

HIGHTING

UPUATED



S U M M A R Y

The whole PETITJEAN production is designed and manufactured on Saint André les Vergers site, France

| Introduction of PETITJEAN | 2-3 |
|---|-------|
| PETITJEAN product range | 4-5 |
| Environmental Policy | 6-7 |
| General Informations | 8-9 |
| OUTDOOR LIGHTING HIGH MASTS | 10-67 |
| Areas of application | |
| Intermediate masts | |
| High Masts | |
| Hinged Masts | |
| Custom-made Masts | |
| Head equipments | |
| PETITJEAN SERVICES : ONE TEAM WORKING FOR YOU ! | 68-73 |
| Technical Assistance | |
| Maintenance, control and verification | |
| OTHERS APPLICATIONS | 74-79 |



PETITJEAN, A KEY PLAYER IN THE LIGHTING MARKET

OUR HISTORY INFLUENCES THE PRESENT AND FUTURE OF PETITJEAN

Petitjean is first a story written by its founder Daniel Petitjean, who was the first to understand the importance and the future of lighting columns and masts for transport of energy.

A visionary who has progressively improved quality through innovation. For it is this approach that brought the company success and placed it at the top of its sector.

Petitjean corporate culture has been structured around theses values of quality and creative research, still at the heart of our company's strategy.

Based in Troyes, Petitjean manufactures and markets one of the world's widest ranges of poles, columns and masts through an industrial site built on a 30 hectares piece of land.

From new products development to quality testing, from manufacturing, cutting, bending, welding to galvanizing and painting, all steps in the design and development of the manufacturing process are fully performed in situ to ensure that we produce the best products for our domestic and foreign customers.

Petitjean is now part of the AL BABTAIN Power & Telecommunications Group, an industry specialist in the manufacturing of masts.



Orly airport Petitjean has designed the masts for the airport roads and car parks.



KOUROU SPACE CENTER, THE NORMANDY BRIDGE, THE OLÉRON BRIDGE, REIMS FOOTBALL STADIUM... Petitjean has moved into an age of modernity and great industry.

PETITJEAN, THE SECTOR'S LARGEST INDUSTRIAL UNIT

Located close to the city of Troyes in the Aube area, Petitjean integrates all the completion stages of the company's product line, from design to distribution logistics.



Obtained initially from steel coils or plates, finished poles produced by our factories are ready for installation and operation.

Petitjean can rely on a productive industrial facility which allows for the production of 100.000 poles per year, going from basic lighting functional poles to high masts for high voltage overhead power lines.





Modern industrial facilities adapted to changing consumer requirements

Over the last few years, market demand has evolved to more customized products, corresponding to special and precise requirements in terms of technical performance and incorporating aesthetically appealing design features.

Its modern industrial facilities enable the company to meet these changing needs as well as to anticipate market developments.

Petitjean's goal is to be the REFERENCE and uncontested leader in the design and manufacture and to give our customers dedicated, responsive service.



An efficient research and designing service which constantly seeks anticipating future demand

The teams at Petitiean deserve a lot of credit for all their hard work in responding to demand from its customers as effectively as possible. Our experienced staff from the areas of design engineering and structural design will develop tailored products which meet all customers requirements.

The technical teams make special efforts to manage and rationalize products content so as to improve response times and to ensure competitive production costs.

In response to the current trend, the company continues to file patent applications

and renewals to protect better its intellectual property rights on both products and manufacturing processes.

One of the most modern galvanization facility in Europe

Petitjean has invested into a new galvanization facility. This high-performance production unit combines technology, reliability, environmental performance and compliance with market standards. Regarded as one of the most advanced in Europe, this facility is showing superior features in terms of :

- Process automation, which saves time and enables accuracy of results and traceability compliance
- Compliance with environmental toughest standards and requirements







Shot-blasting offers a supplementary guarantee for good paint adhesion.



3D drilling machine allows a more precise and reliable positioning increases cutting quality and speed. of mounting holes.



Cutting bench



PETITJEAN, AN EXTENSIVE RANGE OF PRODUCTS

FROM THE CONVENTIONAL MAST TO HIGHLY SOPHISTICATED SUPPORTS

An extensive range of outdoor lighting poles and columns as well as energy transportation masts

The experience and know-how required to design and make steel structures have allowed Petitjean to develop and to address new markets.

From the purely functional poles to the tailor-made products designed either for large architectural projects or to perform specific missions, Petitjean provides a wide range of solutions to meet all needs and suit all aesthetic requirements of the markets.

A complete range of lighting poles and accessories.











1. Poles and columns

Straight masts and columns, cylindrical, round-conical and octagonal in shape. Also Petitjean has a full range of signposts supports and flagpoles.

2. Decorative poles

The real test of decorative products

Petitjean offers a range of sophisticated lighting columns, which are either audacious in inspiration or surprisingly sober, elegant and refined so as to impact to the urban landscape a real visual identity.

3. Middle range and high masts

A wide range which provides a line of continuity with the large-scale architectural projects. With the completion of flagship sites, Petitjean continues to be a reference with regard to creativity.

4. Accessories and pole band

Our range of accessories and universal pole band for masts and columns.

TO ENHANCE CITIES AND VILLAGES

The challenge of cities : Making tomorrow today

All the Petitjean lines of products meet the aesthetic requirements and standards of today.

Our products are designed and made to enhance the places we live in and to contribute to the identity of public areas.

Our people, who can rely on a unique know-how, work in close relationship with famous names in lighting design.

Petitjean also wants to deliver real solutions in response to the profound changes affecting the public environment in an increasingly connected world. To invent and build the city of tomorrow, Petitjean has placed innovation at the center of its corporate strategy. Meet customers changing requirements, provide more value to our products, invent new technical solutions reflect how Petitjean is managing the challenges of the city of tomorrow.

A complete range of utilities supports.









1 & 2 distribution and transmission lines

Petitjean provides all the necessary support services for installing and renovating a line from start to finish.

3. Telecom

1 2

3 4

Petitjean products meet the specific enhanced security requirements to carry antennas and phone aerial lines.

4. Strain poles

A sector in which Petitjean has become a specialist in the area of design as with manufacturing. Petitjean designs and manufactures supports for multiple applications, going from overhead contact lines to protective safety nets.

QUALITY AND ENVIRONMENT



Petitjean accepts responsibility for the quality of its products and solutions as well as for our environment. This is the reason why, the company keeps investing not only in the ongoing improvement of its products, but also in resource-conserving materials and technologies. Petitjean added a corporate risk manager function to deploy a QSE system (Quality, Security, Environment) for the whole company.

This responsibility implies a motivation and determination to :

- make sure that our employees fulfil the obligations arising out of the approved quality system to meet our customers requirements.
- Ensure safety and security of employees and take initiatives to promote safe and clean operations.
- Recognize the universal need for care and protection of our natural resources.

This certification testifies the ongoing improvement of our environment management system to soften the environmental impact of Petitjean's business activities and to manage all wastes generated in complete compliance with applicable regulations.

Innovation relies on the desire to promote a sustainable and socially responsible corporate development.

The corporate environmental management system has been awarded the ISO 14001 certification in 2013, which reinforced the ISO 9001 certification already received in 1995.

Petitjean is dedicated to a prevention strategy under which it works toward minimizing waste and potential negative impact in all environmental areas.

This responsability is exercized through a corporate environmental management team.



PRODUCTS AND ENVIRONMENT

Petitjean offers **100% eco-designed and recyclable** products in order to prevent waste generation. The company is dedicated to a prevention strategy under which it works toward minimizing waste and potential negative impact on its community. Petitjean has integrated all the completion stages of its products range in a single industrial site located in the Aube area. This helps save energy and reduce the company's carbon footprint.

Petitjean works at making drastic waste reductions by:

- Recognizing the universal need for care and protection of our natural resources. To fulfill its corporate role in this area, Petitjean adheres to the prevailing instructions set by ADEME and other national standard bodies.
- Operating its facilities in compliance with applicable local, State and European environmental laws and regulations, as well as following more stringent internal standards, where necessary, to better protect our environment.
- Monitoring and changing processes, where feasible, to reduce the volume and toxicity of wastes generated. Wastes that are unavoidably generated will be disposed of by regulatory agency-approved methods.
- Recycling and reusing waste materials to the greatest extent feasible.

AN ENVIRONMENTAL POLICY AT THE HEART OF EVERYDAY LIFE.

Environment protection is at the heart of Petitjean everyday life. The company is dedicated to a prevention strategy that reduces or eliminates wastes. Petitjean works toward this goal by:

- The creation of a logistics management system whose goal is to optimize routes for reducing road transport's environmental impact.
- The development of a sustainable waste management system
- An environmentally management of toxic chemicals storage.
- The acquisition of production machinery with lower energy consumption to upgrade existing systems.
- A collaborative work with the company's established suppliers to promote the substitution of consumables and supplies most harmful to the environment.
- In addition to these initiatives a full energy consumption audit has been completed in 2015 to help the company save energy and maximize the efficiency of its existing operations.

In 2013, Petitjean has invested into a new galvanization facility, which ranks among the most modern zinc coating units in Europe. This high-performance production unit combines technology and environmental performance. This facility is showing superior features in terms of:

Encapsulation of the pre-treatment operations. This process automatically removes and neutralizes the acid fumes, preventing contamination of outdoor air and exposure of workers.

- Installation of a new zinc dust removal and processing system.
- Recovery of the lost calories from the zinc bath. Those calories are then re-used in the circuit of heating.
- Installation of a process for continuously regenerating the fluxing bath and reducing waste generated.

Other projects dedicated to Petitjean commitment to minimize waste and potential negative impact in all environmental areas have been completed, such as:

- Acquisition of a shot-blasting machine : mechanical process used as an alternative to the chemical treatment of poles.
- Installation of a biological degreasing with activated microorganisms, in combination with a closed rinse water system, as an alternative to degreasing methods using chemical solvents.
- Clean-up of the Vienne river which runs through the Petitjean industrial site, and whose waters are now clear of any pollution.

- Maximizing the energy efficiency of its existing operations and saving energy to the greatest feasible extent. In addition, Petitjean commits to developing new systems with lower energy consumption, and to upgrading existing systems with higher efficiency technology.
- Striving to anticipate and eliminate work hazards, and providing a safe work environment for its employees.
- Providing the necessary instruction to educate and motivate its employees to apply safe and environmentally sound work practices.





