

CUSTOM-MADE

steel poles

for world-wide infrastructure projects



design and production of steel poles for:

- street and highway lighting
- traffic (signalling) systems
- road signing
- camera observation systems
- overhead power supply for tram and trolley bus



focus

PMF has a clear focus on steel poles. From two locations in the Netherlands, the professionals of PMF are busy every day with the design and manufacture of the most diverse types of poles. These poles are mainly used for street and highway lighting, traffic (signalling) systems, road signing, camera observation systems, travel information and for the overhead power supply for trams and trolley buses. Due to the specific focus on poles, the experience with the applications, the customer focused approach, the additional design services, an efficient production process and the associated pricing the PMF advisors are increasingly invited as a partner with infrastructural projects all around the world. We are proud of this.





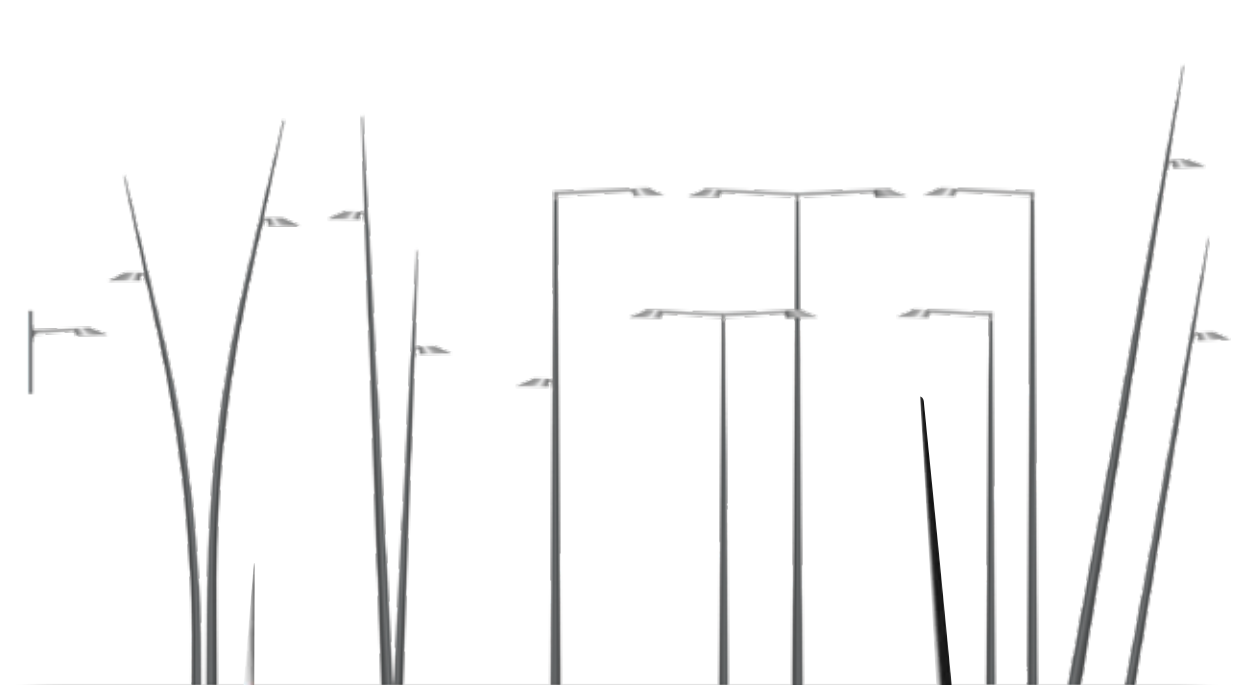
So many people, so many wishes! PMF is specialist in customization. All your individual requirements can be included in the pole design and during the logistical handling. PMF can also offer you many extras in respect to style: with the help of the two available forming machines we can produce uniquely shaped tubes. This allows you to easily give your own identity to your range of poles. PMF also has good possibilities for poles with a triangular, square or an oval shape. Do you have special requirements with regards to style, final colour, preservation and/or logistical handling? We will be pleased to advise you.



quality

PMF makes no concessions on quality. Many of our products indeed stand alongside the public highway. Hundreds or thousands of road users drive daily past or under the supporting constructions that we have delivered. Moreover our products withstand the weather conditions and will do that for a period of many decades. Before we can issue a quotation, a construction calculation has already been made of the pole in question. The required amount of steel is calculated. During production we make the choice of using top quality steel, which originates from reputable manufacturers. For the preservation and transportation of the poles we make use of regular suppliers.





