

General Note: **BHARAT HEAVY ELECTRICALS LIMITED**

(A Government of India Undertaking)
HIGH PRESSURE BOILER PLANT
PURCHASE DEPARTMENT - FOSSIL BOILERS
THIRUCHIRAPALLI - 620014
TAMILNADU (INDIA)

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429-002/A

E-tender 0429-002/A	Collective No.	Enquiry Date Publish	Due Date For Quotation
	2661800269	12.07.2018	23.07.2018
Please quote Enquiry No, Date and due date in all correspondences. This is only a request for quotation and not an order			

Item	Description	Unit	Quantity	Delivery Quantity	Schedule Date
10	3.7kW VVFD for Hoist Application 3.7kW VVFD for Hoist Application Variable Voltage Variable Frequency Drive (VVFD) for 3.7kW Crane duty Motor Application:Crane Hoist Control. Detailed Technical Specifications: 1.0 The VVVF Drive should be dedicated for hoist application. 2.0 The rated output current of the drive should be at 45 deg. C ambient Temperature and maximum operating temperature shall be 55 deg. C. 3.0 Duration on any account (Viz) temperature / carrier frequency should not exceed 15% of rated output current of inverter offered. 4.0 Inverter offered should be provided with accurate brake co-ordination signals. 5.0 Vibration: The drive must be Compliant with JIS C60068-2-6 or IEC 60068-2-6 6.0 In addition to the above crane specific features the inverter shall offer the Following features: 6.01 Rated input voltage & Frequency: 3 Phase, 380-460V, 50/60 Hz. 6.02 Allowable Voltage Fluctuation : +10% to -15%. 6.03 Allowable frequency Fluctuation: +5% to -5%. 6.04 Overload Tolerance : 150% of rated output current for 60s 6.05 Multi Function Digital Inputs: Minimum 8 multifunction digital inputs.(4 inputs shall be dedicated for 4 speed selection) 6.06 Multi Function Relay Output: Minimum 2 multifunction	NO	3.000	3.00	30.07.18



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relay outputs (110V)
6.07 Max. Output Voltage : 3 phase,
380-460V
{Proportion to Input Voltage}
6.08 Max. Output frequency : 400Hz
{Programmable}
6.09 Control method: High carrier
frequency{low noise} sine
wave PWM Technique.
6.10 Control Supply : 110V AC.
6.11 Starting Torque : 200% / 0.3Hz
(Open Loop Vector
Control)
6.12 Speed Control Range : 1:200 (Open
Loop Vector Control)
6.13 Torque limit : Settable through
program {Parameter}
6.14 Output frequency Resolution : 0.01
Hz. / 0.02
6.15 Frequency setting signal
Acceleration/Deceleration
Time : 0.01 to 60 sec.
6.16 Braking Torque : Approx. 20%
{approx. 125% when using
braking Resistor}.
6.17 MAIN CONTROL FUNCTIONS:
a) Auto tuning
b) Momentary loss
restart
c) PID control
d) Drop control
e) DC injection
braking
f) Slip compensation
g) Speed search
h) Excess torque
detection and Torque
limit
i) Multi step speed
operation
j) Accl./Decel. Time
change over
operation.
k) 3 Wire sequence
l) Operation Fault
log
m) Built in Crane
Algorithm /
brake control
logic.
6.18 PROTECTIVE FUNCTIONS:
a) Motor overload
trip
b) Instantaneous
over current trip
c) DC bus protection
d) Input supply Over
/ Under voltage
trip
e) Power loss ride



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through.

overheat detection &

Drive,DBU,DBR)

circuit protection

open circuit

f) Heat sink

tripping(both

g) Output Short

h) Input / Output

protection

i) Stall prevention

7.0 Keypad of the drive shall be LCD

8.0 The keypad of the VVVF drive shall be panel mounted with

necessary extension wire from the drive.

9.0 DBU of Drive shall be of same manufacturer.

10.0 DBR shall be supplied with thermal overload protection, so

that on excessive temperature the signal shall be sent to

drive and the drive will trip.

11.0 When DBU Power transistor gets shorted then drive needs to

be tripped for that necessary provision must be present.

12.0 Drives shall have protective PCB coating (Conformal coating)

Scope Of Supply:

1. Each VVVF Drive unit should be supplied with Suitable hoist

Dynamic Braking Unit & Dynamic Braking Resistor(atleast 50% of motor KW).

2. The VVVF Drive unit should be loaded with software needed for

Hoist applications in cranes.

3. For Every VVFD drive instruction manual, User manual,

starting guide, necessary parameter catalogues shall be

supplied in Hardcopy manner.

4. DBR shall be 50% of the motor KW.

Resistance calculation value shall be given by supplier. DBR make

shall be either by OEM or OEM recommended.

5. Only YASKAWA, MITSUBISHI, FUJI, L&T, TOSHIBA make of VVVF

Drives are acceptable. Other makes are liable for rejection.

PART- A : PRE- QUALIFICATION CRITERIA

The BIDDER / VENDOR has to compulsorily meet all the following

requirements to get qualified for consideration of the technical offer

for the SUPPLY OF VVVF DRIVES FOR HOIST

APPLICATIONS. If the vendor does

not qualify as per PRE- QUALIFICATION

Value: Fifty-fifty



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CRITERIA, the technical offer of such BIDDER(s) / VENDOR(s) offer will not be evaluated.

1.The BIDDER(s) / VENDOR(s) shall be a Manufacturer or an

Authorised Channel partners having scope with the OEM to carry

out supply and provide field services during the warranty

period of the VVVF DRIVES. The authorisation by the OEM shall

be valid atleast three months from the date of tender opening.

2.Any Deviations in technical specification may lead to

rejection of the offer.

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NO

2.000

2.00

30.07.18

7.5KW VVVF FOR HOIST

APPLICATION

7.5KW VVVF FOR HOIST APPLICATION

Variable Voltage Variable Frequency Drive

(VVVF) for 7.5KW Crane Duty

Motor

Application:Crane Hoist Control.

Detailed Technical Specifications:

1.0 The VVVF Drive should be dedicated for hoist application.

2.0 The rated output current of the drive should be at 45 deg. C

ambient Temperature and maximum operating temperature shall

be 55 deg. C.

3.0 Duration on any account {Viz} temperature / carrier

frequency should not exceed 15% of rated output current of

inverter offered.

4.0 Inverter offered should be provided with accurate brake

co-ordination signals.

5.0 Vibration: The drive must be Compliant with JIS C60068-2-6

or IEC 60068-2-6

6.0 In addition to the above crane specific features the

inverter shall offer the Following features:

6.01 Rated input voltage & Frequency: 3 Phase, 380-460V,

50/60 Hz.

6.02 Allowable Voltage Fluctuation : +10% to -15%.

6.03 Allowable frequency Fluctuation: +5% to -5%.

6.04 Overload Tolerance : 150% of rated output current for

60s

6.05 Multi Function Digital Inputs: Minimum 8 multifunction

digital inputs.(4 inputs shall be

of opening of tenders

Yours faithfully,



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dedicated for 4 speed
selection)
6.06 Multi Function Relay Output: Minimum
2 multifunction
relay outputs (110V)
6.07 Max. Output Voltage : 3 phase,
380-460V
{Proportion to Input Voltage}
6.08 Max. Output frequency : 400Hz
{Programmable}
6.09 Control method: High carrier
frequency{low noise} sine
wave PWM Technique.
6.10 Control Supply : 110V AC.
6.11 Starting Torque : 200% / 0.3Hz
(Open Loop Vector
Control)
6.12 Speed Control Range : 1:200 (Open
Loop Vector Control)
6.13 Torque limit : Settable through
program {Parameter}
6.14 Output frequency Resolution : 0.01
Hz. / 0.02
6.15 Frequency setting signal
Acceleration/Deceleration
Time : 0.01 to 60 sec.
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{approx. 125% when using
braking Resistor}.
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b) Momentary loss
restart
c) PID control
d) Drop control
e) DC injection
braking
f) Slip compensation
g) Speed search
h) Excess torque
detection and Torque
limit
i) Multi step speed
operation
j) Accl./Decel. Time
change over
operation.
k) 3 Wire sequence
l) Operation Fault
log
m) Built in Crane
Algorithm /
brake control
logic.
6.18 PROTECTIVE FUNCTIONS:
a) Motor overload
trip
b) Instantaneous
over current trip
c) DC bus protection