GENERAL INFORMATIONS

Steel high masts above 15 meters, used to illuminate large areas, have a specific metal structure to comply with to EUROCODES that replaced old standards. Eurocodes application is now mandatory.

Those very general standards must be supplemented and their use well controlled in order to enable a correct verification and dimensionning of the mast.

The CTICM (Technical and Industrial Centre for Metal Constructions) recommendations constitute the acknowledged rules of the art for the design of lighting masts above 15 meters with floodlights.

Those recommendations define all necessary rules. They determine the requirements relating to wind, drag coefficient, reinforcement of door openings, jointing, bending at service limit state, fatigue strenght, allowable stress limits to prevent local bending, anchor rods.

WIND

The fundamental value of the basic wind velocity, vb,0, is the 10 minutes mean wind velocity, at 10 m above ground level in open country terrain and having the probability of 0.02 for an annual exceedence (return period of 50 years).

This value of the basic wind velocity is given by each member of the CEN (European Committee for Standardization) into the EN 1991-1-4 standard National Annex.

GROUNDROUGHNESS

The fundamental value of the basic wind velocity, vb,0, is the 10 minutes mean wind velocity, at 10 m above ground level in open country terrain and having the probability of 0.02 for an annual exceedence (return period of 50 years).

This value of the basic wind velocity is given by each member of the CEN (European Committee for Standardization) into the EN 1991-1-4 standard National Annex.

Terrain Categories

| 0 | Sea or coastal area exposed to the open sea |
|----|--|
| I | Lakes or flat and horizontal area with negligible vegetation and without obstacles |
| П | Area with low vegetation such as grass and isolated obstacles (trees, buildings) with separations of at least 20 obstacle heights |
| Ш | Area with regular cover of vegetation or buildings or with isolated obstacles with separations of maximum 20 obstacle heights (such as villages, suburban terrain, permanent forest) |
| IV | Area in which at least 15 % of the surface is covered with buildings and their average height exceeds 15 m |

III and IV terrain categories are not adapted for the calculation of high masts, unless a written and explicit request is done.

RELIABILITY CLASSES

Three classes (noted 1 to 3) have been defined, on the basis of an increasing level of safety. Class 2 is always adopted by default.

| Deliakiliku elese | Partial factors for actions | | | | |
|-------------------|-----------------------------|------------------------------|--|--|--|
| Reliability class | γQ (wind) | γG (continuous load) | | | |
| 3 | 1,7 | 1,2 | | | |
| 2 | 1,5 | 1,1 | | | |
| 1 | 1,3 | 1,0 | | | |

EFFECTIVE CALCULATED LOAD PRESSURE

A comparison between standards or with an extreme wind velocity (peak) could only be made on the speed corresponding to the effective calculated load pressure, multiplied by wind partiel rate (yw).

| 10 minutes mean wind velocity (m/s) | | 22 - 0 | 24 - 0 | 26 - 0 | 28 - II | 28 - 0 | 17 - II | 17 - 0 | 32 - II | 32 - 0 | 34 - II | 34 - 0 | 36 - II | 36 - 0 |
|---|-------|---------|---------|--------|---------|--------|---------|--------|---------|--------|---------|--------|---------|--------|
| & ground roughness | | 24 - II | 26 - II | | | | | | | | | | | |
| Calculated load pressure x γw (daN/mm²) | 104.6 | 129.1 | 153.6 | 180.3 | 169.4 | 209.1 | 62.5 | 77.1 | 221.3 | 273.1 | 249.8 | 308.3 | 280.1 | 345.6 |
| Company don't birth around (m/a l/m/b) | 41.33 | 45.90 | 50.08 | 54.25 | 52.60 | 58.42 | 31.93 | 35.47 | 60.11 | 66.77 | 63.87 | 70.94 | 67.62 | 75.11 |
| Correspondant high-speed (m/s –km/n) | 149 | 165 | 180 | 195 | 189 | 210 | 115 | 128 | 216 | 240 | 230 | 255 | 243 | 270 |

Calculations made 10m above the floor (for a class 2 reliability category).

OTHER STANDARDS

PETITJEAN can calculate masts with other wind standards, AASHTO standard (USA) for instance but also with other national applications standards (Chile, Israël...).

In the absence of any specification, and for countries where there are no precise known standards, EUROCODE 1 will be used with a clearly defined wind speed : High-speed (top speed ou gust) or 10 minutes mean wind velocity.

FOUNDATION BLOCK

The dimensions given in our business proposals for foundations blocks are calculated using the Andrée and Norsa formula. This takes into consideration assumptions concerning elastic behaviour of the ground and a rotary motion of the block around its lower spine.

It takes into account both vertical stress on the ground and lateral stresses.

The acceptable lateral stress at the bottom of the excavation is taken as equal to the acceptable vertical stress ; at the surface, it is taken to be one third of the former in order to account for the lower ground resistance at the surface level.

The loads used (bending moment, shearing force, vertical load) correspond to the Ultimate Limit State (ULS). Before installing the foundations, the quality of the soil, if necessary, by geotechnical analysis.

The calculation of the foundations based on the results obtained (dimensions and ironwork) must be done by a specialised firm in civil engineering or reinforced concrete.

Foundations build on the installation site must be cast to fill the excavation using C25/30 class concrete with characteristic strenght at 28 days (fck) equivalent to at least 25 Mpa and must be vibrated to eliminate air pockets. A water evacuation drain must be included.



FLANGE PLATE AND SEALING TEMPLATE

Flange plates have a circular shape.

The use of an alignment sealing template for the type achor rod specific to each mast is mandatory for round flange plates.

ANCHOR BOLTS

High Masts anchor bolts are straight and made of B500B high-adherence steel (NF A 35-080-1). Only the threaded part of the anchor bolt raised out of the foundation block.

The anchor bolts bond in the foundation block is calculated for a C25/30 beton with a characteristic strenght at 28 days (fck) equal to at least 25Mpa.

| | d (mm) | D (mm) | L1 (mm) | L2 (mm) |
|-----------------|--------|--------|---------|---------|
| Anchor bolt T24 | 24 | 25 | 820 | 170 |
| Anchor bolt T30 | 30 | 32 | 1070 | 210 |
| Anchor bolt T39 | 39 | 40 | 1380 | 260 |
| Anchor bolt T48 | 48 | 50 | 1640 | 290 |











Lighting of Ariane 5 European rocket launch site in Kourou, French Guiana : Our technology to meet the European Spatial Program challenge.

LIGHTING HIGH MASTS

What types of masts, which lighting systems, for which applications?

An airport maintenance area is not illuminated in the same way as a railway station.

Based on this observation, Petitjean has developed specific know-how and solutions adapted to the problems of each type of universe to be illuminated.

This unique experience is the result of an active and close collaboration between the engineers and technical services of Petitjean, with architects, design offices and developers.

| Airport area | 12 |
|--|-------|
| Port area | 14 |
| Sports facilities | 16 |
| Urban environment | 18 |
| Industrial site | 20 |
| Rail network | 22 |
| Road network | 24 |
| Selection assistance | 26 |
| Understanding lighting high masts | 28 |
| Masts supports | 30-43 |
| Intermediate masts - High Masts - Hinged Masts | |
| Head equipment | 44-67 |
| Fixed lighting Access Mobile lighting | |



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AIRPORT AREA







A SPECIFIC APPROACH

Minimal glare, reliability, fast and ease of operation.

Large masts installed on airports are subject to many constraints.

Our mobile systems or our hydraulic cylinder tippers best meet these requirements.

- FIXED RING
- UPRIGHT PLATFORM
- HINGED MAST WITH HYDAULIC JACK
- MOBILE RING
- LOWERING AND LIFTING SYSTEM

REFERENCES ACCROSS THE WORLD

PORT GENTIL INTERNATIONAL AIRPORT - GABON ROISSY CHARLES DE GAULLE INTERNATIONAL AIRPORT - FRANCE NICE COTE D'AZUR INTERNATIONAL AIRPORT - FRANCE COTONOU INTERNATIONAL AIRPORT - BENIN BEIRUT RAFIC HARIRI INTERNATIONAL AIRPOT - LEBANON LA GUARDIA NYC AIRPORT - USA BANGKOK INTERNATIONAL AIRPORT - THAILAND HAVANA JOSE MARTI INTERNATIONAL AIRPORT - CUBA CAIRO INTERNATIONAL AIRPORT - EGYPT





















HIGH TECHNOLOGY

Modern ports have wide spaces for loading and storing goods.

Our range includes high-rise and high-capacity masts, on which circular platforms or mobile headframe can be installed at the head of fixed headframe: ideal for this type of site.

- FIXED RING
- MOBILE RING
- CIRCULAR PLATFORM

REFERENCES ACCROSS THE WORLD

PORT OF ROTTERDAM - NETHERLANDS PORT OF KAOHSIUNG - TAÏWAN PORT OF SETE - FRANCE PUERTO DEL CALLAO - PERU PORT OF AQABA - JORDANIA PORT OF VALENCIA - SPAIN PORT OF VALENCIA - SPAIN PORT OF ASHDOD - ISRAEL PORT OF ASTAKOS - GREECE PORT OF DAKAR - SENEGAL PORT OF SHANGAI - CHINA



SPORTS FACILITIES













GREAT DIVERSITY

The sports facilities are numerous and varied: from the small training ground to the big stadium, from the football field to the hippodrome or to the ski slope.

Straight or curved crossarms, with or without platform, head frames, hinged masts or mobile system, our wide range of products always allows to meet your needs.

- U-BOLTED CROSSARM
- UPRIGHT PLATFORM
- HEAD FRAME
- HINGED MAST
- HINGED MAST WITH HYDRAULIC JACK
- LOWERING AND LIFTING SYSTEM

REFERENCES ACCROSS THE WORLD

AUGUSTE DELAUNE REIMS STADIUM - FRANCE ALTRAD STADIUM MONTPELLIER - FRANCE FAELLEDPARKEN STADIUM COPENHAGEN - DENMARK PAMPELOPONNISSIAKO STADIUM PATRAS - GREECE SAIDA STADIUM - LEBANON BOLLAERT STADIUM LENS - FRANCE NAN TOW STADIUM - TAÏWAN ENUGU, KADUNA & IBADAN STADIUMS - NIGERIA WOODLAND NAUTICAL COMPLEX - SINGAPORE ZAYEB STADIUM - UNITED ARAB EMIRATES MORESBY SPORTS COMPLEX - NEW GUINEA









INTEGRATION INTO THE ENVIRONMENT

High mast lighting is sometimes required in urban areas, both in commercial areas and in large urban areas.

