

INGAL **EPS**

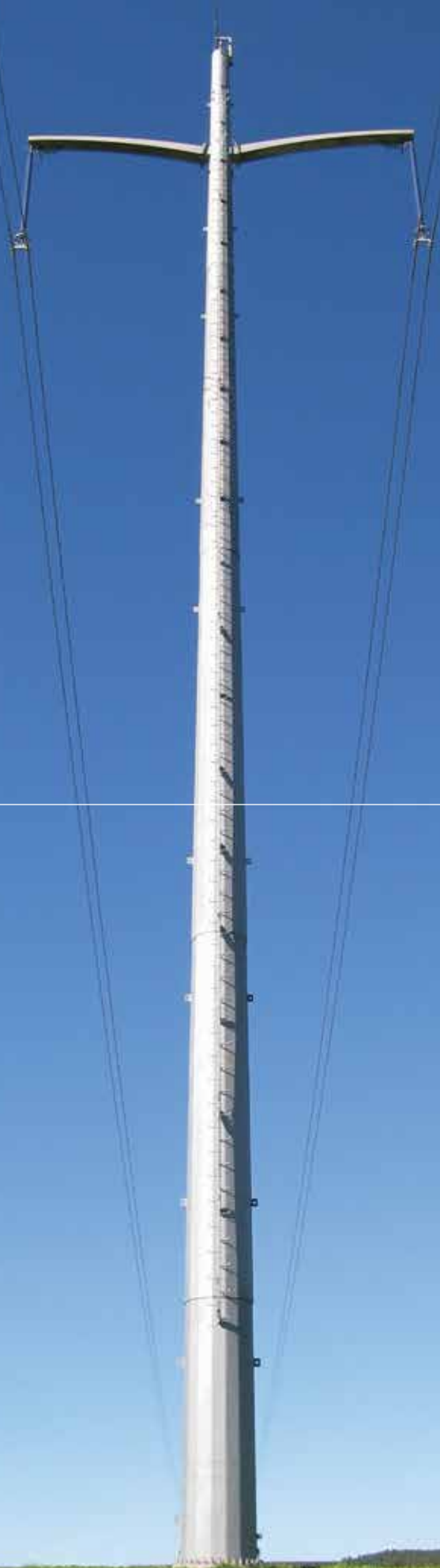
A valmont COMPANY



Utility Poles



>> Oceania's most experienced and versatile supplier of quality, engineered overhead line structures.



INGAL **EPS**

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At INGAL EPS, we've been designing and producing utility poles since the early days of the company's start-up back in 1969; producing octagonal distribution poles for the Western Australian utility market. Over the years we've grown significantly and poles with ultimate tip loads approaching 900kN are now not uncommon.

INGAL EPS has a dedicated utility structure design team, quality assured manufacturing processes and superior before and after sales service. INGAL EPS is now established as Oceania's most versatile utility pole supplier. No other overhead line structure company can cover the full range of structures we can; from our standard range of distribution poles through to the most detailed and heavily loaded structures you could possibly need.

The engineering and raw materials that go into our structures are second to none and you have the comfort of knowing your structures are backed by the experience and security of the largest pole company in the world.

Whatever you need, we've got it covered.



Standard Poles

INGAL EPS' Standard Utility Poles are the lightest poles available across the full range of length and tip loads. All of the standard range conforms to AS/NZS standards and ASCE/SEI 48-11. The length and tip loads of the standard range allow INGAL EPS steel poles to be a direct replacement for most timber and concrete poles, with the addition of some significant advantages.

Our standard range of in-ground and base plate mounted poles come with the offer of PLS Pole data to give asset owners and consultants real-time checking of our structures at the desktop.

Key Benefits

- Lightest poles across the full range of length and tip loads
- Conform to all relevant AS/NZS standards
- Conform to ASCE/SEI 48-11
- Impervious to insects and rot
- Non-combustible with proven bush fire performance
- Tapered design enables self-cleaning during rainfall
- Fully recyclable
- Self-bonding
- PLS Pole data available

Standard Features

In-Ground Mounted

- 12-sided pole shaft
- Welded top cap
- Mounting holes (to your specification if required)
- Identification plate
- M12 earth point 250mm above the nominal ground line
- M24 nut 250mm above the nominal ground line (to assist lifting)
- Additional in-ground corrosion protection 200mm above to 400mm below the nominal ground line
- Anti-sink straps
- Hot dip galvanised finish

