

NUCLEAR POWER CORPORATION OF INDIA LTD

KUDANKULAM NUCLEAR POWER PROJECT UNITS 3&4

INVITATION FOR EXPRESSION OF INTEREST

The Chief Construction Engineer, KKNPP 3&4, on behalf of Nuclear Power Corporation of India Limited invites “Expression of Interest (EOI)” from reputed Indian manufacturers/firms for the following work:

Sl. No.	Name of Work	Approx. cost (INR)	Last date for receipt of EOI documents in physical form (hard copy)
1	Design, Manufacturing, Supply, Erection, Commissioning and Testing of Material Handling Equipments such as Cranes, Hoists, Grapplers, Lifts, Trolleys etc., for KKNPP-3&4	₹ 47.00 Crores	March 13,2017

EXPRESSION OF INTEREST (EOI)

FOR

DESIGN, MANUFACTURING, SUPPLY, ERECTION, COMMISSIONING AND TESTING OF MATERIAL HANDLING EQUIPMENTS SUCH AS CRANES, HOISTS, GRAPPLERS, LIFTS, TROLLEYS ETC., FOR KKNPP3&4.

1.0 Background:

Kudankulam Nuclear Power Project-3&4 (KKNPP-3&4) consists of 2 x 1000 Mwe Nuclear Power Plants which are being constructed at site by Nuclear Power Corporation of India Limited (NPCIL). NPCIL invites Expression of Interest (EOI) for Design, Manufacturing, Supply, Erection, Commissioning and Testing of Material Handling Equipments from indigenous reputed parties/firms having experience in the above fields.

2.0 The brief scope of works:

Various types of Material Handling Equipments such as Cranes, Hoists, Trolleys, Grapplers and Lifts are required for construction, operation and maintenance of Nuclear Power Plants at Kudankulam. Some Material Handling Equipments are to be supplied by the contractor and some are received from our collaborator from Russia. All these equipments are to be erected, commissioned and tested by the contractor. Hence the total scope of work of contractor is divided into the following two groups. It is envisaged to have single package works contract encompassing the scope of both the group of works.

Group-1: Design, manufacturing, supply, erection, commissioning and testing of Material Handling Equipments for KKNPP-3&4.

Group-2: Receipt of Free Issue Material Handling Equipments, shifting to location, erection, commissioning and testing of same at KKNPP-3&4.

3.0 The details of Group-1:

The scope of works covers design, detailed engineering, preparation of drawings, materials, construction features, manufacture, shop inspection & testing at the manufacturer's works, packing & forwarding, delivery to site including transit insurance arrangement, unloading at site, handling, storage at site, erection, testing at site, commissioning, performance testing and handing over of the following Material Handling Equipments. The equipment are intended to confirm in all respects to high standards of design, engineering, manufacturing, erection and high quality of workmanship and to be capable of performing continuous operation.

Sr. No	Description of cranes	SWL (T)	Span (m)	Lift (m)	Quantity (nos.)
1	Manual Stationery Gear Hoists	0.5		3-12	342
		1.0		3-9	133
		2.0		3-18	84
		3.2		3-6	16
		5.0		3-9	30
2	Gear Mobile Hand-Operated Hoists	0.5		3-12	254
		1.0		3-12	183
		2.0		3-9	30
		3.2		3-12	64
		5.0		3-12	41
3	Electrical Hoists	0.25		6-12	5
		1.0		6-20	16
		2.0		12-32	6
		3.2		22.5	4
		5.0		12-40	8
		8.0		10	4
4	Manual Crane	1.0	4.5	3	17
		2.0	3-7.5	6-12	8
		3.2	7.5	12	2
		5.0	6-7.5	9-12	12
		1.0	3-4.2	6-12	10
5	Bridge electric single beam suspended single span Crane (Under Slung)	3.2	6-9	12-36	21
		5.0	4.2-7.5	12-18	50
		12.0	4	12	8
		15	40	30	2
6	Bridge Supporting Electric Crane	20/5	9.5	12	2
		32/5	13.68	30	2
		10	5.5	20	2
7	Gantry electric Crane	20 & 20/2	6.5-29	24-30	4
		1		18	1
8	Boom electric Crane	1		18	1
9	Hand Load Fork Trolleys	1			3
		1.25			9
		2			16
10	Hand Load Level Trolleys	0.5			34
		1			32
		2			1
11	Hand Load Platform Trolleys	0.5			3
		1			4
12	Hand Load Lifting Trolleys	0.5			2
13	Hand Load Handle Trolleys	1			14
14	Electro Trolleys	2			4
		4			2
		5			8
		16			1
15	Hand operated grapplers	0.5			300
		1.0			37
		2.0			104
16	Manually operated winch	0.5			4
		2			6
		3.2			4
TOTAL					1965