Petitjean's decorative approach, which controls design and customized design, allows the integration of large lighting mast in any type of environment.

- U-BOLTED CROSSARM
- MOBILE RING
- FIXED RING
- CUSTOM DESIGN

REFERENCES ACCROSS THE WORLD

FORT SAINT JEAN IN MARSEILLE - FRANCE DESIGN BY AGENCE LUMIÈRE

CROIX ROUGE REIMS - FRANCE DESIGN BY COUP D'ÉCLAT

UNIVERSITY HOSPITAL OF STRASBOURG - FRANCE DESIGN BY ATELIER LUMIÈRE

BIBLIOTHEQUE NATIONALE DE FRANCE IN PARIS - FRANCE DESIGN BY DOMINIQUE PERRAULT

VASCO DE GAME BRIDGE IN LISBON - PORTUGAL

- STONECUTTERS ISLAND HONG KONG
- JERUDONG PARK BRUNEI



INDUSTRIAL SITE









HIGH TECHNOLOGY HIGH REQUIREMENTS

Whether it is to light a rocket launch in Kourou, an oil field in Algeria or a sugar factory in France, mobile headframe, circular or straight platforms, hinged masts have proved themselves.

- CIRCULAR PLATFORM
- UPRIGHT PLATFORM
- MOBILE RING
- HINGED MAST

REFERENCES ACCROSS THE WORLD

ARIANE SPACE IN KOUROU - FRENCH GUYANA NNPC PIPELINE DEPOT - NIGERIA ZALDIVAR MINE CHILE - CHILE NORD-AMIENS INDUSTRIAL SPACE - FRANCEE



RAIL NETWORK









EASY SERVICING AND MAINTENANCE

Docks, railway or railyard, PETITJEAN has equipped these sites since its creation.

And to meet the needs of our customers, mobile equipment and hinged masts are among the most installed products.

- MOBILE RING
- HINGED POLE

REFERENCES ACCROSS THE WORLD

MULTIMODAL HUB IN OUTREAU - FRANCE MULTIMODAL HUB IN GRANDE SYNTHE - FRANCE METRO DE LIMA RAILWAY - PERU RAIL MARSHALLING YARD OF VAIRES - FRANCE



ROAD NETWORK











EFFICIENCY AND EASE OF USE

The lighting of roads, intersections or motorway tolls is special: the high traffic volume of the vehicles and the limited space available for their installation require compact products on which fast and secure intervention is possible.

Crossarms, hinged masts or mobile systems are the products that best fit this use.

- MOBILE RING
- HINGED POLE
- U-BOLTED CROSSARM
- LOWERING AND LIFTING SYSTEM

REFERENCES ACCROSS THE WORLD

HIGHWAY INTERCHANGE IN MAGNY-COURS - FRANCE TONNAY CHARENTE HIGHWAY TOLL STATION (A837) - FRANCE GHAZALI EXPRESSWAY - BRUNEI EASTERN CORRIDOR - HONG KONG PANAMERICANA SUR - PERU AQABA REAR ROADWAY - JORDANIA



SELECTION ASSISTANCE

| | | | | | _=== 拉 |
|------|--|---------------------------------------|------------------------------|--------------|-----------|
| | MAST Ranges | HEAD MAST Equipment | MAX NUMBER Of Floodlights | AIRPORT AREA | PORT AREA |
| lore | | Head frame with central shaft | 100 et + | | |
| nd m | | Mobile rings CM61-10-20 | 36 | | |
| Mal | | Ring or crossarm with lowering system | 36 | | |
| 50 | LIGHTING HIGH | Crossarm(s) and platform | 24 | | |
| | MASTS | Circular platform | 24 | | |
| | | Fixed ring | 12 | | |
| F | | MOB302 and CM62 mobile rings | 12 | | |
| IGH | | U-bolted crossarms | 8 | | |
| Ŧ. | HINGED MATS (BMT) | Fixed ring | 16 | | |
| | | U-bolted crossarms | 8 | | |
| | HINGED MASTS WITH HYDRAULIC JACK | Crossarms | 24 | | |
| | | Fixed ring | 24 | | |
| | | Fixed ring | 16 | | |
| 2 | INTERMEDIATE MASTS | U-bolted crossarms | 8 | | |
| 15 1 | | Crossarm and platform | 8 | | |

| 六 | P | 3 | | · _ : |
|------------------|-------------------|-----------------|--------------|--------------|
| SPORT FACILITIES | URBAN ENVIRONMENT | INDUSTRIAL SITE | RAIL NETWORK | ROAD NETWORK |
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UNDERSTANDING THE LIGHTING HIGH MASTS

FROM HIGH MASTS...

The range of lighting high masts is an extension of the functional range of public lighting masts. It starts at a height of 15 and has no upper limit since Petitjean has the capacity to manufacture masts exceeding 100 metres. Production uses only steel, for the obvious reasons of strength and resistance. The high lighting range contains two sub-categories : standards masts and custom-made masts.

neters

STANDARD MASTS

This range is fairly comprehensive and includes a number of different sizes in order to meet the lighting needs of most large areas.

Intermediate masts

These masts are made of galvanized steel, with a round-conical or polygonal section, in two elements, for heights ranging from 15 to 25 metres. A number of optional extras and accessories complete the range.

Hinged masts

This range of straight masts and street lighting poles is intended for many applications : supports for luminaries, crossbeam floodlights, antennas, neon signs and clocks.

The shafts are made of galvanized steel in round-conical or polygonal section, depending on the model.

neter

Normal jointing or jointing by section



B

Door

neters

PELVOUX

neter

CARLIT

...TO CUSTOM-MADE MASTS



CUSTOM-MADE MASTS

Altough the standard range of masts covers most high lighting needs, custom-made masts need specific requirements.

They are designed to individual specifications, soliciting the full extent of Petitjean skill and expertise.

The bore diameters and shafts heights are calculated using state of the art expertise and technology.

Each custom-made mast is the result of in-depth, detailed research.

The production and transport of these masts require extraordinary human and technological resources.

Reinforcement of ALTRAD STADIUM in MONTPELLIER (France) lighting in 2016:

installation of two 22 meters high, high masts of 7.7 tons in steel with a bracket with an offset of 22.50 meters.

AUGUSTE DELAUNE STADIUM lighting in REIMS (France) in 2005:

REIMS Stadium drawing

Four 65M high masts, tilted 15° equipped with a lowering and lifting system for floodlights.





MASTS SUPPORTS

Depending on the intended use of the head equipment, Petitjean offers a wide range of standardised high masts.

Petitjean provides the necessary expertise to ensure the safety of both the equipment and the men who operate it, in compliance with the industry standards, and in accordance with the number of floodlights you require, the photometric study and your chosen maintenance method.

| Intermediate masts | 32 |
|---|----|
| High Masts | 34 |
| Hinged masts | 36 |
| Hinged masts with hydraulic jack | 38 |
| Manufacturing and installing High masts | 40 |



DESCRIPTION | DECISIVE ADVANTAGES

MASTS

INTERMEDIATE

Placed between poles and high masts, the intermediate masts have been designed for heights ranging from 15 to 25 meters, and can support light equipment on head (crossarm, fixed ring...)

Made out of galvanized steel, our intermediate masts range come in round-conical or 12 sided polygonal, in two or three sections that fit into one another. Mast is assembled on the ground and then is erected with its head equipment and floodlights on the foundation block.

The bottom mast round-flange plate is fixed on the foundation block with anchor bolts.

Anchor bolts are supplied with masts.

Template is proposed optionally but highly recommended.

Intermediate masts have two inspection doors giving access to 3 electrical device supports, where floodlight electronical ballasts are hanged (within the limits of the mast dimensions, maximum 6 or 8 ballasts). PELVOUX mast has a specific equipment belt that can support up to 9 2kW electronical ballasts.

Intermediate masts dimensionnal datas, as described in the summary table below, are provided for your information :

| | DECODIDITION | SECTION | DIAMETER | | ANCHO | R BOLTS SETTING |
|------------------------------|--------------|---------------|-----------------|-----|------------|--|
| HEIGHT | DESCRIPTION | SECTION | BASE | TOP | DRILLING Ø | ANCHOR BOLTS |
| | OLERON 100 | Round conical | 278 | 99 | Ø 370 | 8 x D 25/24x820 |
| 15 | LORY | Round conical | 278 | 99 | Ø 370 | 8 x D 25/24x820 |
| | GOLEON | Round conical | 303 | 124 | Ø 400 | BOLTS SETTING ANCHOR BOLTS 8 x D 25/24x820 8 x D 25/24x820 12 x D 25/24x820 8 x D 25/24x820 8 x D 25/24x820 12 x D 25/24x820 12 x D 25/24x820 12 x D 25/24x820 14 x D 25/24x820 15 x D 25/24x820 16 x D 25/24x820 16 x D 25/24x820 20 x D 25/24x820 20 x D 25/24x820 |
| | OLERON 100 | Round conical | 290 | 99 | Ø 380 | 8 x D 25/24x820 |
| 16 | LORY | Round conical | 290 | 99 | Ø 400 | 8 x D 25/24x820 |
| | GOLEON | Round conical | 315 | 124 | Ø 400 | BOLTS SETTING ANCHOR BOLTS 8 x D 25/24x820 12 x D 25/24x820 12 x D 25/24x820 12 x D 25/24x820 12 x D 25/24x820 16 x D 25/24x820 16 x D 25/24x820 16 x D 25/24x820 20 x D 25/24x820 20 x D 25/24x820 12 x D 32/30x1070 |
| OLERON 100 Round conical 315 | 99 | Ø 400 | 8 x D 25/24x820 | | | |
| 10 | LORY | Round conical | 315 | 99 | Ø 400 | 12 x D 25/24x820 |
| 10 | GOLEON | Round conical | 340 | 124 | Ø 430 | 12 x D 25/24x820 |
| | CARLIT | 12 sided | 406 | 162 | Ø 500 | 3 Ø ANCHOR BOLTS 8 x D 25/24x820 8 x D 25/24x820 1 2 x D 25/24x820 12 x D 25/24x820 1 2 x D 25/24x820 8 x D 25/24x820 1 2 x D 25/24x820 8 x D 25/24x820 1 2 x D 25/24x820 12 x D 25/24x820 1 2 x D 25/24x820 12 x D 25/24x820 1 2 x D 25/24x820 12 x D 25/24x820 1 1 2 x D 25/24x820 16 x D 25/24x820 1 1 6 x D 25/24x820 16 x D 25/24x820 1 1 6 x D 25/24x820 16 x D 25/24x820 1 1 6 x D 25/24x820 12 x D 25/24x820 1 1 6 x D 25/24x820 12 x D 25/24x820 1 1 6 x D 25/24x820 12 x D 25/24x820 1 1 6 x D 25/24x820 12 x D 25/24x820 1 1 6 x D 25/24x820 12 x D 25/24x820 1 1 6 x D 25/24x820 12 x D 25/24x820 1 1 2 x D 32/30x1070 12 x D 32/30x1070 |
| 20 | LORY | Rond conique | 340 | 99 | Ø 430 | 12 x D 25/24x820 |
| 20 | CARLIT | 12 sided | 434 | 162 | Ø 520 | 16 x D 25/24x820 |
| 22 | CARLIT | 12 sided | 462 | 162 | Ø 550 | 16 x D 25/24x820 |
| 23 | CARLIT | 12 sided | 504 | 190 | Ø 590 | 20 x D 25/24x820 |
| 25 | CARLIT | 12 sided | 504 | 162 | Ø 590 | 20 x D 25/24x820 |
| 25 | PELVOUX | 12 sided | 578 | 143 | Ø 690 | 12 x D 32/30x1070 |