Yours faithfully,



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- / Under voltage
through.
overheat detection &
Drive,DBU,DBR)
circuit protection
open circuit
- d) Input supply Over
trip
e) Power loss ride
f) Heat sink
tripping(both
g) Output Short
h) Input / Output
protection
i) Stall prevention
- 7.0 Keypad of the drive shall be LCD
8.0 The keypad of the VVVF drive shall be
panel mounted with
necessary extension wire from the drive.
9.0 DBU of Drive shall be of same
manufacturer.
10.0 DBR shall be supplied with thermal
overload protection, so
that on excessive temperature the signal
shall be sent to
drive and the drive will trip.
11.0 When DBU Power transistor gets shorted
then drive needs to
be tripped for that necessary provision must
be present.
12.0 Drives shall have protective PCB coating
(Conformal
coating)
- Scope Of Supply:
1. Each VVVF Drive unit should be supplied
with Suitable hoist
Dynamic Braking Unit & Dynamic Braking
Resistor(atleast 50%
of motor KW).
2. The VVVF Drive unit should be loaded with
software needed for
Hoist applications in cranes.
3. For Every VVFD drive instruction manual,
User manual,
starting guide, necessary parameter
catalogues shall be
supplied in Hardcopy manner.
4. DBR shall be 50% of the motor KW.
Resistance calculation
value shall be given by supplier. DBR make
shall be either by
OEM or OEM recommended.
5. Only YASKAWA, MITSUBISHI, FUJI, L&T,
TOSHIBA make of VVVF
Drives are acceptable. Other makes are liable
for rejection.

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NO

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22KW VVVF FOR HOIST
APPLICATION



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22KW VVVF FOR HOIST APPLICATION
Variable Voltage Variable Frequency Drive
(VVVF) for 22kW Crane duty
Motor

Application:Crane Hoist Control.

Detailed Technical Specifications:

1.0 The VVVF Drive should be dedicated for
hoist application.

2.0 The rated output current of the drive
should be at 45 deg. C

ambient Temperature and maximum
operating temperature shall
be 55 deg. C.

3.0 Duration on any account {Viz} temperature
/ carrier

frequency should not exceed 15% of rated
output current of
inverter offered.

4.0 Inverter offered should be provided with
accurate brake
co-ordination signals.

5.0 Vibration: The drive must be Compliant
with JIS C60068-2-6
or IEC 60068-2-6

6.0 In addition to the above crane specific
features the

inverter shall offer the Following features:

6.01 Rated input voltage & Frequency: 3
Phase, 380-460V,
50/60 Hz.

6.02 Allowable Voltage Fluctuation :
+10% to -15%.

6.03 Allowable frequency Fluctuation: +5%
to -5%.

6.04 Overload Tolerance : 150% of rated
output current for

60s

6.05 Multi Function Digital Inputs: Minimum
8 multifunction

digital inputs.(4 inputs shall be
dedicated for 4 speed
selection)

6.06 Multi Function Relay Output: Minimum
2 multifunction

relay outputs (110V)

6.07 Max. Output Voltage : 3 phase,
380-460V

{Proportion to Input Voltage}

6.08 Max. Output frequency : 400Hz
{Programmable}

6.09 Control method: High carrier
frequency{low noise} sine
wave PWM Technique.

6.10 Control Supply : 110V AC.

6.11 Starting Torque : 200% / 0.3Hz
(Open Loop Vector

Control)

6.12 Speed Control Range : 1:200 (Open
Loop Vector Control)

6.13 Torque limit : Settable through



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program {Parameter}

6.14 Output frequency Resolution : 0.01
Hz. / 0.02

6.15 Frequency setting signal
Acceleration/Deceleration

Time : 0.01 to 60 sec.

6.16 Braking Torque : Approx. 20%
{approx. 125% when using
braking Resistor}.

6.17 MAIN CONTROL FUNCTIONS:

restart
braking
detection and Torque
operation
change over
log
Algorithm /
logic.
6.18 PROTECTIVE FUNCTIONS:
trip
over current trip
/ Under voltage
through.
overheat detection &
Drive,DBU,DBR)
circuit protection
open circuit

a) Auto tuning
b) Momentary loss
c) PID control
d) Drop control
e) DC injection
f) Slip compensation
g) Speed search
h) Excess torque
limit
i) Multi step speed
j) Accl./Decel. Time
operation.
k) 3 Wire sequence
l) Operation Fault
m) Built in Crane
brake control
a) Motor overload
b) Instantaneous
c) DC bus protection
d) Input supply Over
trip
e) Power loss ride
f) Heat sink
tripping(both
g) Output Short
h) Input / Output
protection
i) Stall prevention

7.0 Keypad of the drive shall be LCD

8.0 The keypad of the VVVF drive shall be
panel mounted with

necessary extension wire from the drive.

9.0 DBU of Drive shall be of same



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manufacturer.

10.0 DBR shall be supplied with thermal overload protection, so

that on excessive temperature the signal shall be sent to

drive and the drive will trip.

11.0 When DBU Power transistor gets shorted then drive needs to

be tripped for that necessary provision must be present.

12.0 Drives shall have protective PCB coating (Conformal

coating)

Scope Of Supply:

1. Each VVVF Drive unit should be supplied with Suitable hoist

Dynamic Braking Unit & Dynamic Braking

Resistor(atleast 50%

of motor KW).

2. The VVVF Drive unit should be loaded with software needed for

Hoist applications in cranes.

3. For Every VVFD drive instruction manual, User manual,

starting guide, necessary parameter

catalogues shall be

supplied in Hardcopy manner.

4. DBR shall be 50% of the motor KW.

Resistance calculation

value shall be given by supplier. DBR make shall be either by

OEM or OEM recommended.

5. Only YASKAWA, MITSUBHISHI, FUJI, L&T, TOSHIBA make of VVVF

Drives are acceptable. Other makes are liable for rejection.

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NO

3.000

3.00

30.07.18

37KW VVFD FOR HOIST

APPLICATION

37KW VVFD FOR HOIST APPLICATION

Variable Voltage Variable Frequency Drive (VVVFD) for 37kW Crane duty

Motor

Application:Crane Hoist Control.

Detailed Technical Specifications:

1.0 The VVVF Drive should be dedicated for hoist application.

2.0 The rated output current of the drive should be at 45 deg. C

ambient Temperature and maximum

operating temperature shall

be 55 deg. C.

3.0 Duration on any account {Viz} temperature / carrier

frequency should not exceed 15% of rated

output current of

inverter offered.

4.0 Inverter offered should be provided with accurate brake



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- co-ordination signals.
- 5.0 Vibration: The drive must be Compliant with JIS C60068-2-6 or IEC 60068-2-6
- 6.0 In addition to the above crane specific features the inverter shall offer the Following features:
- 6.01 Rated input voltage & Frequency: 3 Phase, 380-460V, 50/60 Hz.
- 6.02 Allowable Voltage Fluctuation : +10% to -15%.
- 6.03 Allowable frequency Fluctuation: +5% to -5%.
- 6.04 Overload Tolerance : 150% of rated output current for 60s
- 6.05 Multi Function Digital Inputs: Minimum 8 multifunction digital inputs.(4 inputs shall be dedicated for 4 speed selection)
- 6.06 Multi Function Relay Output: Minimum 2 multifunction relay outputs (110V)
- 6.07 Max. Output Voltage : 3 phase, 380-460V {Proportion to Input Voltage}
- 6.08 Max. Output frequency : 400Hz {Programmable}
- 6.09 Control method: High carrier frequency{low noise} sine wave PWM Technique.
- 6.10 Control Supply : 110V AC.
- 6.11 Starting Torque : 200% / 0.3Hz (Open Loop Vector Control)
- 6.12 Speed Control Range : 1:200 (Open Loop Vector Control)
- 6.13 Torque limit : Settable through program {Parameter}
- 6.14 Output frequency Resolution : 0.01 Hz. / 0.02
- 6.15 Frequency setting signal Acceleration/Deceleration Time : 0.01 to 60 sec.
- 6.16 Braking Torque : Approx. 20% {approx. 125% when using braking Resistor}.
- 6.17 MAIN CONTROL FUNCTIONS:
- a) Auto tuning
 - b) Momentary loss restart
 - c) PID control
 - d) Drop control
 - e) DC injection
 - f) Slip compensation
 - g) Speed search
 - h) Excess torque braking

Yours faithfully,



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detection and Torque

limit

i) Multi step speed

operation

j) Accel./Decel. Time

change over

operation.

k) 3 Wire sequence

l) Operation Fault

log

m) Built in Crane

Algorithm /

brake control

logic.