The PMF employees communicate clearly. Clear quotations, well-presented drawings and reliable products: it is characteristic of our way of working. We only present what you actually receive. We work daily on your poles with a great deal of devotion and passion. Since six production companies are active within the PMF Group (of which two businesses specialize in the design and manufacture of steel poles), production can be quickly scaled up with sizeable orders. However, we certainly don't lose sight of your desired quality level.



design

PMF has, at its disposal, sufficient knowledge and expertise to draw up a good design. Our designers will gladly assist you in calculating all types of poles according to national and international standards. This is made possible by the use of specifically developed software, which is checked and approved by TUV/LGA in Nuremberg. For the drawing up of summary and detail drawings, we use the most up to date C.A.D.software.



street and highway lighting

PMF manufactures 1001 different types of lighting poles in just as many lengths and shapes, such as conical, cylindrical, cylindrical conical, cylindrical stepped, parabolic conical, ribbed, triangular, oval, straight, diagonal, curved, etc. The poles can be provided with doors, cable holes, foot or ground plates, swivels, push-pull cables etc.





street and highway lighting

For rail emplacements and large industrial sites it can be desirable to be able to tilt poles, so that periodic maintenance can be carried out more easily and efficiently. We can deliver poles with a maximum above ground length of 25 metres with a manual or electrically operated tilting mechanism. This electrically operated tilting mechanism was developed in collaboration with Dutch Railways (ProRail).





traffic systems and travel information

You want to organize the traffic flow more efficiently? PMF has a great deal of experience with the delivery of the most diverse supporting constructions, with which traffic lights, road sign displays or detectors alongside or above the road are placed. We have much experience in the design and delivery of portals (beam length up to 40 metres) and single-arm gantry (overhead lengths up to 14 metres). These constructions can be delivered including the brackets, with which traffic lights, road sign displays or detectors are fitted on or to the poles.



road signing

You want to install road signs alongside or above the road? PMF provides the design and the manufacture of the supporting constructions for static and dynamic road sign panels. We have a wide and deep assortment of poles and portals for your usage. The construction calculation shows the pole dimensions and the interplay of forces at ground level. The required foundation for the mast can be provided from this information.



camera observation systems

A camera at the required height that registers everything. It appears simple. But which requirements do you place on the maximum sagging, which is caused by the force of the wind and gusts of wind. Do you want an undisturbed image on the monitor when you zoom in with the available cameras? A rigid pole is obtained by increasing the diameters and/or wall thicknesses or by being smart when designing the pole.





overhead power supply for tram and trolley bus

The use of trams or trolley buses is the future: it is a proven form of sustainable public transport without annoying exhaust fumes in the urban environment. Especially for this purpose we have already been able to provide many tram and trolley bus routes with poles for suspending the necessary overhead contact lines. Thanks to the overhead contact lines the passing tram or trolley bus is provided with power in a reliable manner.





The style and/or colour scheme of the poles can be adapted to your personal requirements, without losing sight of the existing tension loads, the current standards and the required level of safety.

pole and wall brackets

Apart from the production of poles we are also extremely adept in the manufacture of pole brackets, which can be fitted on or to a pole. A bracket can normally also be produced in the same style, which is suitable for wall mounting. These pole and wall brackets are manufactured from steel and possibly supplemented with decorative elements from cast aluminum or stainless steel.





special tubes

With the help of two advanced forming machines, a steel tube [with an original external diameter of $\varnothing 76$ to $\varnothing 273$ mm] is heated inductively and then perfectly reshaped. The final required end diameter can be decreased locally to every value between $\varnothing 48$ and $\varnothing 273$ mm. The options for this are infinite: cylindrical conical, multiple conical, inverse conical, parabolic, ribbed etc. These specially formed tubes are generally processed into finished goods in our own factory, but are also regularly delivered as semi-finished product to other pole manufacturers within Europe or far beyond.





special tubes

During this procedure, we use cylindrical tubes, which are produced according to the European standards EN10217 or EN10219. The available forming machines can process tubes with one of the following external diameters: $\varnothing 76,1$ mm, $\varnothing 108,0$ mm, $\varnothing 114,3$ mm, $\varnothing 121,0$ mm, $\varnothing 133,0$ mm, $\varnothing 139,7$ mm, $\varnothing 152,4$ mm, $\varnothing 159,0$ mm, $\varnothing 168,3$ mm, $\varnothing 177,8$ mm, $\varnothing 193,7$ mm, $\varnothing 219,1$ mm, $\varnothing 244,5$ mm or $\varnothing 273,0$ mm. PMF can carry out additional activities in accordance with customer specifications, such as 3D cutting operations, cutting holes, welding components, hot dip galvanizing, etc.