ACCESSORIES AND OPTIONS

- Straight or curved crossarms of different lenghts (400-1100-1550-2200 or 3000 mm) to optimize floodlights fixation (attached by 1 or 2 U-bolts).
- Fixed rings. Available diameters : 1000, 1250, 1500 and 2000 mm. Fixed on to head plate or adapter head.
- The floodlights are attached using adjustable supports.
- PFD 15 Upright platform : designed for one-sided lighting.
- Access with rungs with safety cable and fall protection system (CE approval).
- Aluminium or steel top cap and grommets.
- Electrical device supports to fix floodlights ballasts inside the mast.
- Acierprotec[®] : an additionnal anti-corrosion treatment for the base of the mast.

HEAD EQUIPMENT FOR MIDDLE INTERMEDIATE





HIGH

MASTS



What makes a high mast different from an intermediate mast is:

- A 16 sided polygonal section
- From 2 to 4 jointed parts
- Frame door
- Heights ranging from 15 to 40 meters
- Fixed and mobile head equipment

The adjacent table represents some of the Petitjean high masts range dimensional datas.



A technical description is supplied for your project
SELECTION FROM HIGH MASTS RANGE

| HEIGHT | DESCRIPTION | BASE Ø (mm) | TOP Ø (mm) | ANCHOR BOLTS |
|--------|-------------|----------------|---------------|----------------|
| 16 | FR2 | 374 | 160 | 12 T24 / Ø480 |
| 18 | FR2 | 402 | 160 | 16 T24 / Ø530 |
| | GM2 | 412 | 160 | 12 T24 / Ø500 |
| 20 | GM2 | 620 | 160 | 20 T24 / Ø710 |
| 20 | GM2 | 680 | 258 | 28 T24 / Ø760 |
| | FR2 | 962 | 316 | 32 T30 / Ø1100 |
| | FR2 | 458 | 160 | 16 T24 / Ø570 |
| 22 | GM2 | 510 | 196 | 20 T24 / Ø600 |
| | GM2 | 745 | 309 | 32 T24 / Ø840 |
| | GM2 | 467 | 160 | 16 T24 / Ø560 |
| 25 | GM2 | 622 | 200 | 24 T24 / Ø710 |
| 25 | GM2 | 745 | 258 | 32 T24 / Ø840 |
| | FR2 | 962 | 311 | 32 T30 / Ø1100 |
| | FR2 | 530 | 160 | 24 T24 / Ø620 |
| 30 | GM2 | 790 | 258 | 24 T30 / Ø890 |
| | FR2 | 1176 | 312 | 36 T39 / Ø1300 |
| 25 | GM2 | 660 | 258 | 28 T24 / Ø760 |
| 30 | FR2 | 1176 | 386 | 36 T39 / Ø1300 |
| (0 | FR2 | 750 | 258 | 32 T24 / Ø850 |
| 40 | FR2 | 1176 | 390 | 36 T39 / Ø1300 |

With fixed head-equipment (crossarm, fixed ring with or without platform, head frames with central beam), floodlights ballasts are installed either in an electrical cabinet beside the mast either inside the bottom mast. In that case, bottom mast is equipped with a ballast support.

It has to be noted that motors and winch take place inside bottom mast in case of mobile ring equipment.

Ballast may be hooked by cable movement or some accessories inside the mast.

It is therefore recommended to install ballasts close to floodlight on the mobile ring.

HEAD EQUIPMENT FOR HIGH MASTS

Mobile rings



Circular platforms



Crossarms and upright platforms - head frame with central beam







MID-HINGED Masts









Manœuvre d'un mât basculant

The principle of hinging enables to bring the equipment mounted on the mast-head down to human height. Hinged masts are a must in areas where lifting devices cannot access (railways and sport fields for example).

It is also recommended on sloping ground or for installations where intervention is frequently necessary. Each mast has a fixed base and a upper top part hingeable at mid-level.

The articulation is designed in order to avoid water infiltration and protect the cables during the tilting operations.

The range complies with EN40 and CTICM standards.

RANGE | CHARACTERISTICS

| DIAMETER IMF | | IMPLAN | ITATION | MAXIMUM TOTAL TOP WEIGHT (kg) | | | |
|--------------|-----|--------|---------|--|------------------|---------------------|---------------------|
| DESCRIPTION | (m) | BOTTOM | TOP | DISTANCE BETWEEN HOLES / DRILLING DIAMETER | ANCHOR BOLTS | MECHANICAL WINCH | ELECTRICAL WINCH |
| BMTRC100 | 10 | 267 | 89 | 300 | J 20/18x400 | 120 | 166 |
| BMTRC120 | 12 | 256 | 89 | 300 | J 25/24x600 | 129 | 180 |
| BMTRC140 | 14 | 256 | 89 | 300 | J 25/24x600 | 92 | 133 |
| BMTxP150 | 15 | 342 | 150 | Ø 430 | 12 x D 25/24x820 | 121 | 165 |
| BMTxP160 | 16 | 342 | 137 | Ø 430 | 12 x D 25/24x820 | 100 | 141 |
| BMTxP180 | 18 | 368 | 137 | Ø 450 | 12 x D 25/24x820 | 176 | 227 |
| BMTPA180 | 18 | 342 | 110 | Ø 430 | 12 x D 25/24x820 | 71 | 106 |
| BMTPA200 | 20 | 368 | 110 | Ø 450 | 12 x D 25/24x820 | 137 | 182 |
| BMTxP200 | 20 | 395 | 137 | Ø 470 | 12 x D 25/24x820 | 174 | 224 |
| BMTxP220 | 22 | 462 | 162 | Ø 550 | 16 x D 25/24x820 | 180 | 229 |
| BMTxP230 | 23 | 504 | 190 | Ø 590 | 20 x D 25/24x820 | 183 | 232 |
| BMTxP250 | 25 | 504 | 162 | Ø 590 | 20 x D 25/24x820 | 145 | 190 |





Rope Pulley The tilting manœuvre may be carried out by a single person.



Mechanical winch 20kg – rolling speed : 1.5 to 2m/ min Ø4.8 mm useful length 20m.



Electrical Winch 30kg – winch with electrical disc-brake in case of power shutdown (230-240V – 3 phases – 0.37kW)

Θ



HINGED Masts



HINGED BY HYDRAULIC JACK MAST

PRESENTATION | ADVANTAGES

The hinged by hydraulic jack masts are recommended once height and capacity require it. It is an extra-large version for hinging masts (12 - 30m), which can be pivoted about an axis located in 1.2m hight, by means of a hydraulic unit comprising 1 or 2 cylinders.

The hydraulic unit is self sustaining and can be used on several masts (speed and ease in installation).

The descent of the mast takes just a few minutes: the duration of the operation is reduced.

When it is upright, the mast is supported by a secure lock system: to unlock, it is necessary to power up the locking spring through the cylinder.

The assembly is made on the ground, the lift is achieved with the operative hydraulic unit.

Thus the hydraulic jack uses none of the essential lifting means on the classic masts.

RANGE | CHARACTERISTICS

| DESCRIPTION | HEIGHT (m) | BASE Ø (mm) | TOP Ø (mm) | MAXI TOTAL TOP WEIGHT (kg) |
|-------------|---------------|----------------|---------------|-------------------------------|
| | 12 | 270 | 160 | 540 |
| Model N° 3 | 16 | | 118 | 361 |
| | 18 | | 118 | 267 |
| | 15 | 380 | 236 | 582 |
| Model Nº 4 | 20 | | 181 | 360 |
| | 25 | | 118 | 243 |
| | 20 | 487 | 286 | 800 |
| Model N° 5 | 25 | | 228 | 517 |
| | 30 | | 160 | 354 |

Note : top/bottom diameters : dimensions accross flats

TECHNICAL DESCRIPTION

Before, during and after tilting motion





MANUFACTURING AND INSTALLING HIGH MASTS,



The manufacturing process for lighting high masts is not the same as for street lighting columns. A dedicated unit on our site of Saint André is specifically dedicated to this activity.

Altough the standard range of masts covers most high lighting needs, custom-made masts need specific requirements. They are designed for individual specifications, soliciting the full extent of Petitjean skills and expertise.

The buildings and machinery are built to accomodate elements exceeding 14 meters in length and 2 meters in diameter. Similarly, specialised and highly skilleds teams

of workers work closely with the engineering and design department to make these very specific products.



4000 tons press-brake Folding of steel plates from 6mm to 30mm thick



Assembling the elements





A SPECIALISED PROFESSION

Cutting and drilling bench



Folding with our 4000 tons press-brake





immersion into the bath of zinc at a temperature of 450°C (842° F)



In 2013 Petitjean invested into a new galvanization facility. This high-performance production unit combines technology, reliability, environmental performance and compliance with market standards.



ORGANIZING AND INSTALLING HIGH MASTS...