6.18 PROTECTIVE FUNCTIONS:

a) Motor overload

trip

b) Instantaneous

over current trip

c) DC bus protection

d) Input supply Over

/ Under voltage

trip

e) Power loss ride

through.

f) Heat sink

overheat detection &

tripping(both

Drive,DBU,DBR)

g) Output Short

circuit protection

h) Input / Output

open circuit

protection

i) Stall prevention

7.0 Keypad of the drive shall be LCD

8.0 The keypad of the VVVF drive shall be panel mounted with

necessary extension wire from the drive.

9.0 DBU of Drive shall be of same manufacturer.

10.0 DBR shall be supplied with thermal overload protection, so

that on excessive temperature the signal shall be sent to

drive and the drive will trip.

11.0 When DBU Power transistor gets shorted then drive needs to

be tripped for that necessary provision must be present.

12.0 Drives shall have protective PCB coating (Conformal coating)

Scope Of Supply:

1. Each VVVF Drive unit should be supplied with Suitable hoist

Dynamic Braking Unit & Dynamic Braking Resistor(atleast 50% of motor KW).

2. The VVVF Drive unit should be loaded with



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software needed for
Hoist applications in cranes.
3. For Every VVFD drive instruction manual,
User manual,
starting guide, necessary parameter
catalogues shall be
supplied in Hardcopy manner.
4. DBR shall be 50% of the motor KW.
Resistance calculation
value shall be given by supplier. DBR make
shall be either by
OEM or OEM recommended.
5. Only YASKAWA, MITSUBISHI, FUJI, L&T,
TOSHIBA make of VVVF
Drives are acceptable. Other makes are liable
for rejection.

50

NO

3.000

3.00

30.07.18

45kW VVFD for Hoist
Application
45kW VVFD for Hoist Application
Variable Voltage Variable Frequency Drive
(VVFD) for 45kW Crane duty
Motor
Application:Crane Hoist Control.
Detailed Technical Specifications:
1.0 The VVVF Drive should be dedicated for
hoist application.
2.0 The rated output current of the drive
should be at 45 deg. C
ambient Temperature and maximum
operating temperature shall
be 55 deg. C.
3.0 Duration on any account {Viz} temperature
/ carrier
frequency should not exceed 15% of rated
output current of
inverter offered.
4.0 Inverter offered should be provided with
accurate brake
co-ordination signals.
5.0 Vibration: The drive must be Compliant
with JIS C60068-2-6
or IEC 60068-2-6
6.0 In addition to the above crane specific
features the
inverter shall offer the Following features:
6.01 Rated input voltage & Frequency: 3
Phase, 380-460V,
50/60 Hz.
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+10% to -15%.
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6.04 Overload Tolerance : 150% of rated
output current for
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6.05 Multi Function Digital Inputs: Minimum
8 multifunction
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dedicated for 4 speed
selection)

6.06 Multi Function Relay Output: Minimum
2 multifunction
relay outputs (110V)

6.07 Max. Output Voltage : 3 phase,
380-460V

{Proportion to Input Voltage}

6.08 Max. Output frequency : 400Hz
{Programmable}

6.09 Control method: High carrier
frequency{low noise} sine
wave PWM Technique.

6.10 Control Supply : 110V AC.

6.11 Starting Torque : 200% / 0.3Hz
(Open Loop Vector

Control)

6.12 Speed Control Range : 1:200 (Open
Loop Vector Control)

6.13 Torque limit : Settable through
program {Parameter}

6.14 Output frequency Resolution : 0.01
Hz. / 0.02

6.15 Frequency setting signal
Acceleration/Deceleration

Time : 0.01 to 60 sec.

6.16 Braking Torque : Approx. 20%
{approx. 125% when using
braking Resistor}.

6.17 MAIN CONTROL FUNCTIONS:

- a) Auto tuning
- b) Momentary loss

restart

- c) PID control
- d) Drop control
- e) DC injection

braking

- f) Slip compensation
- g) Speed search
- h) Excess torque

detection and Torque

limit

- i) Multi step speed

operation

- j) Accl./Decel. Time

change over

operation.

- k) 3 Wire sequence
- l) Operation Fault

log

- m) Built in Crane

Algorithm /

brake control

logic.

6.18 PROTECTIVE FUNCTIONS:

- a) Motor overload

trip

- b) Instantaneous

over current trip

- c) DC bus protection



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- / Under voltage
through.
overheat detection &
Drive,DBU,DBR)
circuit protection
open circuit
- d) Input supply Over
trip
e) Power loss ride
f) Heat sink
tripping(both
g) Output Short
h) Input / Output
protection
i) Stall prevention

- 7.0 Keypad of the drive shall be LCD
8.0 The keypad of the VVVF drive shall be
panel mounted with
necessary extension wire from the drive.
9.0 DBU of Drive shall be of same
manufacturer.
10.0 DBR shall be supplied with thermal
overload protection, so
that on excessive temperature the signal
shall be sent to
drive and the drive will trip.
11.0 When DBU Power transistor gets shorted
then drive needs to
be tripped for that necessary provision must
be present.
12.0 Drives shall have protective PCB coating
(Conformal
coating)
Scope Of Supply:
1. Each VVVF Drive unit should be supplied
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Dynamic Braking Unit & Dynamic Braking
Resistor(atleast 50%
of motor KW).
2. The VVVF Drive unit should be loaded with
software needed for
Hoist applications in cranes.
3. For Every VVFD drive instruction manual,
User manual,
starting guide, necessary parameter
catalogues shall be
supplied in Hardcopy manner.
4. DBR shall be 50% of the motor KW.
Resistance calculation
value shall be given by supplier. DBR make
shall be either by
OEM or OEM recommended.
5. Only YASKAWA, MITSUBHISHI, FUJI, L&T,
TOSHIBA make of VVVF
Drives are acceptable. Other makes are liable
for rejection.

