**LINE/ CONDUCTOR STRINGING MACHINE/EQUIPMENT**

**Scope of work**

The acquisition of a complete hydraulic puller and tensioner machines with equipment for stringing and tensioning overhead conductors. The machines and equipment will be utilised by Major Engineering Works(MEW) Section for building and constructing High Voltage overhead networks/lines when stringing and tensioning of conductors up to 132kV. It will also be used for maintaining networks by restringing and re-conductoring and repairing of High Voltage(HV) overhead networks/lines up to 132kV during breakdowns/emergencies in the North West Operating Unit.

The machines and equipment will provide a sustainable capacity in assisting Major Engineering Works to be able to execute most of Assert Creation and Maintenance & Operations Departments’ HV related projects/scopes. This will assist in alleviating the use of external resources which will result in a huge outsourcing/insourcing cost saving initiative within our Operating Unit.

**Description of the conductor stringing machines/equipment specifications**

The machines comprise of a Hydraulic Puller and Hydraulic Tensioner.

**Hydraulic Puller specifications**

* Fit to pull one rope in stringing operations of overhead lines
* One pair of multi-grooved steel capstans fit for stringing one steel rope
* Machine control panel with dynamometer, preselector of maximum pull force and metercounter
* Plug for electronic instruments
* Safety negative hydraulic brake
* Chassis with rigid axle, overrun brake and drawbar for towing at low speed on workplace
* Hydraulic back stabilisers and manual front stabilisers
* Fittings for anchoring the machineReelwinder fit for 1400mm diameter reel, with automatic ropewinder
* Oil cooling system
* Diesel engine with 84hp/62kW,12V
* Pull performance 60kN maximum pull at a speed of 1.8km/h at maximum pull

**Hydraulic Tensioner specifications**

* Fit to tension one or two conductors
* One pair of steel capstans lined with multi-grooved nylon sectors
* Machine control panel equipped with hydraulic dynamometer and mechanical metercounter
* Device to control low-force tensions(2-20kN)
* Safety negative hydraulic brake
* Two front oscillating conductor-driver with nylon rollers
* Two back fix conductor-driver with nylon rollers
* Rigid axle, tyres, handbrake and drawbar for towing at low speed in workplace
* Stabilisers, share and attachments for anchoring the machine
* Oil cooling system
* Diesel engine with 28kW, with air cooling,12V
* Pull back performance with force of 45kN at maximum speed of 0.8km/h
* Minimum tension force of 2kN and Maximum tension force of 45kN with maximum speed of 5km/h

**The equipment specifications**

* Hydraulic drum drive motors and reel winders to control the reel rotation by either recovering or releasing the conductor which is fed by the hydraulic power unit, fitted with 1 or 2 disc brakes with hydraulic clamp that is controlled by manual pump. The reel diameter ranges from 0.80m-4m, reel width of 1.5m-2.20m
* Drum/Reel stands, one pair of stand to carry weight of 350-1200kg that is fit for steel or wooden reels and useful for a reel and braking it while stringing on the conductor. Each stand to be able to be raised and lowered independently by a hydraulic hand pump. Should have mechanical safe-stops mouted on the jack arm. And lateral supports with ball joints.The dimensions of the reel stands to be between (2,10 x 0.50)m to (3.10 x 0.60)m and the spindle diameter of 45-95mm.
* Antitwisting steel and nylon ropes, square section antitwisting galvanised rope specifically designed for stringing that is made of braided strands and has high resistant to break, flexible, safe and easy to handle with a diameter of 12-13mm.
* Single/Triple pulley block(Running out blocks), fitted with single or three sheaves fit for stringing single-two-three overhead conductors. Aluminium sheaves sheave/s mounted on sealed ball bearings and grooved lined with nylon sectors, neoprene awith attached swivel hook
* Running earths(Ground device), for use when stringing on steel towers and suitable for conductors up to 32mm diameter. Should be earthed to existing steel work, tension stringing plant or earth spike.
* Pulling and connection grip, dead end and joining stocking for overhead conductors ranging from conductor of 7-50mm. with a total length of 1200-4000mm.
* Swivel and fixed joints, joints for either ropes and conductors. Designed for joining lengths of pulling rope together to provide a continuous length of rope between 10-28mm in diameter. Fit for the passage over the puller capstans.
* Come-a-long clamps, Self-gripping clamps can be used whenever a conductor or cable or a rope made of aluminium, aluminium/steel copper or steel, even if insulated, has to be stretched.  The body is made of high strength hot forged steel in order to minimise weight in comparison with the working load. Suitable for 6mm diameter steel and 7.5mm- 18mm(6-50mm range).
* Lever block hoist, ranges from ¾- 6Ton, are made of steel and equipped with mechanical brake; they are designed to facilitate and accelerate chain positioning operations
* Conductor trimming rigid and bushes(cable stripper), 8KGS. with case (10kgs with all bushings and dies for all sizes of conductor). Light weight construction cuts aluminium strands of ACSAR Conductor up to 43 mm diameter. Adjustable cutter wheel makes cutting safe and predictable. Accommodate all sizes of conductor. Bushing holder for all sizes of conductor bushing.
* Hydraulic cutter, Light weight portable hydraulic cutter. 180 degree rotating head allows for easy cutting positions with 55mm diameter for steel wire, ACSR and copper conductor.
* Steel container, 3m x 10m lockable container with air ventilator on top