The logistics Department operates on the 30 hectares of the Petitjean site, with a wide fleet of sophisticated vehicles.

The lifting cranes are equipped with fully customised prehensile tools.

The importance we give to transport is yet another proof of Petitjean expertise.



Every product manufactured is identified according to the type of packaging necessary for its transport.

Each item is managed in accordance with the unloading and handling methods in use on the installation site.

Large elements require specific packing know-how. Small parts are marked and shipped in individual crates. The Petitjean logistics staff works together with the contracting authority in order to guarantee a delivery at the final destination under optimum conditions.



... REQUIRING SPECIFIC LOGISTICS

Assembling is made on-site in coordination with the various suppliers.

A mast must be installed quickly and efficiently : efficiently for safety and quickly to minimise the operation's casts.

From design, through manufacture and logistic, to technical assistance : PETITJEAN makes full use of its technological know-how and capacity.

> Petitjean offers high quality technical assistance to ensure optimum organisation for unloading and assembling on site, working in close cooperation with the installation company.









HEAD-MAST Equipment

Petitjean is already well-known for its expertise in the design and production of masts. However, this know-how also covers the design of the elements equiping the masts.

This equipment can be provided with the mast, forming a package that is easy to install and maintain.

Similarly, we place no limits on the height of our masts, and any number of floodlights can be places on the mast-head.

Fixed equipment

| Crossarms | . 40 |
|--|----------------------|
| Fixed rings | . 48 |
| Crossarms and upright platforms | . 50 |
| Circular platform | . 52 |
| Head frame with central shaft | . 54 |
| | |
| Access systems to the head mast | |
| Access systems to the head mast Rungs with safety cable | . 50 |
| Access systems to the head mast Rungs with safety cable Access system with mobile steps | . 54 . 58 |
| Access systems to the head mast Rungs with safety cable Access system with mobile steps Power lift. | . 58 . 58 . 60 |

Mobile equipement

| Mob302 | 63 |
|---|----|
| Cm062 | 63 |
| CM61-CM10-CM20 | 66 |
| Withdrawable mobile ring-Guided mobile ring | 68 |
| Lowering and lifting system | 69 |



FIXED EQUIPMENT CROSSARMS



Crossarms can be mounted on any type of mast, from lighting pole to high lighting masts.

With their lightweight, they are easy to install and the wide range of Petitjean crossarms makes possible multiple configurations..

U-BOLTED STRAIGHT CROSSARMS

| DESCRIPTION | WIND SURFACE (m²) | WEIGHT (kg) | HORIZONTAL CENTER DISTANCE (mm) |
|--|----------------------|----------------|------------------------------------|
| 400 mm Crossarm with 1x U-bolt= TB 400 | 0.06 | 4.3 | - |
| 1100 mm Crossarm with 1x U-bolt= TB 1100 | 0.15 | 12.2 | 830 |
| 1550 mm Crossarm with 1x U-bolt= TB 1551 | 0.22 | 16.8 | 1280 |
| 1550 m Crossarm with 2x U-bolts= TB 1552 | 0.33 | 24.2 | 1280 |
| 2200 mm Crossarm with 2x U-bolts= TB2200 | 0.45 | 33.0 | 1930 |

U-bolted straight crossarms can be installed on masts of top diameter varying:

From 60 to 205 mm (one u-bolt) From 76 to 205 mm (two u-bolts)





The 400 mm lenght crossarm support only 1 floodlight, the others crossarms (1100, 1550 or 2200 mm lenghts) can support 2 floodlights by row (or 3 sitting on the upper row), according to floodlights dimensions.

With our 5 u-bolted straight crossarms models, it is possible to construct the configuration adapted to the number and type of floodlights required (up to 9 symmetrical floodlights or 7 asymmetrical floodlights in a standard configuration).

It should be noted that the upper crossarm is mounted on the front of the mast and the lower crossarm at the rear, in order to create an appropriate distance for a better lighting (avoiding occultation).

U-bolted straight crossarms can be mounted on masts with no acess or access with rungs and safety cable.

Electrical supply cables come out of the head mast by a grommet (4 or 8 cable gland models).

If necessary, extra cable gland can be positionned directly at the lower crossarm level.

Then, il is also possible to mount floodlights on a back-to-back position to allow a two-sides lighting.

CURVED CROSSARMS

Curved crossarms, equivalent to straight crossarms capacities, can be proposed to improve head mast aesthetic appearence. Curved crossarms are lighter and offer less wind resistance.

| DESCRIPTION | WIND SURFACE (m²) | MASSE (kg) | HORIZONTAL CENTER DISTANCE (mm) |
|---|----------------------|---------------|------------------------------------|
| 1100 mm curved crossarm (50 square tube) =TC1100 | 0.07 | 5.3 | 830 |
| 1550 mm curved crossarm (50 square tube) = TC1551 | 0.10 | 7.9 | 1280 |
| 1550 mm curved crossarm (60 square tube) = TC1552 | 0.12 | 9.0 | 1280 |
| 2200 mm curved crossarm (60 square tube) = TC2200 | 0.17 | 12.8 | 1930 |

Curved crossarms can be installed on masts of top diameter varying:

From 60 to 205 mm (TC1100 and TC1551)

From 76 to 205 mm (TC1552 and TC2200)

Curved crossarm is fixed on the mast by two mounting kits, each composed of one u-bolt and one steel angle.

Curved crossarm can be mounted only on the front of the mast, unlike straight crossarms that can be fixed also at the rear.



Fixed on the mast by 2 mounting kits

3000 MM CURVED CROSSARM

3000 mm curved crossarm completes Petitjean crossarms range. It can be mounted on the mast without platform or with a PFD15 platform model.

This 3000 mm curved crossarm is fixed on the mast by two mounting kits, each composed of one u-bolt and one steel angle. 3000 mm curved crossarm can be installed on masts of top diameter varying from 99 to 205 mm.

Capacities:

Wind surface (m²) : 0.20 Weight (kg) : 20



FIXED EQUIPMENT FIXED RINGS

DESCRIPTION | DECISIVE ADVANTAGES



Fixed rings can be fitted to a large range of masts (top \emptyset between 89 and 258 mm), from standard poles to high litghting masts, for a 360° lighting configuration.

Fixed rings are easy to install, light-weight.Their structure (the fixing ring has 4 carrying arms) ensure the stability and regidity of its equipment. Ring is fixed on a head plate or adapted plate. The floodlights are installed using adjustable supports. Several diameters are available : 1000, 1250,1500 and 2000 mm .





RANGE | CHARACTERISTICS

| DESCRIPTION | Ø DIAMETER (mm) | WEIGHT (kg) | MAXIMUM NUMBER OF FLOODLIGHT* |
|-------------|-----------------------|----------------|-------------------------------------|
| CF1000 | 1000 | 25.8 | 8 |
| CF1250 | 1250 | 30.8 | 10 |
| CF1500 | 1500 | 35.8 | 12 |
| CF2000 | 2000 | 48.3 | 16 |

*Floodlight characteristics : 0.20m² and 15kgs weight, sitting and hanging floodlights, 360° lighting.



lighting. Head plate is welded on the mast. In most configurations, electrical cables come out of the mast with 2 opposite notches, taking place under the head plate.

HIGH CAPACITY FIXED RING

A Ø4000 mm reinforced fixed ring has been designed to support a large quantity of floodlights (up to 30 floodlights) or larger floodlights than the standard rate.

This fixed ring can only be installed on high masts.

LIGHTING FRAME

In order to adapt the product to a 2-sides lighting, ring has been replaced by a 3000x1900 mm fixed frame. This frame allows to carry up to 16 (2 x 8) floodlights on a two-sides configuration. Conditions of use are the same as for a fixed ring.





FIXED EQUIPMENT Rectangular platforms

DESCRIPTION | DECISIVE ADVANTAGES



It is necessary to have a platform to ensure the floodlights maintenance if the mast is equipped with a quantity of 4 to 24 floodlights.

The platform is fixed with u-bolts at the rear of the mast (independently of the crossarms).

Two persons can safely get on the platform by an access trap located into the platform floor.

When the mast is equipped with two crossarms, a ladder allows to reach the top row of floodlights.

Only the PDF15 platform equipped with one crossarm can be mounted on a middle range mast (\emptyset top = 114 mm mini). All others configurations have to be mounted on high masts (\emptyset top head = 160 to 258 mm).

Platforms can be supplied assembled or non-assembled to optimise the transport.





RANGE | CHARACTERISTICS



Many configurations are possible with the following elements :

Platforms:

PFD15 model (1.5m lenght, 0.8m width, 70kg weight) or PFD30 model (3m lenght, 0.8m width, 200kg weight)

Crossarms:

TB1550-2 (straight crossarm, 24kg weight), 3000 (curved crossarm, 32kg weight) or 4800 (bent crossarm, 49kg weight)

Ladder:

2.7m height (30kg weight for PDF15 platform and 64kg weight for PFD30 model)

Based on these elements, there are 7 different possible configurations:



PFD15 - one 1550 crossarm 4 floodlights maxi



PDF 15 - one 3000 curved crossarm - 8 floodlights maxi



PFD15 – two 3000 curved crossarms 2.7m ladder- distance between rows 1.6m - 16 floodlights maxi



PFD30 - one 4800 bent crossarm - 12 floodlights maxi



PFD30 – two 4800 bent crossarms 2.7m ladder – distance between rows 2m - 18 floodlights maxi

PFD15 – two 3000 curved crossarms 2.7m ladder- distance between rows 2m- 12 floodlights maxi



PFD30 – two 4800 bent crossarms 2.7m ladder – distance between rows 1.6m - 24 floodlights maxi

Electricity cables come out either from a head cap (4 or 8 cable gland models) or either from \emptyset 101 mm steel tubes on crossarm level.



REAR LIGHTING

The PFD15 platform may be reinforced in order to add a 3000 curved crossarm, allowing rear lighting with 6 extra floodlights.

COMPLIANCE

Our platforms are in compliance with NFE85014 standards (industrial equipment elements, work platforms)



FIXED EQUIPMENT CIRCULAR PLATFORMS

DESCRIPTION | DECISIVE ADVANTAGES



Circular platform is particularly suited to a 360° lighting of wide outdoor spaces. Platform is mounted on high mast top.

The center octogonal maintenance platform can holp up 2 persons for floodlights maintenance operations. This maintenance platform is also spacious (2.68m²) and secure, in compliance with standards.