60

NO

1.000

1.00

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55kW VVFD for Hoist
Application



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BHARAT HEAVY ELECTRICALS LIMITED

(A Government of India Undertaking)
HIGH PRESSURE BOILER PLANT
PURCHASE DEPARTMENT - FOSSIL BOILERS
THIRUCHIRAPALLI - 620014
TAMILNADU (INDIA)

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55kW VVVF for Hoist Application
Variable Voltage Variable Frequency Drive
(VVVF) for 55kW Crane duty
Motor
Application:Crane Hoist Control.
Detailed Technical Specifications:
1.0 The VVVF Drive should be dedicated for
hoist application.
2.0 The rated output current of the drive
should be at 45 deg. C
ambient Temperature and maximum
operating temperature shall
be 55 deg. C.
3.0 Duration on any account {Viz} temperature
/ carrier
frequency should not exceed 15% of rated
output current of
inverter offered.
4.0 Inverter offered should be provided with
accurate brake
co-ordination signals.
5.0 Vibration: The drive must be Compliant
with JIS C60068-2-6
or IEC 60068-2-6
6.0 In addition to the above crane specific
features the
inverter shall offer the Following features:
6.01 Rated input voltage & Frequency: 3
Phase, 380-460V,
50/60 Hz.
6.02 Allowable Voltage Fluctuation :
+10% to -15%.
6.03 Allowable frequency Fluctuation: +5%
to -5%.
6.04 Overload Tolerance : 150% of rated
output current for
60s
6.05 Multi Function Digital Inputs: Minimum
8 multifunction
digital inputs.(4 inputs shall be
dedicated for 4 speed
selection)
6.06 Multi Function Relay Output: Minimum
2 multifunction
relay outputs (110V)
6.07 Max. Output Voltage : 3 phase,
380-460V
{Proportion to Input Voltage}
6.08 Max. Output frequency : 400Hz
{Programmable}
6.09 Control method: High carrier
frequency{low noise} sine
wave PWM Technique.
6.10 Control Supply : 110V AC.
6.11 Starting Torque : 200% / 0.3Hz
(Open Loop Vector
Control)
6.12 Speed Control Range : 1:200 (Open
Loop Vector Control)
6.13 Torque limit : Settable through

Yours faithfully



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program {Parameter}

6.14 Output frequency Resolution : 0.01
Hz. / 0.02

6.15 Frequency setting signal
Acceleration/Deceleration

Time : 0.01 to 60 sec.

6.16 Braking Torque : Approx. 20%
{approx. 125% when using
braking Resistor}.

6.17 MAIN CONTROL FUNCTIONS:

restart
braking
detection and Torque
operation
change over
log
Algorithm /
logic.
6.18 PROTECTIVE FUNCTIONS:
trip
over current trip
/ Under voltage
through.
overheat detection &
Drive,DBU,DBR)
circuit protection
open circuit

a) Auto tuning
b) Momentary loss
c) PID control
d) Drop control
e) DC injection
f) Slip compensation
g) Speed search
h) Excess torque
limit
i) Multi step speed
j) Accl./Decel. Time
operation.
k) 3 Wire sequence
l) Operation Fault
m) Built in Crane
brake control

a) Motor overload
b) Instantaneous
c) DC bus protection
d) Input supply Over
trip
e) Power loss ride
f) Heat sink
tripping(both
g) Output Short
h) Input / Output
protection
i) Stall prevention

7.0 Keypad of the drive shall be LCD

8.0 The keypad of the VVVF drive shall be
panel mounted with

necessary extension wire from the drive.

9.0 DBU of Drive shall be of same



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manufacturer.

10.0 DBR shall be supplied with thermal overload protection, so

that on excessive temperature the signal shall be sent to

drive and the drive will trip.

11.0 When DBU Power transistor gets shorted then drive needs to

be tripped for that necessary provision must be present.

12.0 Drives shall have protective PCB coating (Conformal coating)

Scope Of Supply:

1. Each VVVF Drive unit should be supplied with Suitable hoist

Dynamic Braking Unit & Dynamic Braking Resistor(atleast 50% of motor KW).

2. The VVVF Drive unit should be loaded with software needed for

Hoist applications in cranes.

3. For Every VVFD drive instruction manual, User manual,

starting guide, necessary parameter catalogues shall be

supplied in Hardcopy manner.

4. DBR shall be 50% of the motor KW.

Resistance calculation

value shall be given by supplier. DBR make shall be either by

OEM or OEM recommended.

5. Only YASKAWA, MITSUBISHI, FUJI, L&T, TOSHIBA make of VVVF

Drives are acceptable. Other makes are liable for rejection.

70

NO

1.000

1.00

30.07.18

75kW VVFD for Hoist

Application

75kW VVFD for Hoist Application

Variable Voltage Variable Frequency Drive

(VVFD) for 75kW Crane duty

Motor

Application:Crane Hoist Control.

Detailed Technical Specifications:

1.0 The VVVF Drive should be dedicated for hoist application.

2.0 The rated output current of the drive should be at 45 deg. C

ambient Temperature and maximum operating temperature shall

be 55 deg. C.

3.0 Duration on any account {Viz} temperature / carrier

frequency should not exceed 15% of rated output current of

inverter offered.

4.0 Inverter offered should be provided with accurate brake



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- co-ordination signals.
- 5.0 Vibration: The drive must be Compliant with JIS C60068-2-6 or IEC 60068-2-6
- 6.0 In addition to the above crane specific features the inverter shall offer the Following features:
- 6.01 Rated input voltage & Frequency: 3 Phase, 380-460V, 50/60 Hz.
- 6.02 Allowable Voltage Fluctuation : +10% to -15%.
- 6.03 Allowable frequency Fluctuation: +5% to -5%.
- 6.04 Overload Tolerance : 150% of rated output current for 60s
- 6.05 Multi Function Digital Inputs: Minimum 8 multifunction digital inputs.(4 inputs shall be dedicated for 4 speed selection)
- 6.06 Multi Function Relay Output: Minimum 2 multifunction relay outputs (110V)
- 6.07 Max. Output Voltage : 3 phase, 380-460V {Proportion to Input Voltage}
- 6.08 Max. Output frequency : 400Hz {Programmable}
- 6.09 Control method: High carrier frequency{low noise} sine wave PWM Technique.
- 6.10 Control Supply : 110V AC.
- 6.11 Starting Torque : 200% / 0.3Hz (Open Loop Vector Control)
- 6.12 Speed Control Range : 1:200 (Open Loop Vector Control)
- 6.13 Torque limit : Settable through program {Parameter}
- 6.14 Output frequency Resolution : 0.01 Hz. / 0.02
- 6.15 Frequency setting signal Acceleration/Deceleration Time : 0.01 to 60 sec.
- 6.16 Braking Torque : Approx. 20% {approx. 125% when using braking Resistor}.
- 6.17 MAIN CONTROL FUNCTIONS:
- a) Auto tuning
 - b) Momentary loss restart
 - c) PID control
 - d) Drop control
 - e) DC injection
 - f) Slip compensation
 - g) Speed search
 - h) Excess torque braking



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detection and Torque

limit

i) Multi step speed

operation

j) Accl./Decel. Time

change over

operation.

k) 3 Wire sequence

l) Operation Fault

log

m) Built in Crane

Algorithm /

brake control

logic.

6.18 PROTECTIVE FUNCTIONS:

a) Motor overload

trip

b) Instantaneous

over current trip

c) DC bus protection

d) Input supply Over

/ Under voltage

trip

e) Power loss ride

through.

f) Heat sink

overheat detection &

tripping(both

Drive,DBU,DBR)

g) Output Short

circuit protection

h) Input / Output

open circuit

protection

i) Stall prevention

7.0 Keypad of the drive shall be LCD

8.0 The keypad of the VVVF drive shall be panel mounted with

necessary extension wire from the drive.

9.0 DBU of Drive shall be of same manufacturer.

10.0 DBR shall be supplied with thermal overload protection, so

that on excessive temperature the signal shall be sent to

drive and the drive will trip.

11.0 When DBU Power transistor gets shorted then drive needs to

be tripped for that necessary provision must be present.

12.0 Drives shall have protective PCB coating (Conformal coating)

Scope Of Supply:

1. Each VVVF Drive unit should be supplied with Suitable hoist

Dynamic Braking Unit & Dynamic Braking Resistor(atleast 50% of motor KW).

2. The VVVF Drive unit should be loaded with



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software needed for
Hoist applications in cranes.
3. For Every VVFD drive instruction manual,
User manual,
starting guide, necessary parameter
catalogues shall be
supplied in Hardcopy manner.
4. DBR shall be 50% of the motor KW.
Resistance calculation
value shall be given by supplier. DBR make
shall be either by
OEM or OEM recommended.
5. Only YASKAWA, MITSUBISHI, FUJI, L&T,
TOSHIBA make of VVVF
Drives are acceptable. Other makes are liable
for rejection.

80

NO

1.000

1.00

30.07.18

90kW VVFD for Hoist

Application

90kW VVFD for Hoist Application

Variable Voltage Variable Frequency Drive

(VVFD) for 90kW Crane duty

Motor

Application:Crane Hoist Control.