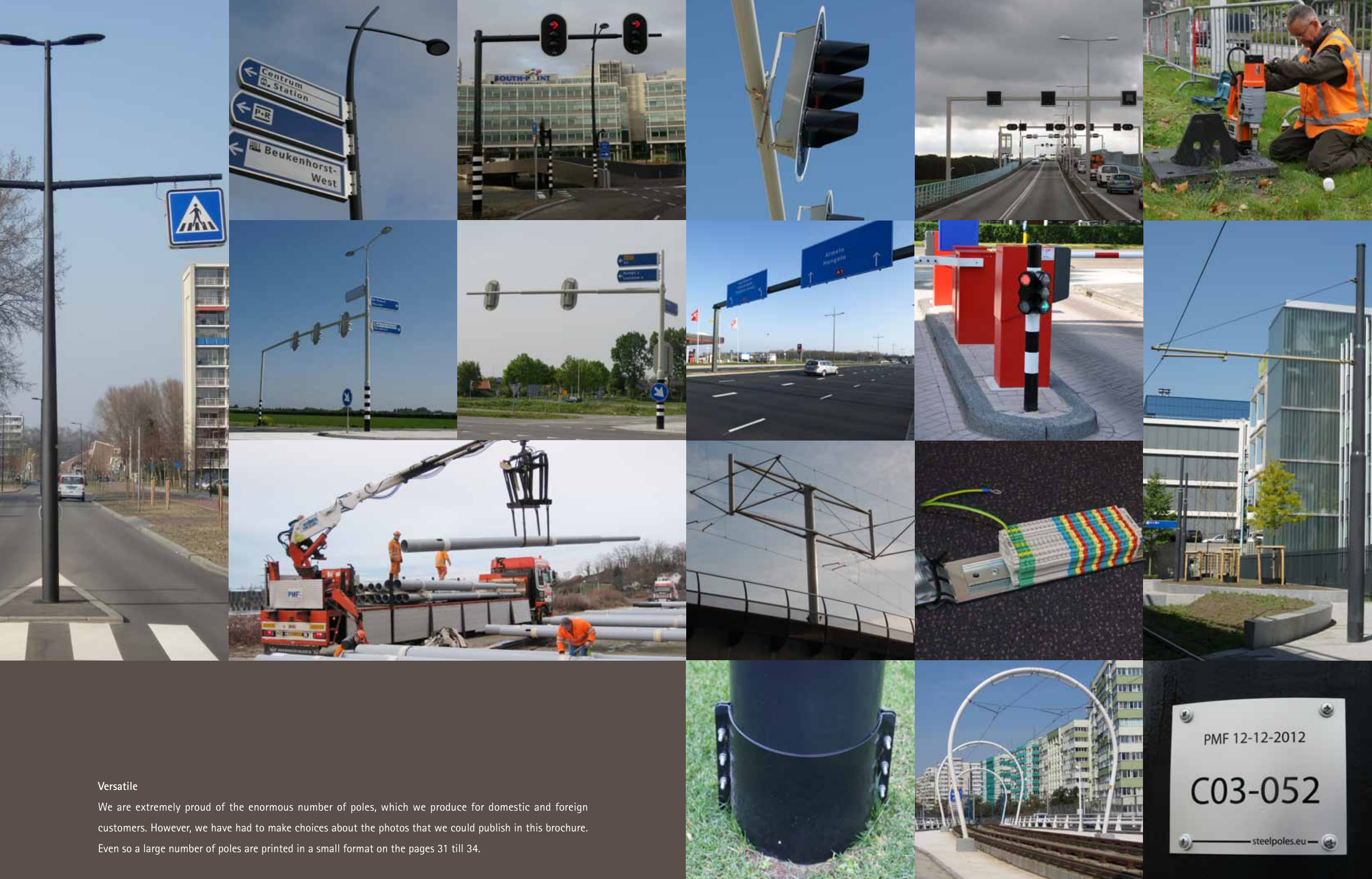




Versatile

We are extremely proud of the enormous number of poles, which we produce for domestic and foreign customers. However, we have had to make choices about the photos that we could publish in this brochure. Even so a large number of poles are printed in a small format on the pages 31 till 34.