A \emptyset 2.4m ring around the platform allows to mount up to 20 sitting and hanging floodlights.



TECHNICAL DESCRIPTION



- Bolted on an welded plate at the top of the mast
- Suitable for masts with top diameter between 160 and 310 mm
- A central stem on the maintenance platform allows safety cable securing.
- Electrical cables come out of the mast under the platform by 1 or 2 Ø101 mm steel tubes. .



- 1 1675 mm wide non-slipping floor
- 2 platform access hatch
- **3** floodlights fixing ring
- 4 railing posts
- **5** central stem for safety cable

Lighting configurations:

- Single-side lighting
- Two-sides lighting
- Circular lighting



PFC15/12 with 6 sitting and 6 hanging floodlights on two sides.



PFC15/12 with 5 hanging floodlights on a single-side



PFC15/12 with 10 sitting floodlights 360° arrangement



PFC15/12 with 5 sitting and 5 hanging floodlights on a single-side



PFC15/12 with 10 sitting and 10 hanging floodlights - 360° arrangement

COMPLIANCE

Our platforms are in compliance with NFE 85014 standards (industrial equipment elements, work platforms).



FIXED EQUIPMENT HEAD FRAME WITH CENTRAL SHAFT

DESCRIPTION | DECISIVE ADVANTAGES



Head frame with central shaft has been designed to support a huge quantity of floodlights for a single-side lighting.

Crossarms are installed on a tubular extension tube bolted on the mast head.

The head frame is tilted forward at a 15° angle for maximum lighting effect and to avoid shadowing.

A platform adapted to the length of the crossarms is fixed at the bottom of the extension tube :

This platform allows the maintenance of the lowest floodlights rows but also accessing to higher floodlights using a mobile ladder.

The mobile ladder moves along the extension tube width allowing to be positionned as close as possible to the floodlights for their maintenance.

A manœuvering aid can facilite heaviest ladder moving.

Head frame with central shaft are made of a range of extension tube, crossarms and platforms :

It is thus possible to design a custom-made head frame (high and narrow or short and wide) in order to be able to optimally meet the specific lighting and aestheticism criteria required by our customers.



TECHNICAL DESCRIPTION

- 1 Tubular extention tube tilted forward at 15° A cable outlet is provided per crossarm
- 2 Maintenance platform
- 3 Access trap
- 4 Crossarm fixed on the extension tube and set to rear
- 5 Mobile ladder
- 6 Guiding tube for mobile ladder



LIGHT-WEIGHT HEAD FRAME

Light-weight head frames are simplified versions of head frame with central shaft. The range consists of 3 standard configurations, allowing to install up to 36 floodlights.



Head Frame Ø250 – 2 crossarms Extension tubeØ250 x4 Height : 3100 mm 2x 3.2m crossarms 2 x 3.6m fixed ladders PDF30 platform



Head Frame Ø250 – 3 crossarms Extension tubeØ250 x6 Height : 5100 mm 3x 3.2m crossarms 2 x 5.4m fixed ladders PDF30 platform



Head Frame Ø325 – 3 crossarms Extension tubeØ325 x6 Height : 5100 mm 3x 5m crossarms 3 x 5.4m fixed ladders PDF42 platform

COMPLIANCE

Our head frame platforms are in compliance with NFE85014 standards (industrial equipment elements, work platforms).

ACCESS Via Anti-Skid Rungs & Anti-Falling Device

DESCRIPTION | DECISIVE ADVANTAGES

PETITJEAN



Access to the maintenance platform can be made via an anti-skid rungs access with a safety cable. Offering continuous safety conditions for the technician, this is the most economical means of access. Any fixed mast can be equipped with this kind of access, from the lighting pole to the high masts.



TECHNICAL DESCRIPTION

ANTI-SKID POLE RUNG

The anti-skid pole rung is fixed to the mast with square-head bolts and lock-nuts

- Usable lenght : 150 mm
- Usable width : 20 mm
- 22 mm stopper located at the end of the rung.
- Rungs are welded staggered to the mast starting from 3M to prevent unauthorised access.

The system includes a ladder support installed at 3M and a cable fixed on the mast in order to be used with a safety harness (see below for a complete description).

ANTI FALLING DEVICE

This safety system consists of :

- A safety device that complies with EN795 standard, composed of an 8 mm dia. steel (stainless steel in option) cable, a tension-grip with take-up spring, and one or more beating limiters that prevent the cable from banging.
- An anti-falling device moving with an enegy absorber belt ASCAB 3, a connector and an harness.

The system is in compliance with EN 353-1, EN 361 and EN362 and 89/686/EEC directive.

It is EC stamped.

RESTING PLATFORM FOR ACCESS

This comprises two 150x300 mm steps that can be folded down along the mast. The platform is fixed to the mast by circular clamps or collars.

LIFE LINE GENERAL AND PERIODIC VERIFICATION

PETITJEAN SERVICES technicians are trained and authorized to proceed to lifeline general and periodic verifications.

General and periodic verification must be made during initial commissionning but also during annual check and reactivation.

PETITJEAN SERVICES provides an intervention report which must be kept into the information folder.

The Safety Register will also be filled out after general and periodic verification.





ACESS SYSTEMS ACESS SYSTEM WITH MOBILE SAFETY STEPS

DESCRIPTION | DECISIVE ADVANTAGES



The access system with mobile safety steps is a secure and comfortable system. It allows the technician to adapt the height of each step and to stop securely wherever he needs, without being limited by the height of fixed steps or platforms.

The access system is made of several pieces of equipment gliding on two rails tightened to the mast. The two handles are connected to the chest of the technician's safety harness. Each handle is tied with a line of adjustable length to a step, gliding on the same rail.

The handles are securely blocked on the rail by the weight of the technician: he cannot glide the handle up or down as long as he does not release his weight from the step attached below the handle. To climb on a mast, the technician will move his weight from one step to the other, releasing the corresponding handle which he will be able to move up, simultaneously moving up the step attached to it. He will then step on the newly moved step, blocking it on the rail, and move the other handle with the attached step.

The technician will progress up or down the mast by alternatively moving his weight from one side to the other, and gliding the equipment which is released from his weight. He can stop for work or rest wherever he wants, just by applying weight on both steps. During the entire time using the system, he will remain securely tied to the mast by his harness.



MASTERING HEIGHT

SECURELY BLOCKED ON THE RAIL

The mobile step system inherently prevents any accidental fall since handles and steps would immediately be blocked on the rail by the weight of the falling body. Moving the handles is only possible by voluntarily releasing weight from one of the two steps. It is impossible to release both steps simultaneously since the technician cannot release his weight from both legs at the same time.

In the worst case including a failure of one handle / step system, the other handle would immediately block on the rail and prevent any fall lower than the maximum height difference between the two handles (40 cm). The system's safety is mechanically redundant by design.



Handles: weight-triggered blocking system



LADDER WITH SAFETY RAIL OR SAFETY CAGE

Access to the service platform on high lighting masts may also be done by galvanized steel ladder with security rail. This access has several advantages compared to welded steps:

- Better climbing comfort (400 mm wide steps, continuous handrail)]
- Higher security with the T-rail system rather than a simple lifeline

In case of safety cage, the resting steps are replaced by a resting platform.

Climbing ladder, 400 mm wide, with two side rails, starting at 3m above ground to prevent unauthorized use.

Available on high masts with a minimum head diameter of 168 mm.

With rail for railblock-type fall prevention system (fall prevention system, shock absorber and harness may be supplied by Petitjean).

The ladder is equipped with fixed resting steps (155 x 255 mm), tightened to the side rails.

The rail may be replaced by a safety cage (rings Ø650 mm). Ladder sections are aligned. A D15-Type resting platform, 1.5m long, will replace the safety steps. The platform allows two persons to cross.

INNER ACCESS

For large masts (minimum head diameter 600 mm), the ladder may be located inside the mast. In that case, the ladder is equipped with a lifeline cable or safety rail, resting steps and inner lighting.

CONFORMITY

The access system is in conformity with ISO 14122-4 - Safety of machinery - Permanent means of access to machinery - Part 4: Fixed ladders.



Ladder with handrail and resting platforms



Ladder with safety cage and platform





ACCESS SYSTEMS Power Lift

DESCRIPTION | DECISIVE ADVANTAGES



Power lift allow comfortable and secure access to the service platform of large, high lighting masts.

The power lift is made of an aluminum cage, a guidance system (articulated frame or rail system), an elevator winch system and a safety braking system on a separate cable. In case of failure of the elevating winch or cable, the cage is safely held by the braking cable.

The power lift may equip any kind of high mast (minimum top diameter 298 mm), up to a height of 45m: guidance system with articulated frame on vertical masts (maximum bottom diameter 3000 mm), or rail-based guidance system on tilted masts (up to 15° forward or 10° backward), without limitation of the bottom diameter.

Both elevating and braking cables are placed along the mast before using the elevator, and taken away after usage: when not in use, the cables do not remain on the mast (better esthetics, no risk of vandalism or other kind of damage to the cables).





TECHNICAL DESCRIPTION

- 1 Aluminum cage, for up to 2 persons and their equipment (240kg max.)
- 2 Upper cage for secure access to the service platform at the top of the mast
- **3** Guidance system, with articulated frame or rail system for tilted masts (not on the picture)
- 4 Three-phase electric winch (400V-50Hz) with disc brake and emergency descent
- **5** Fall protection braking system (automatically triggered in case of excessive speed) on a separate cable
- 6 Control box and security control (phase order control, load limitation control)
- 7 Upper limit switch

The cage is fitted with an electric socket to power the maintenance equipment at the top of the mast.



CONFORMITY

For sales in Europe, power lift cages must bear the "CE" marking.

The system was reviewed according to the EC-type examination procedure for systems intended for lifting persons above 3m, under the control of a notified body, which delivered the following EC-type examination certificates:

- N° 0526 5206 760 06 12 1002 for the elevator cage with guidance system by articulated frame
- N° 0526 5206 760 06 12 1001 for the elevator cage with guidance system by rail system



ASSOCIATED SERVICES WITH THE ELEVATOR SYSTEM

Warning: power lift cages are designed to lift 2 persons up to 45 m. The following services are offered by Petitiean Service:

- Technical support for on-site cage assembly and installation
- On-site assistance for correct use of the elevator system
- Maintenance contracting



MOBILE EQUIPEMENT Mobile Rings

DESCRIPTION | DECISIVE ADVANTAGES



The mobile headframe is a product designed to raise the floodlights to the top of masts for the lighting of large spaces (utilisation phase), and to lower them to the ground for maintenance purposes (this operation can only be done when winds are under 45 km/hr).