Detailed Technical Specifications:

1.0 The VVVF Drive should be dedicated for
hoist application.2.0 The rated output current of the drive
should be at 45 deg. Cambient Temperature and maximum
operating temperature shall
be 55 deg. C.3.0 Duration on any account {Viz} temperature
/ carrierfrequency should not exceed 15% of rated
output current of
inverter offered.4.0 Inverter offered should be provided with
accurate brake
co-ordination signals.5.0 Vibration: The drive must be Compliant
with JIS C60068-2-6
or IEC 60068-2-66.0 In addition to the above crane specific
features the

inverter shall offer the Following features:

6.01 Rated input voltage & Frequency: 3
Phase, 380-460V,
50/60 Hz.6.02 Allowable Voltage Fluctuation :
+10% to -15%.6.03 Allowable frequency Fluctuation: +5%
to -5%.6.04 Overload Tolerance : 150% of rated
output current for

60s

6.05 Multi Function Digital Inputs: Minimum
8 multifunction

digital inputs.(4 inputs shall be



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dedicated for 4 speed
selection)

6.06 Multi Function Relay Output: Minimum
2 multifunction
relay outputs (110V)

6.07 Max. Output Voltage : 3 phase,
380-460V
{Proportion to Input Voltage}

6.08 Max. Output frequency : 400Hz
{Programmable}

6.09 Control method: High carrier
frequency{low noise} sine
wave PWM Technique.

6.10 Control Supply : 110V AC.

6.11 Starting Torque : 200% / 0.3Hz
(Open Loop Vector

Control)

6.12 Speed Control Range : 1:200 (Open
Loop Vector Control)

6.13 Torque limit : Settable through
program {Parameter}

6.14 Output frequency Resolution : 0.01
Hz. / 0.02

6.15 Frequency setting signal
Acceleration/Deceleration

Time : 0.01 to 60 sec.

6.16 Braking Torque : Approx. 20%
{approx. 125% when using
braking Resistor}.

6.17 MAIN CONTROL FUNCTIONS:

- a) Auto tuning
- b) Momentary loss

restart

- c) PID control
- d) Drop control
- e) DC injection

braking

- f) Slip compensation
- g) Speed search
- h) Excess torque

detection and Torque

limit

- i) Multi step speed

operation

- j) Accl./Decel. Time

change over

operation.

- k) 3 Wire sequence
- l) Operation Fault

log

- m) Built in Crane

Algorithm /

brake control

logic.

6.18 PROTECTIVE FUNCTIONS:

- a) Motor overload

trip

- b) Instantaneous

over current trip

- c) DC bus protection



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- / Under voltage
through.
overheat detection &
Drive,DBU,DBR)
circuit protection
open circuit
- d) Input supply Over
trip
e) Power loss ride
f) Heat sink
tripping(both
g) Output Short
h) Input / Output
protection
i) Stall prevention
- 7.0 Keypad of the drive shall be LCD
8.0 The keypad of the VVVF drive shall be
panel mounted with
necessary extension wire from the drive.
9.0 DBU of Drive shall be of same
manufacturer.
10.0 DBR shall be supplied with thermal
overload protection, so
that on excessive temperature the signal
shall be sent to
drive and the drive will trip.
11.0 When DBU Power transistor gets shorted
then drive needs to
be tripped for that necessary provision must
be present.
12.0 Drives shall have protective PCB coating
(Conformal
coating)
- Scope Of Supply:
1. Each VVVF Drive unit should be supplied
with Suitable hoist
Dynamic Braking Unit & Dynamic Braking
Resistor(atleast 50%
of motor KW).
2. The VVVF Drive unit should be loaded with
software needed for
Hoist applications in cranes.
3. For Every VVFD drive instruction manual,
User manual,
starting guide, necessary parameter
catalogues shall be
supplied in Hardcopy manner.
4. DBR shall be 50% of the motor KW.
Resistance calculation
value shall be given by supplier. DBR make
shall be either by
OEM or OEM recommended.
5. Only YASKAWA, MITSUBHISHI, FUJI, L&T,
TOSHIBA make of VVVF
Drives are acceptable. Other makes are liable
for rejection.
Note:
1)Prospective tenderers have to compulsorily
submit detailed
catalogue indicating the model number



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recommended against
this specification.
2) Drive shall have warranty period of one year
from the date of
receipt at BHEL.

General Note:

General Note:

1. POINT-BY-POINT CONFIRMATION TO BHEL'S SPECIFICATIONS, COMMERCIAL TERMS & CONDITIONS ARE TO BE PROVIDED BY THE VENDORS IN "ANNEXURE-II".
2. PLEASE ENSURE THAT ALL TERMS & CONDITIONS SHOULD BE INDICATED IN THE TECHNO-COMMERCIAL BID IN EPS POSITIVELY.
3. VALIDITY OF THE OFFER SHOULD NOT BE LESS THAN 120 DAYS.
4. THE BIDDER SHALL MEET PRE-QUALIFICATION CRITERIA

Kindly submit your offer in two part bid system (Technical bid + Price bid) in the E-Procurement portal only i.e. Part (I). Techno-Commercial Bid containing point wise confirmation of Technical details, specifications, drawings if any, Prequalification criteria, commercial terms and conditions

LIST OF ATTACHMENTS:

1. PRE QUALIFICATION CRITERIA.
2. ANNEXURE-II TERMS AND CONDITIONS OF THE ENQUIRY. (TWO PART-BID)

Enclosures:

"ID clause has to be confirmed without fail."

The bidder along with its associate / collaborators / sub-contractors / sub-vendors / consultants / service providers shall strictly adhere to BHEL fraud prevention policy displayed on BHEL website <http://www.bhel.com> and shall immediately bring to the notice of BHEL Management about any fraud or suspected fraud as soon as it comes to their notice.

PR Links

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Annexure-II

BHARAT HEAVY ELECTRICALS LIMITED

(A GOVT.OF INDIA UNDERTAKING)

HIGH PRESSURE BOILER PLANT**TIRUCHIRAPPALLI-620 014****TERMS AND CONDITIONS OF THE ENQUIRY (TWO PART BIDS)**

1.	The tender will be operated on two part bids basis i.e. Part I - Techno-Commercial Bid & Part II- Price Bid in EPS PORTAL ONLY
2.	Techno-Commercial Bid: Containing Technical details, specifications, commercial terms and conditions Taxes, delivery terms, delivery schedule, validity of offer, payment terms (except price details), acceptance for LD clause, RP clause etc. as per ANNEXURE-II
3.	Price details Containing the price of all the quoted items in EPS PORTAL.
4.	This Tender is hosted in ABC portal & offer to be submitted through ABC portal only. You are requested to submit your 2 parts offer before due date & time given in RFQ through EPS PORTAL only.
5.	Tender should not be addressed to any individual's name / designation.
6.	Attached documents/tenders should be free from CORRECTION AND ERASURES. Any correction in any attached document should have been attested. If there is such discrepancy in an offer, the same shall be conveyed to the bidder with target date up to which the bidder has to send his acceptance on the above lines and if the bidder does not agree to the decision of the purchaser, the bid is liable to be ignored
7.	Please submit point wise compliance to our specifications, terms and conditions. Otherwise it will be presumed that you are accepting BHEL's terms and conditions. Please ensure that all terms & conditions are filled.
8.	Offer(s) received after due date and time as mentioned in EPS portal will not be considered under any circumstances.
9.	If the due date of tender opening happens to be a holiday, those tenders will be opened on future working day for which corrigendum will be issued.
10.	Documents submitted with the offer shall be signed and stamped in each page by authorized representative of the bidder
11.	The bidder shall submit his response through bid submission to the tender on e-procurement platform at https://bhel.abcpocure.com . The bidder would be required to register on the e-procurement market place https://bhel.abcpocure.com and submit their bids online. SEALED COVER BIDS / E-MAILS / FAX / MANUAL OFFERS WILL NOT BE ACCEPTED
12.	Normally offer to be submitted with in due date only. Any tender due extension request to be given on or before 48hrs of due date & time