4.0 SCOPE OF SUPPLY OF GROUP-1 EQUIPMENTS:

4.1 Manual stationery gear hoists : (against sl.no.1) shall consist of but not limited to the following:

- 1) Manual stationery gear hoists shall be manufactured in following variants.
 - a) Variant 1--with load suspension on one chain loop
 - b) Variant 2--with load suspension on two chain loops
 - c) Variant 3--with load suspension on three chain loops
- 2) Top and bottom hooks shall rotate and bottom hook with suspended nominal load shall easily rotate from manual effort applied to it.
- 3) Hoists structure shall provide for all types of maintenance and repair works using mechanical means in NPP conditions.
- 4) Hoists surfaces, subjected to corrosion, must have the protective coverings, implemented in manufacturing with due consideration of operation conditions.
- 5) The hoist in its composition must contain minimum amount of combustible material.
- 6) The following is included into delivery set:
 - a) Manual stationery gear hoists
 - b) Load and hoisting chains
 - c) Certificate, with technical specification.
 - d) Instruction on installation and operation
 - e) Documents for maintenance in compliance with working instructions.
- 7) A certificate of test and examination shall be issued with every consignment of blocks, giving the following information for each one:
 - a) Safe working load,
 - b) Distinguishing mark,
 - c) Description,
 - d) Range of lift,
 - e) Load chain size and grade,
 - f) Date of testing, and
 - g) Operational proof load applied.
- 8) One (1) lot of essential spares.
- 9) One (1) lot of start-up spares required during testing, trial operation and commissioning at site.
- 10) One (1) set of all required maintenance tools and tackles.
- 11) List of essential spares, start-up spare & recommended spares for 5 yrs trouble free operation with itemized rate.

4.2 Gear mobile hand-operated hoist: (against sl.no.2) shall consist of but not limited to the following:

- 1) Gear fixed hand-operated hoist.
- 2) Hand-operated grapplers.
- 3) Trolley runway rails (I-Beam) with machined clamps, bolts, and nuts, end stops with spring/rubber buffers and wheel stops.
- 4) Load and hoisting chains – for hoist, hoisting chains
- 5) Consumables like lubrication for the initial operation of equipment till handing over.
- 6) One (1) lot of essential spares.
- 7) One (1) set of all required maintenance tools and tackles.
- 8) One (1) lot of start-up spares required during testing, trial operation and commissioning at site.
- 9) List of essential spares, start-up spare & recommended spares for 5 yrs trouble free operation with itemized rate.

4.3 Electrical Hoists (against the sl. no. 3) shall consist of but not limited to the following:

- 1) Motor operated trolley and accessories
- 2) Hoist frame, rope drum, wire rope, gear & gear boxes, motor, top & bottom block, sheaves, hooks etc.,
- 3) Trolley runway rails (I-Beam) with machined clamps, bolts, and nuts, end stops with spring/rubber buffers and wheel stops.
- 4) Limit switches to prevent hook over travel, over hoisting/lowering, Radio remote control, pendant control station suspended from hoist and control panel.
- 5) Cable wiring terminating at operating floor and heavy duty switch fuse unit.
- 6) Festoon cables for feeding power to Hoist.
- 7) One (1) lot of essential spares.
- 8) One (1) lot of start-up spares required during erection, testing, trial operation and commissioning.
- 9) One (1) set of all required maintenance tools and tackles.
- 10) List of essential spares, start-up spare & recommended spares for 5 yrs trouble free operation with itemized rate.

4.4 Manual crane: (against sl. no. 4) shall consist of but not limited to the following:

- 1) End carriages for long travel and trolley frame.
- 2) Long travel runway rail with machined clamps, bolts and nuts, end stops with spring/rubber buffers and wheel stops.
- 3) Manual operated chain drive for LT motion.

- 4) ISMB of adequate size for mounting hoists for CT movement.
- 5) Maintenance and repair platform with hand railing on both sides of bridge girders for the full span length.
- 6) Supply of adequate quantity of consumables required for the job at site.
- 7) Initial fill of various lubricants.
- 8) One (1) lot of essential spares for five (5) years of trouble free operation.
- 9) One (1) lot of start-up spares required during erection, testing, trial operation and commissioning.
- 10) One (1) set of all required maintenance tools and tackles.
- 11) List of essential spares, start-up spare & maintenance spare.