Standard Features

Base Plate Mounted

- 12-sided pole shaft (40kN to 80kN)
- 16-sided pole shaft (100kN & 120kN)
- Welded top cap
- Mounting holes (to your specification if required)
- Identification plate
- M12 earth point 250mm above the pole base
- Two lifting gussets on the base plate
- Anchor bolts, templates, nuts & washers
- Hot dip galvanised finish

Pole Shaft and Top Cap

Pole shafts are manufactured from sheet or plate steel that has a minimum tensile strength of 450MPa. The welded top cap is usually made from Grade 250 equivalent steel or greater and is not a structural element of the pole. Shafts are all 12 and 16-sided to allow flat mounting faces for lateral stability and ease of mounting cross arms and other hardware.

Mounting Holes

Poles can be supplied with or without mounting holes. Drilling mounting holes at the time of dressing a pole is simple and carried out in very much the same way as a timber pole. When holes are drilled post galvanising, we recommend the use of an organic zinc rich primer on the exposed surfaces prior to assembly.

Standard steel poles could have 22mm through-holes (two holes at the same level and at 180 degree apart), every 75mm down the pole with negligible affect on the strength. In general, 22mm holes could be spaced closer at 50mm apart for groups of six to ten through holes without significantly affecting the design capacity of the overall pole.

Generally up to four to eight 22mm holes on adjacent flats of the pole could be placed at the same level if required. The section capacity at that level will be slightly lower but generally the overall pole design capacity should still be able to be achieved.

Additional In-Ground Corrosion Protection

Hot dip galvanising provides an excellent means of corrosion protection above ground and in many circumstances this is all that is required below ground when direct burying poles. However, in some areas soil conditions are such that additional in-ground protection is desirable to extend the life of the pole.

The rationale behind additional in-ground corrosion protection is that by separating soil and oxygen from the metal, you eliminate oxidation.

Empirical evidence gathered over years of experience and research into conditions and performance of products in other markets extending back much further has led INGAL EPS to recommend these two options for additional in-ground protection; concrete encasing or a high quality polyurea coating.

Concrete encasing is a time proven performer for additional ground line protection. Concrete encasing is not to be confused with foundation mounted poles as encasing is only required from just above the ground line to a depth of around 400mm to 600mm to provide additional protection. It is important to note that when finishing off the concrete above the ground line, a smooth, tapered surface is recommended. This ensures that any contaminants are readily washed away from the pole interface with the concrete during rainfall.

Polyurea coatings also provide a tough barrier between the pole and the soil with the additional benefit of not requiring concrete on site for the pole installation. All standard poles are supplied with a polyurea coating that extends from 200mm above the nominal ground line to 600mm below.

Whether you choose one of our recommendations or specify based on your own preferences, INGAL EPS can apply it so it's ready to go in the ground when it's delivered.

Earth Point

Prior to galvanising, an M12 steel nut is welded to the pole 250mm above the nominal ground line to serve as an earth point. A hole is drilled in the pole prior to welding the nut on to allow clearance for an M12 bolt to pass through the nut.

Lifting Points

In-ground poles up to 3.2T in total weight are manufactured with an M24 nut welded to the pole at 180 degrees to the M12 earth point. The M24 nut is provided to assist in the pole lifting and installation, as detailed in the applicable INGAL EPS Technical Instruction. The safe working load of the nut is limited to 3.2T as the lifting eyebolt recommended in the relevant Technical Instruction is limited to 3.2T. If using a different lifting eyebolt than recommended by INGAL EPS, care should be taken to ensure the safe working load is modified to suit.

In-ground poles above 3.2T in total weight are supplied with a lifting lug welded to the pole face. The safe working load of this lug is 11.0T and is suitable for lifting all in-ground poles over 3.2T in the standard range.

For base plate mounted poles, two lifting points are provided at the base of the pole in the form of a gussets welded between the base plate and the pole shaft. The gussets have a 32mm hole drilled into them to allow for the attachment of a shackle.

Anti-Sink Straps and Plates

All in-ground poles are provided with anti-sink straps or a plate to attach across the bottom of the base section. Distribution poles are supplied with a single strap and sub transmission/transmission poles with two straps or an anti-sink plate (depending on the weight & load capacity of the pole). Straps and plates are hot dip galvanised and are provided with securing bolts to attach to the pole prior to installation.