13.	Validity of quoted rates should be maintained minimum for 120 days from the date of Tender opening for ordering (Technical Bid). The quoted/Finalized rates shall be Firm till completion of the supplies
14.	The rates are to be quoted on F.O.R. BHEL TRICHY STORES basis ONLY and Packing & marking charges, Freight & Transit Insurance charges which are payable to supplier. All the items should be supplied at our STORES, BHEL / TRICHY-14 at your own cost. Offers with any other delivery conditions is not acceptable. <u>IMPORTANT NOTE:</u> Delivery condition like Ex-works / Ex-godown / Transportation of materials through transport carriers from your works up to the transport carrier's office at Trichy and taking delivery of goods by BHEL from such office of transport carriers is not acceptable to us).
15.	<u>Payment Terms (Indigenous):</u> Payment term is "100% direct EFT payment after 45 days from the date of receipt and acceptance (supply, installation & successful commissioning of the system, wherever if applicable) of materials at BHEL Stores". The duplicate copy of the invoice meant for the transporters should accompany the material as stipulated under C.E. rules 52a and 173c (or) 57gg. A Photostat copy of the above invoice for each Delivery Chelan should be submitted along with the original bills routed through bank or submitted directly to BHEL finance department. Any deviation in the above payment term will attract loading as mentioned below. "Base rate of SBI (as applicable on the date of bid opening. Techno-commercial bid opening in case of two part bids) + 6% shall be considered for loading for the period of relaxation sought by bidders. Payment other than credit payment will not be acceptable & will be rejected. Offers of indigenous Suppliers with payment terms as LC / Advance Payment, Payment through bank etc. will be rejected. <u>Payment term for supply portion(For import supplies):</u> BHEL Payment term is 100% payment on CAD basis after 45 days from the date of receipt of documents, specified in PO, at BHEL bank. Respective bank charges to respective account. <u>Any deviation in the above payment term will attract loading as mentioned below :</u> "Base rate of SBI (as applicable on the date of bid opening. Techno Commercial bid opening in case of two part bids) + 6% shall be considered for loading for the period of relaxation sought by bidders. If the LC payment is insisted, TWO sets of original TCs to be submitted prior to dispatch and a certificate to that effect from BHEL should form a part of the documents to be negotiated. If this condition is not complied by the vendor, the offer is liable for rejection. In the case of usance LCs the loading will be considered @ 1.5% on the offered Value. For LC at sight the loading will be considered @ 3.5% on the offered Value. Offers with payment terms as Advance payment, CAD at sight and Confirmed LCs etc will be rejected.

16.	<u>Liquidated Damages / Penalty:-</u> The delivery of the goods specified in the purchase order should be made within the time prescribed. LD for delay in 'Supply' and/or 'E&C' (E&C wherever if applicable) will be applicable to the delays attributed to vendor. LD will be considered separately for 'Delivery' and 'E&C' (E&C wherever if applicable). Where the seller supplies or dispatches the goods, beyond the delivery period Liquidated damages shall be applicable 0.5% of the total order value per week or part thereof subject to a maximum of 10% of the total order value. ** In case of single delivery date , Order should be completed 100% for processing the bill, otherwise LD will be calculated based on Total PO Value restricted to Max % as mentioned in the PO Condition column Material Despatched after Due date: Once the delivery due date is crossed, bills have to be clubbed till final despatch and forwarded for processing of payment as a single bunch. LD percentage will be calculated from Delivery due date to final despatch date. The rate of LD for delayed E&C shall be @ 0.5% per week of delay of total PO value (Supply + E&C) in E&C subject to a maximum of 10% of total PO value (Supply + E&C). Penalty on delay in 'Supply' and/or 'E&C' will be applicable to the delays attributed to vendor. Penalty will be considered separately for 'Supply' and 'E&C'. The rate of penalty for delayed Supply shall be @ 0.5% per week of delay of total PO value (Supply + E&C) in supply subject to a maximum of 10% of total PO value (Supply + E&C). The rate of penalty for delayed E&C shall be @ 0.5% per week of delay of total PO value (Supply + E&C) in E&C subject to a maximum of 10% of total PO value (Supply + E&C). Maximum penalty for delay in Supply and E&C together shall be limited to 15% of total PO value (Supply + E&C). For staggered delivery schedule, LD shall be 0.5% of the undelivered portion per week of the delay or part thereof subject to a maximum of 10% of the total order value. Any deviation from the above LD clause, loading will be applied to the extent to which it is not agreed by the bidder (at offered value).
17.	<u>RISK PURCHASE:</u> Alternatively the purchaser at his option will be entitled to terminate the contract and to purchase elsewhere at the risk and cost of the seller either the whole of the goods or any part which the previous supplier has failed to deliver or dispatch within the time stipulated as aforesaid or if the same were not available, the best and the nearest available substitutes therefore. The supplier shall be liable for any loss, which the purchaser may sustain by reason of such risk purchases in addition to penalty at the rate mentioned in our LD clause. Risk Purchase clause will be applicable. Deviated offers with non-acceptance of Risk Purchase clause will lead to rejection of offer.
18.	<u>PREFERENTIAL DELIVERY:</u> (Applicable in the case of BHEL's Enquiry specifies Preferential Delivery in the Special Instructions) It should be noted if a contract is placed on a higher tendered as a result of this invitation to tender in preference to the lowest acceptable offer in consideration of the earlier delivery, the seller will be liable to pay to the purchaser the difference between the contract rate and that of the lowest acceptable tender on the basis of final price F.O.R destination, including all elements of freights, Sales tax, duties and other incidents, incidental in case of failure to complete supplies in terms of such contract within the date of delivery specified in the tender and incorporated in the contract, such difference amount in addition to penalty at the rate mentioned in our LD clause.
19.	BHEL reserves its right to reject a tender due to unsatisfactory past performance in the execution of a contract at any of BHEL projects / Units
20.	If Guarantee / Warranty period is applicable as per tender specification, No deviation permitted and deviated offers are liable for rejection
21.	Price shall be quoted item wise in EPS Portal

22.	Supplier has to ensure quoting of price very carefully in EPS PORTAL to avoid any discrepancies
23.	While quoting price, it will be ensured that all terms & conditions as per GST act is followed
24.	TAXES AND DUTIES: GST IN no, HSN CODE, GST rate for each items are to be quoted
25.	On the due date of tender opening, the technical bids will be opened . Bids will be evaluated by us and clarifications required, if any, will be called for from the bidders on technical and commercial points
26.	After tender opening Technical Scrutinisation Of the Offers Will be done.
27.	Vendors Meeting Our Technical Specification Will Be Essential For Consideration Of Offer.
28.	Tender evaluation will be carried out on the basis of Technical Specifications and Commercial Terms and Conditions specified in the tender documents and changes thereof (if any) will be communicated to all bidders
29.	For verification of data submitted towards evaluation of bidder's capability, BHEL may decide to visit the bidder(s) works. Any fact found deviating from submitted data shall make the bidder liable to be disqualified.
30.	The correspondence between the bidder and BHEL through email is considered as valid document Legally though not signed. It is treated as valid confirmations made on behalf of the respective company and comes under the legal ambit of the business transaction and hence binding on both the parties. If any difference is found in the terms in the Techno-commercial bid and price bid, the terms mentioned freezed after clarification sought through mail acceptable by BHEL will be considered
31.	<u>Cost Evaluation:</u> Evaluation will be done on the basis of " Total landed cost to BHEL Trichy ". For evaluation, the exchange rate (TT selling rate of SBI) on the date of bid opening shall be considered. If the relevant day happens to be a bank holiday, then the forex rate as on the previous working day shall be considered. BHEL will consider the ranking after the loading is applied as referred above, wherever deviations are observed Ranking (L-1, L-2 etc.) will be done only for the Techno-Commercially acceptable offers. Normally BHEL reserves the right to place order for individual items with different vendors. At special circumstance ranking shall be done on compatible basis which will be indicated through Enquiry special instruction General Notes. In the event of more than one vendor becoming L-1 for any of the item / items, the enquiry quantity for those item / items may be shared equally among all the L1 vendors
32.	In the event of more than one vendor becoming L1 for any of the item / items, the enquiry quantity for those item / items will be shared equally among all the L1 vendors.
33.	If the quoted prices by the L1 suitable vendors for net cash out flow to BHEL is same and quantity splitting is not feasible, in such case revised price bid may be asked from those respective suppliers for the respective item/items. (Wherever, if applicable)
34.	BHEL reserves the right to increase or decrease the tender quantity and split up the tender quantity among more than one vendor at the lowest acceptable price to BHEL and place order accordingly in any proportion at our own discretion
35.	Lowest price received against BHEL tenders need not be the technically acceptable one and in that case BHEL reserves the right not to consider the same. The purchaser shall be under no obligation to accept the lowest or any other tender and shall be entitled to accept or reject any tender in part or full without assigning any reason whatsoever. (Wherever if applicable)
36.	BHEL reserves the right to negotiate or refloat the tender opened, if L1 price is not the lowest acceptable price to BHEL due to inter-alia other reasons. (Wherever if applicable).