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Do you want to use our quality products within your projects? We will be pleased to send you product specifications. A number of pole drawings and pole details are illustrated above. We manufacture all poles in accordance with your customer specific wishes and requirements. This is the reason that we do not have a standard assortment. Anything is possible! We will be pleased to inform you about the possibilities.

The technical strength of the poles you order are calculated based on current standards and individual customer specifications. Software is used to carry out the calculation. In this software the pole is provided with the stated loads, such as lighting armatures, panels, traffic lights, existing tension loads, etc. A wind load is then projected onto the pole from the most unfavourable position. In order to check the viability of a pole, two criteria are in general examined, such as the maximum tension of the material and the maximum sagging as a result of wind. The customer can also specify additional requirements, such as additional safety factors, optional loads, etc.

steel preservation: hot dip galvanizing

If steel is well preserved, then it will not oxidize. Many poles and pole accessories are hot dip galvanized. For this, the complete object is immersed in various cleansing baths, a flux bath and finally in the 'zinc pan', that is filled with hot zinc (440°C). All visible and non-visible parts are hereby provided with a layer of zinc, so that it is

protected against corrosion. Hot dip galvanizing has the following characteristics:

- If the layer of zinc is damaged and a small bare patch occurs, then the cathodic operation ensures that no corrosion appears.
- The final colour, the structure and the coating thickness of the layer of zinc to be applied on the various tube and plate segments cannot be specified beforehand and is dependent on the amount of phosphorus and silicon in the steel. In the EN 10025 standard the lower and upper limits of the amount of phosphorus and silicon present is specified, whereby various shades of grey, types of structure and coating thicknesses can occur during thermal galvanizing. The thickness of the layer of zinc does therefore not become greater by hanging the object for a longer period in the zinc pan. We work in accordance with the internationally accepted standard EN ISO 1461, which guarantees the stated minimum thickness of the layer of zinc.
- Hot dip galvanizing of an object is limited to pole lengths of 21.5 metres in relation to the length of the zinc bath.
- The expected maintenance free life expectancy amounts to very many years. Rainwater causes a zinc emission of 2 - 4 micron per year. The National Institute for Public Health and the Environment (RIVM) has shown that this zinc emission is not harmful for human beings and the environment.



steel preservation: wet paint or powder coating

If you require a good protection of the steel and you also have a preference for the eventual final colour, then wwnizing. There are 1001 different colours and structures and just as many differences in the characteristics of the various coating systems. For each object and its surroundings there exists the optimal paint or powder coating system. Together with our renowned coating manufacturers and applicators we will gladly inform you about the possibilities.

There are also countless possibilities for additional protection on the embedded part of the poles. In many cases a thermally galvanized preserving is satisfactory. Even so, the customer sometimes finds it desirable that the embedded parts are provided with a tar-free bitumen or epoxy coating. Also the pole at ground level can be provided with glass fibre bandage or a steel cuff.

remove packaging material after delivery

To correctly transport a pole from the factory to the project location or from the factory to a temporary storage we often use packaging material. Depending on the object and the customer specification the pole is completely or partly packed. After the pole is unloaded from the lorry or container, the packaging material should be removed immediately. Through weather conditions (changing temperatures, sunlight and rainwater) the packaging material can affect the applied preservation. PMF cannot be held accountable for damage resulting from this.

certificates

Our steel poles are delivered with the CE hallmark according to the European standards EN40-5 or EN1090.

PMF has a quality management system that is audited and certified in accordance with ISO 9001. All welders are certified according to EN 287 and/or EN 1418. All welding procedures are recorded and approved according to EN ISO 15609-1 and EN ISO 15614-1. PMF has accepted its responsibility by encompassing Climate Neutral manufacturing. Our production takes place without the environment being affected. The emission is made known annually and by means of an agreement with the Climate Neutral Group this emission is compensated for. The Climate Neutral Group plants trees and constructs biogas installations and wind and solar energy parks. The environment care system is certified according to EN ISO 14001.

terms of delivery

The Metaalunievoorwaarden are applicable to all our quotations and orders. The latest version of these general terms and conditions of sale can be downloaded from our website www.steelpoles.eu.



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*We will be pleased to inform you
about the possibilities.*

national representative