4.5 Electric operated cranes: (against the sl. nos. 5, 6 &7) shall consist of but not limited to the following:

- 1) Box type girder, end carriages and trolley frame.
- 2) Gantry frame and Gantry Truck in case of Gantry cranes.
- 3) Long travel runway rail with machined clamps, bolts and nuts, end stops with spring/rubber buffers and wheel stops.
- 4) Trolley runway rails with machined clamps, bolts, and nuts, end stops with Spring/rubber buffers and wheel stops
- 5) Lifting hook, wire ropes, rope drum, sheaves, equalizing sheaves and bottom block and top block assemblies.
- 6) Totally enclosed gearboxes.
- 7) Drive motors for all motions.
- 8) Brakes (all motions) for fail-safe operation.
- 9) Operator's cabin and radio remote control.
- 10) PVC insulated shrouded type DSL with copper conductor and spring loaded current collectors with fixtures.
- 11) Flexible trailing cable system for hoist drives and for cross travel motion.
- 12) Controllers, resistors, control panel and distribution panel.
- 13) Necessary cabling.
- 14) Protection devices and indicating devices such as limit switches, resistors, insulators, safety switches, etc.
- 15) Lighting fixtures and accessories for cranes.
- 16) Earthing of all electrical equipment in crane.
- 17) Maintenance and repair platform with hand railing on both sides of bridge girders for the full span length.
- 18) Protective guards, necessary fasteners, screws and other fixtures.
- 19) Supply of adequate quantity of consumables required for the job at site.
- 20) Initial fill of various lubricants.
- 21) One (1) lot of essential spares.

- 22) One (1) lot of start-up spares required during erection, testing, trial operation and commissioning.
- 23) One (1) set of all required maintenance tools and tackles.
- 24) List of essential spares, start-up spare & recommended spares for 5 years trouble free operation with itemized rate.

4.6 Boom Electric Cranes (against the sl. no. 8) shall consist of but not limited to the following:

- 1) Lifting hook, wire ropes, rope drum, sheaves, bottom block and top block assemblies.
- 2) Boom, column and column base plate.
- 3) Totally enclosed gearboxes.
- 4) Drive motors for all motions.
- 5) Necessary cabling.
- 6) Initial fill of various lubricants.
- 7) One (1) lot of essential spares.
- 8) One (1) lot of start-up spares required during erection, testing, trial operation and commissioning.
- 9) One (1) set of all required maintenance tools and tackles.
- 10) List of essential spares, start-up spare & recommended spares for 5 yrs trouble free operation with itemized rate.

4.7 Hand load trolley : (against sl.nos.9-13) shall consist of but not limited to the following:

- 1) Hand load trolley with steel platform mounted on two swivel type metal based rubber wheel at push handle end and two fixed type metal based rubber wheels at other end.
- 2) Wheels shall be rubber-coated.
- 3) The trolley shall be equipped with a brake, eliminating trolley self-motion during outage.
- 4) Trolley structure shall provide for execution of all types of maintenance and repair works with application of mechanical means.
- 5) The trolley shall be equipped with slinging elements for its transportation by lifting means.
- 6) The hand load trolley delivery set shall include
 - a) Hand load trolley
 - b) One (1) set of all tools and tackles required maintenance and repair.
 - c) One (1) lot of essential spares for five years of trouble free operation
 - d) List of essential spares for 5 years trouble free operation with itemized rate.

- e) Two (2) Set of Operation documents.

4.8 Electro trolley: (against sl.no.14) shall consist of but not limited to the following:

- 1) Electro Trolley.
- 2) Charging device set for accumulator.
- 3) Special tool and devices for maintenance and repair.
- 4) Spare parts for term of warranty.
- 5) Consumables like lubrication for the initial operation of equipment till handing over.
- 6) One (1) lot of essential spares.
- 7) One (1) lot of start-up spares required during testing, trial operation and commissioning.
- 8) One (1) set of all required maintenance tools and tackles.
- 9) List of essential spares, start-up spare & recommended spares for 5 years trouble free operation with itemized rate.

4.9 Hand Operated Grapplers: (against sl.nos.15) shall consist of but not limited to the following:

- 1) Hand operated grapplers.
- 2) Hoisting chains.
- 3) Totally enclosed gearboxes.
- 4) Trolley runway rails (I-Beam) with machined clamps, bolts, and nuts, end stops with spring/rubber buffers and wheel stops.
- 5) Consumables like lubrication for the initial operation of equipment till handing over.
- 6) One (1) lot of essential spares.
- 7) One (1) lot of start-up spares required during erection, testing, trial operation and commissioning.
- 8) One (1) set of all required maintenance tools and tackles.
- 9) List of essential spares, start-up spare & recommended spares for 5 yrs trouble free operation with itemized rate.