37.	<u>IMPORTANT NOTE:</u> BHEL WILL CONSIDER THE RANKING AFTER THE LOADING IS APPLIED AS REFFERED ABOVE WHEREVER DEVIATIONS ARE OBSERVED
38.	The basic amount will be arrived by deducting the applicable GST taxes & duties, freight & insurance charges. GST Taxes& duties will be paid over total quoted amount. Including Packing , marking charges, Freight& insurance amount
39.	Any other conditions which might have been quoted by the seller and are in contravention to the terms prescribed in the order and which have not been specifically accepted by purchaser in written will not be applicable to the contract
40.	<u>Special Provisions for Micro and Small Enterprises (MSE)</u> The bidder may also be a Micro and Small Enterprises (MSE) vendor registered as per MSE act. As per the public procurement policy notified by the Central government. 20% of the tendered quantity is earmarked for MSE suppliers in this tender. Out of the 20% tendered quantity reserved for MSE suppliers, 4% shall be earmarked for procurement from MSE owned by SC / ST entrepreneurs. In case MSE vendor participating in the tender quotes within the price band of L1 + 15%, they will be allowed to supply the portion of the requirement subject to acceptance of L1 price by MSE vendor. In case of more than one such MSE, the supply shall be shared proportionately. "MSE suppliers can avail the intended benefits only if they submit along with the offer, attested copies of either EM II certificate having deemed validity (five years from the date of issue of acknowledgement in EM, II) or valid NSIC certificate or EM II certificate or Udyoug Aadhar No with due validity along with attested copy of a CA certificate (where deemed validity of EM II certificate of five years has expired) applicable for the relevant financial year (latest audited). Date to be reckoned for determining the deemed validity will be the date of bid opening (Part I in case of two part bid). Non submission of such documents will lead to consideration of their bid at par with other bidders. In case any improper / lack of documents is there vendor on their own interest may submit all the relevant documents as stated above before tender opening. No benefit shall be applicable for this enquiry if any deficiency in the above required documents are not submitted before tender opening. Documents should be notarized or attested by a Gazetted officer for consideration of MSE certificate. " Such Micro/Small Enterprises registered vendors must state the sub-category to which they belong and submit documentary proof for the same. The sub-categories: (a) Enterprises owned by Scheduled Castes. (b) Enterprises owned by Scheduled Tribes. (c) Enterprises owned by other than above two categories The enterprises under (a) & (b) means the proprietor in case of single owned firm and all partners in case of partnership and all directors in case of private/public limited must belong to SC/ST category (Such enterprise will have to submit relevant document for proof of SC/ST category) (Note: vendor need to go through General note Of tender condition also for any special instruction & deviation from above.) If more than one valid MSE supplier stands with in range of L1+15% range, 20% of quantity will be shared till quantity split is feasible & rest of 20% will be awarded to lowest quote of valid MSE supplier. Note: Wherever for splitting of order ,if splitted quantity comes out <1 ,the splitting of order will not be feasible. (for MSE vendors) Traders will be excluded from the above MSE benefit as per MSE public procurement policy. For MSE vendors getting award- In order to get benefit to MSE suppliers in Bill timely payment MSE supplier will have to send the original hard copy of Udyoug Aadhar No(UAN) supported by CA certificate of last fin yr .Scanned copy is not acceptable for MSE consideration.
41.	Equipment will be inspected and proved at vendor's works prior to dispatch, if applicable as per tender condition. However final inspection and acceptance of equipment will be after installation at BHEL, Trichy.

42.	PACKING AND MARKING: The supplier shall arrange for securely protecting and packing the stores to avoid loss or damages during transit. (Wherever if applicable).
43.	Erection / commissioning charges , if applicable as per tender condition will be clearly mentioned in the offer or else confirmation that Erection / commissioning shall be done at free of cost is available in the offer
44.	Any warranty replacement during warranty period shall be supplied free of charge on FOR BHEL, TIRUCHIRAPALLI basis
45.	The vendor shall provide necessary drawings, Test Certificates and Operating Maintenance Manuals etc., as called for in the Technical Specification, in the required number of copies at no extra cost
46.	In case of any short shipment in the main equipment / spares, where separate rates are not available in the contract, the customs duty levied on such supplies, shall be borne by the supplier / Indian agent.(For import supplies)
47.	ARBITRATION: All disputes or differences whatsoever which may arise at any time during execution of the Contract shall be mutually settled by BHEL Trichy and Vendor as per provision of the Contract. However, in the event such disputes cannot be settled mutually, such disputes shall be settled as per the Arbitration and reconciliation Act, 1996 of the Govt. of India and its subsequent amendments. In case of disputes with the Central PSUs, the same shall be settled at Tiruchirappalli as per the Guidelines of the Govt. of India. However, during the period such disputes are settled either by mutual discussions between the parties or by legal means, Vendor shall continue to do the work as per terms & conditions of Contract. Any dispute arising out of or in connection with this Agreement shall be finally settled by binding arbitration in accordance with the Arbitration and Conciliation Act, 1996 as may be amended from time to time. Executive Director / BHEL, Trichy – 620 012 or his authorized representative shall be the Sole Arbitrator and his decision shall be final and binding on both the parties. The place of arbitration shall be Tiruchirappalli, and the language shall be English. The courts at Tiruchirappalli shall have exclusive jurisdiction on any dispute arising out of or in connection with this Agreement, if intervention of court is warranted, subject to the arbitration provided above.
48.	The quality of the supplies should strictly conform to Technical specifications applicable for the item. The offer should specifically confirm this
49.	If any quality problem is pointed out by any BHEL unit w.r.t. supplied material, the same shall be settled and corrected immediately with the concerned BHEL unit, by the supplier. If the material cannot be accepted by BHEL, supplier has to replace the material with no extra cost. Collection of rejected material will be sole responsibility of the supplier. If there is any failure by the supplier to settle such quality problems, the matter will be considered very seriously and appropriate penal action may be initiated against the respective supplier
50.	BHEL shall be at liberty to accept any tender, part or in full, at their discretion without giving any reason
51.	Unloading at BHEL Unit / Site has to be done by the SUPPLIERS only. BHEL will not be in a position to provide any handling / unloading facilities.
52.	The supplier shall arrange for securely protecting and packing the material to avoid loss or damages during transit.
53.	There is no minimum quantity for placement of purchase order.
54.	BHEL shall be at liberty to cancel the requirement as per tender partially or fully at any stage, without giving any reasons partially or fully.
55.	In case of receipt of order vendor will need to send consignment/material as indicated in PO. In case of dispatch by courier/ Lorry kindly put/paste the Delivery challan (extra copy) on the top of packed consignment box & another copy of DC inside the box. Consignment should be forwarded to the PO consignee address only along with extra/Xerox copy of invoice (wherever applicable) .It should be supported with Delivery challan copy. (Kindly do not forward any consignment to purchase dept. or do not address the consignment to the name of any official)