It includes the fixed part at the top of the mast , the mobile part (ring, suspension cable,...), the winch and the electrical equipment.

It is mainly designed to be equipped with floodlights, but can also be fitted with any other equipment items, such as cameras, obstruction lights, bill boards, etc.

- Suitable for 360° lighting
- 8 to 32 floodlights depending on the model
- Adapted for masts up to 50 meters high
- Ground maintenance= no need of qualified personnel for working at a height
- Simple, safe and reliable system during operational phase as well as during manœuvre phase
- Complete electrical equipment supplied = just need to power the mast and to connect floodlights
- Floodlights and control gear boxes are mounted on bolted arms onto the ring = more flexibility in the floodlights arrangement and their lighting (allows to configurate your lighting according to your need)
- Control gear boxes are on the mobile ring= better efficiency in terms of switching, no need of an electrical control cabinet at the bottom of the mast
- Low wind surface area (no platform on top, no access) = light masts, small dimensions and reduced cost
- Minimal floor space = masts may be installed in constricted areas
- Ease of transport and deployment of the winch
- Withdrawal ring optionnally available = suitable for cyclonic areas

| MODEL | MOBILE PART DIMENSIONS | MAX NUMBER OF FLOODLIGHTS |
|---------|---------------------------|------------------------------|
| M0B 302 | Square frame 800x800 | 8 |
| CM62 | Ø1250 mm ring | 12 |
| CM61 | Ø1250 mm ring | 16 |
| CM10 | Ø1750 mm ring | 26 |
| CM20-1 | Ø1900 mm ring | 32 |
| CM20-2 | Ø1900-3500 mm ring | 32 |

CONFORMITY

Our mobile rings are EC stamped (certification supplied with the installation, operating and maintenance manual) in conformity with Machinery European Directive 2006/42/CE.

ASSOCIATED SERVICES TO MOBILE RINGS

An installation, operating and maintenance manual is systematically provided with our mobile rings.

PETITJEAN SERVICES technicians can operate for additional services in terms of installation, first putting into service, maintenance and service of the equipments.

MOB 302

As part of an ongoing drive for improvement, PETITJEAN has designed a new generation of mobile system with the following main features : simplicity, reduced cost, robustness, standardised product and ease of installation.

MOB 302 is a simple and low-capacity mobile ring allowing ground maintenance at a lower cost.

- Its square frame is adapted for a one-side or two opposite-sides lighting, but also 360° lighting with the particular disposition of floodlights holders arms.
- Suspended by two stainless steel cables. The mobile part is not locked to the fixed part on top of the mast.
- Manœuvre ring is made by a complete operating unit (motor and winch equipped with a traction cable).
 The electrical helical worm gear motor is removable and is used for several masts.
- MOB 302 simplicity is not done to the detriment of safety : mobile part is clamped to a transition plate, that is locked to the door frame : the locking pin can be removed only when the winch is in place and the cable held.

TECHNICAL DESCRIPTION

- 1 Mobile part
- 2 Arms supporting the floodlights
- 3 Stabiliseurs
- 4 Fixed part with 2 pulleys
- 5 2 suspension cables
- 6 1 or 2 electrical cables
- 7 Lift fixture
- 8 Clamping plate
- 9 Winch
- **10** Fixed box (with 1 or 2 sockets)
- 11 raction cable connected to the lift fixture

| DESCRIPTION | M0B302 |
|-----------------------------|---|
| Mobile part dimensions | Square frame 800x800 |
| Fixed part section | 50x50x3.2 |
| Maximum total net load | 300 |
| Number of electrical cables | 1 or 2 |
| Type of electrical cables | Round electrical cables 5*2.5 mm ² |
| Floodlight maximum powe | 6KW per cable |
| Number of suspension cables | 2 |
| Type of winch | Removable ** winch TP300 |
| Winch capacity (kg) | 320 |
| Mast maximum height (m) | 30 |
| Max Number of floodlights | 8 |

*These values are given for information only. Values for a 1000W floodlight, 0.20m² and 15kgs (and 18kgs more for control gear boxes), sitting and hanging position, 360° lighting.









MOBILE EQUIPEMENT MOBILE RINGS

CM 62



CM62 mobile ring is a simple and standardised model:

- Suitable for masts height of 20,25,30 and 35m
- Maximum number of floodlights : 12 fixed on two rows
- The fixed part , in galvanized steel, is bolted on top of the mast
- The floodlights and their control gears are not directly fixed on the ring, but on 600 mm length arms
- During operational phase, mobile ring is locked onto the fixed part by a latching hook
- $\hfill \ensuremath{$ The mobile part is suspended by three Ø 5 mm marine-grade stainless steel cables
- Complete electrical equipment supplied
- Manœuvre ring is made by a complete operating unit (motor and winch equipped with a traction cable). The electrical helical worm gear motor is removable and is used for several masts



TECHNICAL DESCRIPTION

- 1 Mobile ring
- 2 Arms supporting the floodlights
- 3 Latching hook
- 4 ring guide (This one in high position penetrates into the guiding sleeve of the fixed part)
- 5 Fixed part with pulleys
- 6 3 suspension cables
- 7 1 to 3 electrical cables
- 8 Lift fixture
- 9 Removable winch
- **10** Tight vertical fixed box (1 per electric cable)
- **11** Traction cable connected to the lift fixture





| DESCRIPTION | СМ62 |
|-----------------------------|---|
| Mobile part dimensions | Ø1250 mm ring |
| Fixed part section | 50x50x3.2 |
| Maximum total net load | 670 |
| Number of electrical cables | 1 to 3 |
| Type of electrical cables | Round electrical cables 5*4 mm ² |
| Floodlight maximum power | 12KW per cable |
| Number of suspension cables | 3 |
| Type of winch | Removable** winch TP600 |
| Winch capacity (kg) | 680 |
| Mast maximum height (m) | 35 |
| Max Number of floodlights | 12 |

*These values are given for information only. Values for a 1000W floodlight, 0.20m² and 15kgs (and 18kgs more for control gear boxes), sitting and hanging position, 360° lighting.

**integrated or semi-integrated winch optional



MOBILE EQUIPEMENT MOBILE RINGS

CM 061- CM 10 - CM 20_



Designed by PETITJEAN, CM 61, 10 and 20 mobile rings are manufactured to support a large number of floodlights, allowing maintenance on the ground level while guaranteeing a high level of security.

- Mobile rings suspended on 3 marine-grade stainless steel cables
- Steel Cables linked to a transition connected to 2 traction cables that are rolled on to a double drum winch
- In operational position, the system is locked to the fixed part by a latching hook mechanism (3 hooks)
- 1 to 6 flat electrical cables
- Traction equipment is housed inside the shaft
- Fixed part is covered by a round piece of aluminium
- Semi integrated winch with removable motor. One motor can be used on several masts



| | СМ | СМ061 СМ10 | | CM20-1 | | | CM20-2 | | | | |
|-------------------------------|-----------|---------------|-----------|--------|-----------|------|--------|-----------|------|------|------|
| Mobile part dimensions (mm) | 1250 | | 1750 | | 1900 | | | 1900-3500 | | | |
| Fixed part section | 50x50x3.2 | | 55x55x5.0 | | 70x70x5.0 | | | 70x70x5.0 | | | |
| Maximum total net load (kg) | 670 | | 1400 | | | 2000 | | | 1764 | | |
| Number of electrical cables | 1 t | o 3 | 1 to 6 | | 1 to 6 | | | 1 to 6 | | | |
| Type of winch | S47 | S57 | S57 | S67 | S77 | S57 | S67 | S77 | S57 | S67 | S77 |
| Winch capacity (kg) | 500 | 750 | 750 | 1200 | 1750 | 750 | 1200 | 1750 | 750 | 1200 | 1750 |
| Mast maximum height (m) | 30 | 0 40 40 40 50 | | 40 | 40 | 50 | 40 | 40 | 50 | | |
| Max Number of floodlights (*) | 1 | 6 | 26 | | | | | 2 | | | |

*These values are given for information only. Values for a 2000W floodlight, 0.20m² and 15kgs (and 20kgs more for control gear boxes), sitting and hanging position, 360° lighting.

TECHNICAL DESCRIPTION

Bottom mast

- 1 Helical-worm gear unit, irreversible, waterproof, lubrificated for life, with 2 output shafts for drums with their traction cables.
- 2 Adapter with coupling
- 3 2 stainless steel (AISI 316) traction cables, with a safety coefficient of 6
- 4 Guide rollers for traction cables and protection deflector
- **5** ransition plate for traction / suspension cables
- 6 2 stainless steel (AISI 316) suspension cables, with a safety coefficient of 6
- 7 Limit switch for locking and unlocking the mobile part
- 8 Fixed supply box
- 9 Cable gland for power cable
- 10 General switch
- 11 Socket for connection of the floodlights power cable, or for operating unit
- **12** 8 or 12 wires cable

Operating unit

- 13 Operating unit
- 14 Ac motor with disc brake
- 15 Operating unit to be fixed directly on fixed supply box (8), instead of electrical cable, with load limiter and pahses controller Remote control switch (with 5m cable)

Head mast

- 1 Mobile ring
- 2 Latching hooks
- 3 Guide rollers
- 4 Guiding rings
- 5 Arms for floodlights and ballasts fixation
- 6 Connecting box
- 7 Fixed part with polyamide pulley on bal bearing for suspension cables, and aluminium rollers for electrical cables









MOBILE EQUIPEMENT MOBILE RINGS

WITHDRAWABLE MOBILE RING



For countries or regions prone to hurricanes, PETITJEAN has developped a withdrawable mobile ring range:

The ring is lowered to the ground level and then the part supporting the floodlights can be withdrawn and fixed to the bottom mast, while the other part is raised to the top. Floodlights are secured on the ground level and no cable stays outside along the mast.

GUIDED MOBILE RING



Each mobile structure is designed and manufactured according to its lighting equipment, allowing a totale adaptation to customer's requirements.

An aluminium star-shaped ring is fixed on a galvanized steel mobile head.

The mechanism slides up and down on a anodised aluminium guiding rail on a mobile cart *(see on next page the full description of this system)*.

