking machines, etc. PMA cable protection solutions safeguard cables, wires and data links against heat, cold, tensile stress, pressure stress and other external influences in the important mechanical engineering industry.



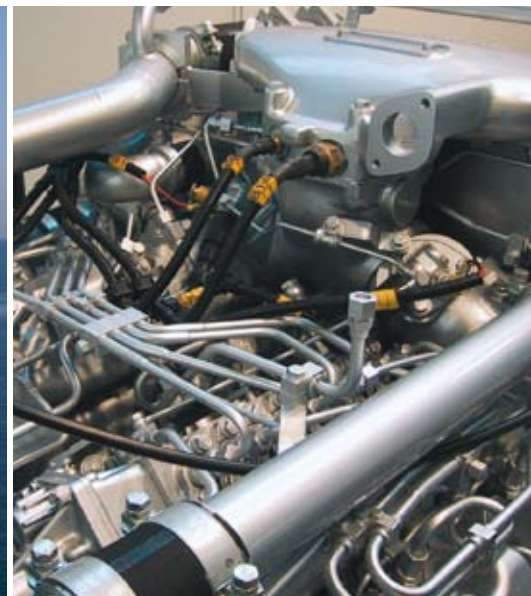
In the field of automation, there is a need for products that can withstand the stress of motion-intensive applications. Solutions developed by PMA for the automation industry fully meet these requirements. Special conduit designs, supports and abrasion protection sleeves provide optimal protection along the entire length of all moving elements, enabling engineers to achieve a massive reduction in torsional forces. There is good reason why leading robotics manufacturers rely on PMA technology.

Flexibility for Automation



Marine Safety

Safety has absolute top priority in marine applications. Cables and cable bundles are subjected to high stress. Vibration increases the risk of overheating, abrasion damage and shorts. Cable routing around machinery must provide absolute protection, and it is important that the cables can be easily integrated into prefabricated elements such as cabins. Many shipping companies rely on the dependability of our products. PMA products protect the “Queen Mary II” and many other small and large fresh and salt water giants when they are underway.



Our 30 years experience in the design and production of cable protection systems guarantees optimal solutions for use in power generation applications whether they are driven by water, wind, sunlight or gas.

PMA offers a broad product portfolio of cable protection products for high and low frequency technology applications and also for fibre optic cables.

For Energy Generation and Distribution Applications



Explosion Endangered Areas

Refineries, oil platforms and other areas where a risk of explosion exists can count upon PMA ATEX certified products to ensure safety for employees and the environment.

Further Countless Applications

PMA cable protection products can be used in an extremely wide range of applications. The list is virtually endless and includes industries such as telecommunications, construction equipment and medical equipment. Wherever there is a need for cable protection, the PMA product portfolio provides safe, dependable, forward-looking solutions or will develop them specially for you to meet your individual needs.



Latest Developments

PMAFIX IP68GT

Fitting



The new PMAFIX IP68GT one piece fittings with integrated sealing cap

The next step in the process of innovation and continual development of the PMA Cable Protection System – the brand new PMAFIX IP68GT. The integrated conduit sealing cap and pre-installed locking clip allow delivery as a single component, make assembly very simple and the extra long sealing cap ensures the highest level of ingress protection.

Fittings:	Male and female threads, straight, 45° elbows, 90° elbows and 90° curved elbows, polyamide or metal threads
Safety system:	Patented safety clip system for connection with PMA conduit
Modes of protection:	IP66, IP68, IP69K
Installation:	Simple “push-in” installation based upon integrated conduit sealing cap and pre-installed locking clip
Standard colours:	Black and grey

PMA Multilayer

Multilayer Conduits



Next Generation Cable Protection

The next major step in the development of innovative cable protection products – the new PMA multilayer conduits. The multilayer conduits (X-Series) are based upon advanced multi-layer-extrusion technology allowing the manufacture of three layer corrugated conduits combining the best characteristics of different materials on inner, middle and outer layers to reach previously unattained performance levels.

Applications:	Machine building, railway rolling stock and railway infrastructure, energy, longterm outdoor applications, etc.
Standard colours:	Outer layer: black or grey Inner layer: various colours

PMAFLEX Pro

Conduits



Conduits for highest requirements

The PMAFLEX Pro conduits have been developed for applications with highest requirements such as e.g. highest fire and human safety protection (BS 6853 1a, London Underground) and extreme temperatures (–100°C up to +200°C).