56.	Vendor's confirmation for any terms & conditions should be uniform throughout the offer. In case any discrepancies are found in the quoted term & condition & Vendor's own format of quotation BHEL reserves the right to consider terms mentioned in Annexure-II
57.	Vendor may View Bill Status in www.bheltry.co.in -> materials management systems -> login id - Vendor Code and Password
58.	For the New vendors- In case of ordering bills against the PO shall be processed only on receipt of the following: - Send the hard copy of EFT Format (will be informed at the time of PO) duly filled-in in a Single Page with all the certification formalities by you & your bankers - One Cancelled cheque of your account (from the concerned bank) must be sent. - The Vendor's code as per PO & address must be as per billing address mentioned in PO.
59.	If winning bidder who gets the order are unable to login or still if you have any difficulty kindly let us know
60.	<u>Authorization for participation in EPS portal through DSC: E-Tender.</u> <u>Participation requirements :</u> Either Principal or authorized agent shall register their Digital Signature Certificate (DSC) (Class 3- SHA2- 2048 BIT-SIGNING & ENCRYPTION). Suppliers are advised to go through the FAQ available in the web portal (https://bhel.abcpocure.com). DSC shall be registered for the authorized person and all transaction done using that DSC against our tenders shall be taken as valid communication and shall be binding on principal/agent and is valid legally. <u>For foreign Principal</u> In case of Principal (being foreigner), they may apply for DSC through Indian embassy at their country and can register with us for participating in E-tenders. Details of the applicable procedure is available in the webpage http://www.cca.gov.in/cca/. <u>For Indian agent</u> In case of agents participating/registering their DSC (of authorized person), it will be at the sole authorization of principal to their agents to participate on their behalf and all transactions done using that DSC against our tenders shall be known as valid communication and shall binding on principal and is legally valid.
61.	Since GST is implemented, the taxes & duties will prevail as per the government notification/ guidelines .Our Provisional GST registration no.33AAACB4146P2ZL. However, it will be mandatory to confirm from BHEL for this mentioned GST no. Suppliers may quote their GST no with valid proof in the quotation .Also before quoting of tender it is suggested to consider all the factors before quoting the tender in line with GST guidelines for input tax credit to arrive ranking of quoted suppliers.
62.	<u>GST compliance for Indigenous suppliers:</u> - In Response to Tenders for Indigenous supplier will be entertained only if the vendor has a valid GST registration no which should clearly mentioned in the offer. If any specific exemption is available, a declaration with due supporting documents need to be furnished for considering the offer.. - Supplier shall mention their GSTN registration number in all their invoices and invoices shall be in the format as specified/prescribed under GST laws. Invoices shall necessarily contain Invoice number (in case of multiple numbering system is being followed for billing like SAP invoice no, commercial invoice no etc., then the Invoice No which is linked/uploaded in GSTN network shall be clearly indicated), item description as per PO, Quantity, Rate, Value, applicable taxes with nomenclature (like IGST, SGST, CGST & UTGST) separately, HSN/ SAC Code, etc. - All invoices shall bear the HSN Code for each item separately (Harmonized System of Nomenclature)/ SAC code (Services Accounting Code). - A declaration to the effect that all invoice particulars are/were uploaded in the GSTN network/ portal & all tax liability as per GST rules and regulations have been and will be discharged, shall be mentioned in

the invoice. If not mentioned in the invoice, a separate declaration shall be submitted as per the requirement of BHEL.

- e. All documents like Mill Test Certificate, LR copy, Guarantee/Warranty certificate, work completion certificate, any other document mentioned in PO, shall be sent along with the vehicle/consignment. For all consignments received within the calendar month, input credit will be availed within that month in line with monthly returns filing cycle. In case of any discrepancy in the document or non-submission of documents mentioned in the PO, then BHEL will not be able to accept or account the material, in such case availing of tax credit will be deferred to next month or so.
- f. In case of discrepancy in the data uploaded by supplier in the GSTN portal or in case of any shortages or rejection in the supply, then BHEL will not be able to avail the tax credit and will notify the supplier of the same. Supplier has to rectify the data discrepancy in the GSTN portal or issue credit note (details to be uploaded in GSTN portal) for the shortages or rejections in the suppliers, within the calendar month notified by BHEL.
- g. For any such delay in availing of tax credit for reasons attributable to supplier (as mentioned above), interest (calculated @ SBI Base Rate + 6%) along with penalty if any will be deducted for the delayed period i.e. from the month of receipt till the month tax credit is availed, from the running bills.
- h. Under GST regime, BHEL has to discharge GST liability on LD recovered from suppliers/contractors. Hence applicable GST shall also be recoverable from suppliers/contractors on LD amount. For this Debit note will be issued by BHEL indicating the respective supply invoice number.
- i. This is to inform that GST portion of invoice, Shall be released only upon Vendor declaring such invoice in his GSTR-1 and receipt of goods and Tax invoice by BHEL and Confirmation of payment of GST thereon by vendor on GSTN portal. Alternatively, BG of appropriate value may be obtained from vendor which shall be valid At least one month after the confirmation of date of payment of GST by vendor on GSTN portal and receipt of Tax invoice and receipt of goods, whichever is later. Above is subject to receipt of goods/service and tax invoice thereof along with vendor declaring invoice in his return and paying GST within timeline prescribed for availing ITC by BHEL.
- j. That in case vendor delays Declaring such invoice in his return and GST credit availed by BHEL is denied or reversed subsequently as per GST law, GST amount paid by BHEL towards such ITC reversal as per GST law shall be recoverable from vendor/contractor along with interest levied/ leviable on BHEL.

63.	<u>Imports and Input Tax Credit (ITC):</u> In GST regime, input tax credit of the integrated tax (IGST) and GST Compensation Cess shall be available to the importer and later to the recipients in the supply chain, however the credit of basic customs duty (BCD) would not be available. In order to avail ITC of IGST and GST Compensation Cess, an importer has to mandatorily declare GST Registration number (GSTIN) in the Bill of Entry. Provisional IDs issued by GSTN can be declared during the transition period. However, importers are advised to complete their registration process for GSTIN as ITC of IGST would be available based on GSTIN declared in the Bill of Entry. Input tax credit shall be availed by a registered person only if all the applicable particulars as prescribed in the Invoice Rules are contained in the said document, and the relevant information, as contained in the said document, is furnished in FORM GSTR-2 by such person. Customs EDI system would be interconnected with GSTN for validation of ITC. Further, Bill of Entry data in non-EDI locations would be digitized and used for validation of input tax credit provided by GSTN. Customs EDI system would be interconnected with GSTN for validation of ITC. Further, Bill of Entry data in non-EDI locations would be digitized and used for validation of input tax credit provided by GSTN. Note: In cases where imported goods are liable to Anti-Dumping Duty or Safeguard Duty, calculation of Anti-Dumping Duty or Safeguard duty would be as per the respective notification issued for levy of such duty. It is also clarified that value for calculation of IGST as well as Compensation Cess shall also include Anti-Dumping Duty amount and Safeguard duty amount
64.	High sea sales for import supply would not be accepted
65.	Wherever Service is associated in the tender scope (For cases Service PO is released – Supplier has to pay GST for all charges including transportation, boarding etc)
66.	Suppliers will have to fill& send the SRF (Supplier registration form) if applicable.
67.	BHEL reserve the right for asking sample / drawing approval / Pre-Dispatch Inspection before bulk supply of the materials (If required)
68.	GST CREDIT: Suppliers are advised to get registered to GSTN portal. Tenderer under "GST credit" shall be preferred
69.	For any clarification you can contact to navanee@bhel.in , surajkumar@bhel.in
70.	Pay procedure will be initiated after acceptance of full lot of material & final submission of Bill in line with PO instructions & conditions, GST regulations. Also Pay procedure will be initiated only if the GST return is filed against submitted invoice to BHEL.