Hot Dip Galvanising

All hot dip galvanising is carried out to conform to ASTM A123 and in doing so automatically meets the minimum coating thickness requirements of AS/NZS 4680.

Cross Arms

Timber, steel and composite cross arms can all be mounted to INGAL EPS steel poles in virtually the same manner as they are mounted to timber poles. No special brackets or cross arm modifications are required.

Transformer Mounting and Transition Arrangements

The sufficiency of a steel pole to take a transformer is governed by the moment capacity of the steel section at and below the transformer mounting position and in any case the steel pole's ability to carry moment is not inferior to equivalent timber or concrete products.

Similarly, you can treat INGAL EPS steel poles in the same manner for transition cables as you would with a timber pole. The only difference need be the use of a drill bit suitable for drilling steel instead of timber.

Ultimate Tip Loads

All ultimate tip loads for standard poles conform to both AS/NZS and ASCE standards for steel pole structures. The design tip load allows for the pole self-weight and assumes no additional vertical load for distribution poles and a small nominal vertical load for sub-transmission poles. The effect of vertical load should be considered in assessing the suitability of a specific tip load rated pole. INGAL EPS can assist with this if required.

Pole Assembly and Handling

Poles with an overall length above 12.5m are supplied in multiple sections. These poles require joining (slipping). The pole slipping and handling process is quite simple and Technical Instructions are available. INGAL EPS staff can also be made available for on-site instruction.

Note that although a measurement is used to check the pole has been slipped properly, all slip joints are completed to a compressive force applied by a wire rope hand winch (or hydraulically) first. After assembly it is safe working practice to temporarily brace the sections together for a crane or helicopter lift. If any aspect of these two points is unclear, please contact INGAL EPS for technical assistance.

Pole Installation

The installation process is very much the same as for other pole types used by electrical utilities. If required installation instructions are readily available from INGAL EPS.

Product Codes – In-Ground Poles, Distribution

In-Ground Poles, Distribution					
9.5m	11.0m	12.5m	14.0m	15.5m	17.0m
DP095016	DPI10016	DPI25016	DPI40016	DPI55016	DPI70016
	DPI10024	DPI25024	DPI40024	DPI55024	DPI70024

DP=Distribution Pole 095=9.5m 016=16kN

Product Codes – In-Ground Poles, Sub Transmission & Transmission

In-Ground Poles, Sub Transmission & Transmission								
18.5m	20.0m	22.0m	24.0m	26.0m	28.0m	30.0m	32.0m	34.0m
STPI85024	STP200024	STP220024	STP240024	STP260024	STP280024	STP300024	STP320024	STP340024
STPI85040	STP200040	STP220040	STP240040	STP260040	STP280040	STP300040	STP320040	STP340040
STPI85060	STP200060	STP220060	STP240060	STP260060	STP280060	STP300060	STP320060	STP340060
STPI85080	STP200080	STP220080	STP240080	STP260080	STP280080	STP300080	STP320080	STP340080

STP=Sub Transmission/Transmission Pole 185=18.5m 024=24kN

Product Codes – Base Plate Poles, Sub Transmission & Transmission

Base Plate Poles, Sub Transmission & Transmission					
20.0m	22.0m	24.0m	26.0m	28.0m	30.0m
STPBP200040	STPBP220040	STPBP240040	STPBP260040	STPBP280040	STPBP300040
STPBP200060	STPBP220060	STPBP240060	STPBP260060	STPBP280060	STPBP300060
STPBP200080	STPBP220080	STPBP240080	STPBP260080	STPBP280080	STPBP300080
STPBP200100	STPBP220100	STPBP240100	STPBP260100	STPBP280100	STPBP300100
STPBP200120	STPBP220120	STPBP240120	STPBP260120	STPBP280120	STPBP300120

STP=Sub Transmission/Transmission 185=18.5m 024=24kN





Custom Engineered Poles

INGAL EPS has a long history of custom designing utility poles for overhead power lines. More often now there is a need to install structures in confined easement spaces and without stays. No load, span or height is outside our capability to design and manufacture and we work closely with utilities, consultants and contractors to help them achieve optimal outcomes for their unique projects.

