

## ANNEXURE-A

### SPECIFICATION FOR SUPPLY INSTALLATION AND COMMISSIONING OF 37 KW DRIVE PANEL FOR LIGHT RUN TEST OF TRACTION MOTOR.

#### SCOPE OF SUPPLY:

##### A) SPECIFICATIONS OF DRIVE.

Rated power	37KW Heavy duty
Input Voltage	380-480V +-10%, 3 Ph AC
Efficiency	90-100%
Power factor cos phi	0.85 - 1
Output current	70 Amp or higher
Output frequency	0 – 500 Hz. (Or better)
Digital inputs	6 (minimum)
Analog inputs	2 (minimum)
Digital outputs	3 (minimum)
Analog outputs	2 (minimum)
Encoder evaluation	Not required.
Breaking resistor	40KW
Drive mounted display/Intelligent operator panel	Yes. (To view and enter parameters/faults. Upload/download backup.)
Communication cable for Drive programming through laptop.	Yes.
Programming software for monitoring/programming drive parameters from Laptop (laptop not in scope)	Yes.

##### B) GENERAL:

- Suitable size RITTAL/BCH/ABB make, ip55 floor mounted control panel for supplied drive with following minimum items Prefitted and wired.
- 100A 3 Ph. Incomer SFU of for safe operation of drive panel.
- 16sq mm, 50m Copper Armored cable suitable for 500VAC.
- Drive input line choke & main contactor suitable for input to drive.
- Suitable no of control relays, Fuse- TBs with indication, control cable etc as required.
- Potentiometer 10 turn Pot for motor speed control.
- 3 Digital LED Display meters: For display of Motor current, voltage and speed.
- R, Y, B Indication for input phase check.
- Digital Voltmeter and ammeter for input supply monitoring.

- j) Panel door mounted Drive start PB, Stop PB, inch FWD PB, Inch Rev PB. Emergency Stop PB.
- k) Panel door mounted Drive run, Stop, Inch FWD, Inch Rev 24VDC LED indication lamps.
- l) 24V 10A DC SMPS regulated power supply for drive panel control.
- m) Side mounted. Single phase 3 pin 5A switch box for Aux 240VAC Power inside panel.
- n) Suitable quantities of lugs, ferrules, Tags for installed devices etc.
- o) Other miscellaneous items not mentioned above but required for commissioning of panel shall be considered in scope of vendor.

#### **C) MAKE OF MAJOR COMPONENTS.:**

- a) Drive: ABB/Siemens/Yaskawa/Allen-Bradley/Schneider/Mitsubishi/Fanuc.
- b) Control Panel: RITTAL /ABB/BCH make only.
- c) Switchgear: ABB/L&T/Siemens/Legrand.only
- d) Drive Fuses: Siemens/ABB/Bussman/cooper. only

#### **SCOPE OF WORK:**

1. Mounting, Installation and commissioning of Drive panel at BHEL Jhansi.
2. Connecting the drive input supply cable from input transformer to drive panel SFU.
3. All Control connections inside panel for drive operation and display of volt, current, speed of motor on digital meters mounted on panel door.
4. Connecting the Drive output cables to the OUTPUT TB.
5. Preparation of 3 phase 10m cable for connection to traction motor.
6. Testing and prove-out of drive panel with 10 no of Traction motor light run tests to the satisfaction of BHEL.
7. Operator training on operation of drive panel to two BHEL Operators and shop executives.

#### **DOCUMENTATION.**

1. Complete electrical circuit diagram for the installed drive panel as commissioned.- 3 Sets.
2. Drive parameter backup in PDF file and archive format.
3. Drive commissioning manual Hard bind copy one set