This system allows to lower floodlights to the ground level even in strong wind conditions.



LOWERABLE SYSTEM FOR LIGHTING

The lowerable system of lighting columns offers an efficient and economical solution for the lighting of large spaces. It fulfills all official norms with regards to the operational safety and maintenance of lighting columns.

Maintenance of the lighting devices is made from the ground, thanks to the specific equipment mounted on steel masts. The system is designed according to the load at the top of the pole. The set support of lighting is mounted on the trolley along an anodized aluminium profile and is fixed upon the mast on its whole height.

APPLICATION AREAS

Sports facilities = Ports = Airports = Motorways interchanges = Video-surveillance = Etc

SIMPLICITY

- Exploitation simplified without external manpower, no electrician required)
- Manpower reduced and no specific qualification is required
- Reclining any time even by strong wind
- No use of lifting or elevators
- Power supply permanent allowing the test of the lighting on the ground
- Highly recommended to hard-to-reach areas

SECURITY

 Breaking parachute system patented in case of failure of the traction cable or winch

MULTIPURPOSE

- Multi purpose support : as video, lighting, antennas, loud speakers, flags, walls ...
- Possibility of deported loads thanks to roller bearings longitudinal and on the side
- On any type of pole, walls, bridges ...
- For installation on new or existing steel masts

NICE DESIGN

They are composed of:

- $\scriptstyle \bullet$ a stainless steel mechanical head with a return pulley and two stabilization pins of the mobile in stainless steel
- a traction cable
- An anodized guiding rail system which ensures the guiding of the mobile structure and flat cable
- A mobile cart in aluminum section, guided by slide rails with security parachute braking self-locking double jaw on the wings of the rail/ instantaneous action in case of breaking of the traction cable
- An electrical equipment comprising fat electrical cable feeding the floodlights, a junction box to
 plug the floodlights and the limit switches
- A traction group with an irreversible worm gear winch
- A portable geared motor with a rapid setting up usable for various masts.







15



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PETITJEAN, FORCES DEDICATED TO YOUR SERVICE

Petitjean confirms its commitment to its partners beyond mast manufacturing.

As a reference player on the engineering and design of masts market, PETITJEAN offers its expertise to different applications along with project owners, project management and installers.

| Assembly assistance | 72 |
|----------------------------------|----|
| Petitjean services | 74 |
| Our expertise is at your service | 75 |



ASSEMBLY ASSISTANCE



The everyday task of PETITJEAN technical and sales teams is to advise clients on the choice of the products and the commissioning of its products.

The PETITJEAN business service can provide a range of other services on request.

Once a lighting high mast has arrived on site, it has to be installed quickly and efficiency. PETITJEAN SERVICES assembly assistance staff work together with the installation companies to coordinate the various service providers and help with the actual assembly by supervising the assembly teams.

The installation of a mast may also be an opportunity to request training for the persons who will have to deal with its maintenance. PETITJEAN SERVICES will provide you with the know-how and support necessary to help your own people developping their technical expertise. Our technical team will also help upgrade your operators knowledge of safety regulations.



Unloading is carried out in accordance to the installation site and in the order in which parts have to be assembled.



The masts are assembled - one weld on the other - at the jobsite, upper section on top of the lower section.



Fitting the sections together is done by force, using a winch, until they reach a minimum jointing depth.



Once the assembly is completed to the ground, the erection can be started.



The lift crane must setting down the mast on the foundation block with the highest precision.



Flange plate fixation on the foundation block.



PETITJEAN SERVICES

PUT OUR EXPERTISE AT YOUR SERVICE

The company's goal is to put its expertise and industry insight at your service to better meet your expectations. In order to ensure and optimise its products performance and reliability, Petitjean offers a customized **support programme that combines consulting, regulatory audit and monitoring, inspection and maintenance, installation and infrastructure services, training**.

As specialists, we put our experience at your service. Petitjean reliable technical staff will support you whatever the type of product you are using.

Our field experts are authorized to operate on any kind and size of masts. We put our extensive and comprehensive expertise (gained over long years of experience into the management and planning of projects) at your service. Our manufacturer know-how is your advantage.



Safety should not be neglected. In order to comply with safety legal regulations, you must maintain your equipment in good working order and condition.

REGULATORY AUDIT AND SURVEILLANCE

Existing legislation justifies that you meet the regulatory maintenance obligations and recommandations.

Thus, the assurance of observance of all standards and regulations requires a careful and regular inspection of your equipment.

Petitjean will provide you with advice and support. Petitjean experts will prepare specific maintenance programmes for each product, based on proven methods to make sure that your equipment will meet all safety standards.

To grant an optimum resistance over time is a necessary condition for enhancing the mast performances, but it is also a requirement regarding regulatory obligations.



| | Regulatory | Recommendation |
|---------------------------------|---------------|------------------|
| FOOT POLE | - | EVERY 3 YEARS |
| FIXED LIGHTING | EVERY YEAR | - |
| HINGED POLES | - | EVERY 3 YEARS |
| ACCESS VIA NON-SKID STEPS | EVERY YEAR | - |



TECHNICAL EXPERTISE

The masts generally have a service life of 25-40 years under normal conditions of use and and maintenance. Nevertheless, masts are subject to certain stimuli and to an absence or insufficient maintenance which can reduce this duration.

In order to maintain the efficiency and the safe use of masts installed for several years, we propose a technical expertise of control allowing to make a complete diagnosis.

Phenomena such as the fatigue cracks occurrence, excessive loads, improper tightening, etc., gradually reduce the strength of the mast and may lead to the fall of the mast, thereby engaging the owner's liability due to the damages which may result.

INSPECTION AND MAINTENANCE

Regular inspection and maintenance of your equipment can significantly extend its lifetime. Petitjean specializes in the inspection and maintenance of poles, masts, and telecommunication towers of all kinds. Thanks to our long years of experience, we offer the reliability that you expect and require.

Depending on the outcome of the assessment, we will recommand preventive and corrective maintenance actions.

Petitjean provides interventions in order to maintain your equipment in good working condition, and bring it up to the security standards and legal regulations.

If you are keen on minimizing life-cycle costs, then our team of technicians will help you upgrade your equipment.

INSTALLATION AND INFRASTRUCTURE SERVICES

Petitjean offers costomized support at the mast installation stage.

We grant in-time execution of all work, including loading and transportation, assembly and installation of the poles, up to a successful technical acceptance by the civil-engineering authorities. Our experienced project managers can supervise and coordinate the various stakeholders to achieve a fast and smooth execution, and serve as the competent contact partner during the entire project phase.

A diagnosis may be performed to assess the resistance and the performances of a mast over time. This expertise allows us to advise you through the inventory of parts which should be changed, and preventive actions which should be carried out. Our technical team will also assess their degree of urgency for an improved planning and coordination of maintenance operations.

TRAINING

Petitjean can offer an accompaniment and a technical support in all your projects throughout the entire lifetime of your equipment. The installation of a mast or its inspection may also be an opportunity to request training for the persons who will have to deal with its maintenance.

Petitjean will provide you with the know-how and support needed to help your own people developping their technical expertise. Our technical team will also help upgrade your operators knowledge of safety regulations.







UTILITIES HIGH MASTS

For almost 60 years, PETITJEAN has been a trusted name in utility structure production.

Forged out of reliable and experienced 'in house' design and cutting edge production technology, all of our products represent the forefront of steel structure construction..

| Transmission poles | 78 |
|--------------------------|----|
| Telecommunications poles | 79 |



UTILITIES HIGH MASTS

TRANSMISSION POLES





Our range of transmission monopoles is completely suited for today's international utility market.

Our transmission products, or Transpole', are of high strength, address major concerns such as safety and reliability, and are available in heights up to 83M (272 ft) and voltages up to 500 kV.

For more than 30 years, we have gained valuable experience in the transmission market.

Over this period, we have supplied our products to all corners of the world and to various international utility providers.

We believe that no two customers are alike. This is why we produce a completely tailored design for your individual project.

This 'build-to-suit' approach enables us to accommodate any specific national standards, and to produce a much more effective end product.

TELECOMMUNICATIONS





CELLULAR

- supports cellular transmitter and receiver appliances galvanized steel design
- typically in height of 20 80M
 (65 262 ft)
- custom engineered to client specifications
- integrate the landscape with appropriate disguising accessories





INTERNATIONAL COMMERCIAL NETWORK

NORTH AMERICA - OCEANIA PACIFIC- SOUTH AND CENTRAL AMERICA - SOUTH EUROPE - FRENCH POLYNESIA

Christian CAVALER0

Tel +33 (0) 3 25 71 32 26 Fax +33 (0) 3 25 71 32 84 Christian.cavalero@petitjean.fr

NORTH EUROPE - FRENCH OVERSEAS DEPARTMENTS MADAGASCAR

Céline CUVILLIER

Tel +33 (0) 3 25 71 32 96 Fax +33 (0) 3 25 71 32 84 Celine.cuvillier@petitjean.fr





AFRICA

PETITJEAN DAKAR Azur 15 Building Bld N'Dijly M'Baye - DAKAR (Senegal)

Axel DOS SANTOS

Tel : +221 33 829 64 58 Cell : +221 78 125 12 05 +33 (0)6 16 68 11 87 ads@petitjean.fr contactafrique@petitjean.fr

ASIA-MIDDLE-EAST- RUSSIA AND CENTRAL ASIA- UNITED KINGDOM AND IRELAND

Guillaume THOMIS

Tel +33 (0) 3 25 71 32 33 Fax +33 (0) 3 25 71 32 84 Guillaume.thomis@petitjean.fr





AL BABTAIN France SAS PETITJEAN – 52 avenue du Maréchal Leclerc CS60010 – 10121 Saint André les vergers – France

Tel : 33 (0) 25 71 32 00 / Fax 33 (0) 3 25 71 32 90 info@petitjean.fr

PETITJEAN, A COMPLETE OFFERING, WITH SOLUTIONS ADAPTED TO DIFFERENT MARKETS REQUIREMENTS

DECORATIVE AND ARCHITECTURAL LIGHTING POLES

A complete range of decorative poles in harmony with urban universe



FUNCTIONAL COLLECTION

The largest range of functionnel steel and aluminium masts and columns. The quality/price ratio The availability of product







THE INNOVATION DYNAMIC

OYA new solar range : The solution to energy saving 100% autonomous lighting