Steel poles are an aesthetic alternative to traditional towers and offer far greater corrosion resilience due to the self-cleaning nature of a tapered structure. Steel poles can be designed for use to be installed in lieu of towers without needing to compromise on height and span lengths and offer the advantages of a much smaller easement and greater public acceptance.

Many pole manufacturers are limited in the structure lengths they can produce. Longer spans enable line designers to minimise the use of structures and maximise spans to match the limits of the conductor being used. Spacing can be achieved without consideration of pole strength and INGAL EPS can design a pole to meet any loading requirement you have as the conductor strength will always be the limiting factor.

Working with load trees or ultimate tip loads, we can offer optimised structures that conform to all AS/NZS standards and/or ASCE 48-11, and because of the tapered design of our poles and the grade of material used in our designs, INGAL EPS steel poles are invariably the lightest pole structures available for any transmission line.

Key Benefits

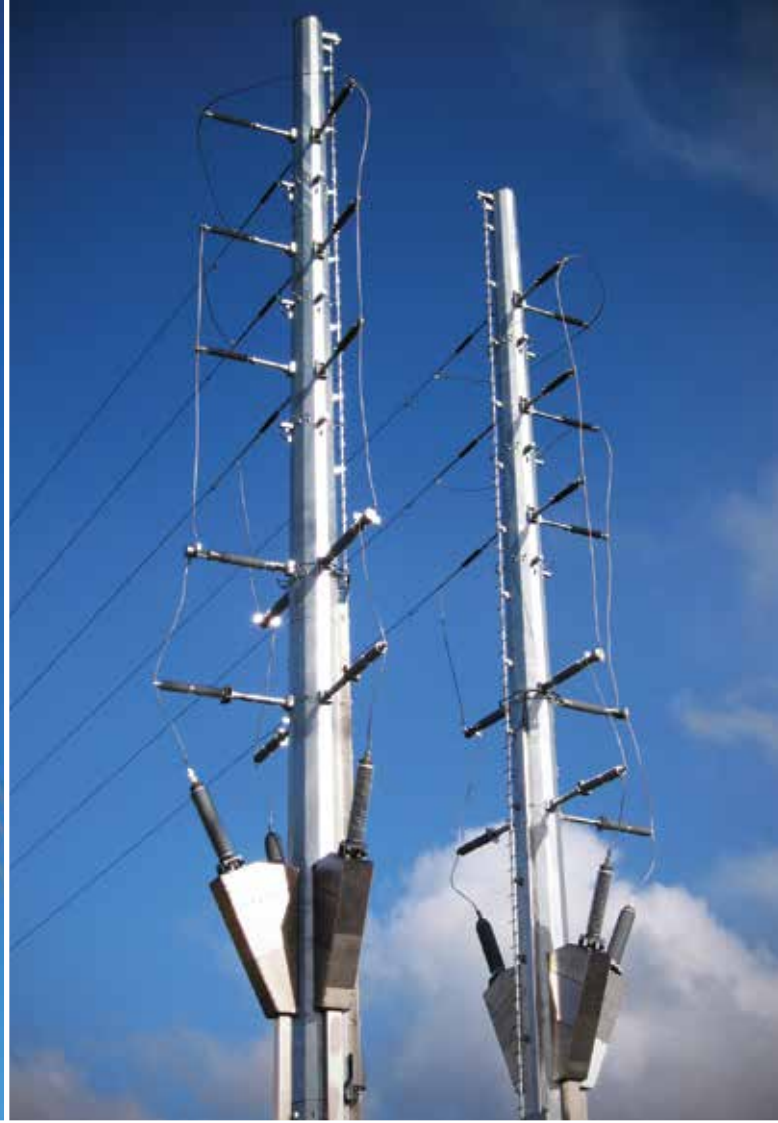
- Effectively no limit to the height and strength of pole that we can produce
- Lightest poles for any length and tip load
- Conform to all relevant AS/NZS standards and/or ASCE 48-11
- Non-combustible with proven bush fire performance
- Tapered design enables self-cleaning during rainfall
- Impervious to insects and rot
- Fully recyclable
- Self-bonding

Options and Accessories

- Cross arms
- OPGW extensions
- Load rings
- Stand-off insulator brackets
- Climbing rungs, stiles and ladders
- Rest platforms
- Other items fabricated to the pole as required
- De-Glare dull galvanised finish











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