Applications:	Areas with highest requirements and standards
Standard colours:	Black and grey

Product-Lines

PMAFIX Pro

Fittings



Next generation for highest requirements

The extremely successful and technically appreciated PMAFIX System has been developed further to create the PMAFIX Pro product range. The next generation fittings are the product of experience gained over many years in the most varied application areas and as such encompass the requirements of many users worldwide.

Fittings:	These conduit fittings meet all ingress protection categories up to IP69K, even dynamically and fulfill the highest international standards
Installation:	Simple "push-in" installation
Standard colours:	Black and grey

PMAFIX/PMAFLEX

Fittings / Conduits



Largest portfolio and best selling

This product line offers solutions that meet the highest expectations: IP66 – IP68 and IP69K. It is based on a perfected system technology that makes installation easy. You can choose from a very large, varied range of fittings and conduits which have demonstrated their dependability in all types of applications for more than 30 years.

Fittings:	Male and female threads, straight, 45° elbows, 90° elbows and 90° curved elbows, polyamide or metal threads, distributors
Conduits:	Over 30 different types of multi- and mono-layer conduits: light to heavy, flexible to highly flexible, conduit sizes from Ø 6 mm to 125 mm
Safety system:	Patented safety clip system for connection with PMA conduit
Modes of protection:	IP66, IP68, IP69K
Installation:	Simple "push-in" installation (IP66 + IP68GT), safety and sealing system (IP68), upgrade to IP69K possible
Standard colours:	Black and grey

PMA SMART LINE

Fittings / Conduits



Modern, versatile and attractive

One-piece design, IP66 protection and simple, fast installation are the outstanding features of the Smart Line. Other characteristics including a modern, functional design and an excellent price/performance ratio make this product line a very attractive solution.

Fittings:	Straight, 45° and 90° elbows
Conduits:	Conduit types made of various materials
Modes of protection:	IP66
Installation:	Pre-closed clips for easy installation
Standard colours:	Black and grey

PMA EX-SYSTEM

Fittings / Conduits / Accessories



Electrostatic load discharging for explosion endangered areas

The Ex-System includes conduits, fittings and accessories for flexible protection of cables, wires and hoses against mechanical damage, UV-radiation and weathering in explosion endangered areas classified as zones 1 and 2 (gas/damp) as well as zones 21 and 22 (dust) according to ATEX 137.

Fittings:	Straight, 45° elbows, 90° elbows and 90° curved elbows, distributors
Conduits:	Highly flexible, conduit sizes from Ø 10 mm to 50 mm
Applications:	Areas, where combustible gases, liquids or solids and (atmospheric) oxygen can form an explosive atmosphere and where any form of ignition has to be avoided
Modes of protection:	IP66, IP68
Installation:	Simple "push-in" installation (IP66), safety and sealing system (IP68)
Standard colours:	Black

AUTOMATION

Robotic Accessories



Protection and dependability in your motion-intensive applications

PMA products provide optimal cable protection in all automation applications. They allow dependable protection against abrasion, and prevent wearing through the insulation. They are very flexible and deliver long service life in motion-intensive applications.

Applications:	Special conduit and accessories for robotics and automation applications provide: · Reduced mechanical stress · Electrostatically discharging · Flexible design for motion intensive applications · Longer service life
Installation:	Simple, practical installation
Standard colours:	Black

PMAJACK

Braided hoses / Terminations / Fittings



Braided protection

Polyamide and polyester braids provide dependable protection and bundling of cables.

Applications:	Mechanical cable protection
Installation:	Simple, practical installation (also for retro-fit), excellent termination
Standard colours:	Black and grey

EMC

Fittings / Braided hoses / Shielding



Reliable shielding

This product line contains metal braids made of tin-plated copper as well as fittings made of nickel plated aluminium or nickel plated brass. The braid is designed to provide protection against electromagnetic interferences. The fittings guarantee excellent clamping of the braid and good contact between the shielding braid and the conduit system.

Applications:	The proven PMA conduit system provides high-grade shielding against electromagnetic radiation combined with mechanical protection
Installation:	Simple, practical installation, excellent termination
Standard colours:	Black and grey

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