4.10 Manually operated winch : (against sl.nos.16) shall consist of but not limited to the following:

- 1) Manually operated winch
- 2) Rope with hooks wound on drum and shall easily rotate with load from manual effort applied to it.
- 3) Adjustable crank with rubber grips.
- 4) Drum with brake arrangement.
- 5) Drum shall provide for all types of maintenance and repair works using mechanical means in NPP conditions.

- 6) Winch surfaces, subjected to corrosion, must have the protective coverings, implemented in manufacturing with due consideration of operation conditions.
- 7) The following is included into delivery set:
 - a) Manually operated winch
 - b) Rope with hook.
 - c) Certificate, with technical specification.
 - d) Instruction on installation and operation
 - e) Documents for maintenance in compliance with working instructions.
- 8) A certificate of test and examination shall be issued with every consignment of blocks, giving the following information for each one:
 - a) Safe working load,
 - b) Distinguishing mark,
 - c) Description,
 - d) Range of lift,
 - e) Load chain size and grade,
 - f) Date of testing, and
 - g) Operational proof load applied.
- 9) One (1) lot of essential spares.
- 10) One (1) lot of start-up spares required during testing, trial operation and commissioning.
- 11) One (1) set of all required maintenance tools and tackles.
- 12) List of essential spares, start-up spare & recommended spares for 5 yrs trouble free operation with itemized rate.

5.0 Inspection and Testing for Group-1 Equipments at Manufacturer's place:

All the components of the equipment and materials used in manufacturing the equipment shall be subjected to testing as per the relevant standards/ Manufacturer's standard practice. Relevant test certificates shall be made available to the Purchaser before the final shop inspection. In case the relevant correlating test certificates are not available, the supplier shall arrange to carry out the necessary tests required as per the QAP at his cost. Parts found unsatisfactory as to workmanship or material, shall be removed by the contractor and replaced by parts which are satisfactory. Major components and materials used to manufacture various assemblies shall be tested as per the approved QAP. Vendor shall prepare a QAP suiting to their manufacturing procedure and shall obtain the purchasers approval before start of manufacturing. Supplier shall conduct all tests required as per approved QAP to ensure that the equipment and material furnished conforms to the requirements of the approved QAP.

Manufacturing, fabrication, NDT and shop test procedures to be submitted for approval.

After all the individual components of the equipment are cleared by NPCIL QA, the vendor shall arrange for complete assembly of MHE and shall conduct shop tests for ensuring proper functioning of machinery and components, Performance test, load test and overload test in the Manufacturer's shop as per approved procedure and QAP in presence of Purchaser's representative. Speed, current, voltage and wattage shall be recorded for individual motions at no load, full load and shall be recorded in the format of approved load test procedure. Functional test of control panel shall be conducted by simulating working conditions. Insulation resistance test, High voltage test at 2.5 KV for one minute shall also be conducted.

The Purchaser's representative shall be given full access to the shop in which the equipment is being manufactured or tested and all test records shall be made available to Purchaser. A final inspection will be done by the Purchaser's representative before the dispatch of the equipment. Final tests of the complete units shall be carried out in the presence of the Purchaser's representative. The Purchaser shall be notified well in advance of the inspection requirement as per QAP, particularly for hold points/witness points.

6.0 List of applicable codes and standards for Group-1 Equipment :

The following codes and standards in their latest edition shall be followed for design, procurement, fabrication, and inspection and testing of Material Handling Equipments.

Code	Title
IS 3177	Code of Practice for Electric Overhead Travelling Cranes and Gantry Cranes other than Steel Work Cranes
IS 15419	Jib Cranes - Code of Practice
IS: 3938	Specification for electric wire rope hoists.
IS 6839	Code of practice for non-powered Material Handling Equipment's
IS 800	General Construction in Steel - Code of Practice
IS 807	Design, Erection and testing (Structural Portion) of Cranes and Hoists - Code of Practice
IS 808	Dimensions for Hot Rolled Steel Beam, Column, Channel and Angle Sections
IS 2062	Hot Rolled Low, Medium and High Tensile Structural Steel
IS 1030	Code of practice Carbon steel castings for general engineering purposes
IS 1570	Schedules for wrought steels
IS 1852	Rolling and cutting tolerances for hot rolled steel products

IS 1875	Carbon steel billets, blooms, slabs and bars for forgings
IS 2629	Recommended Practice for Hot-Dip Galvanizing of Iron and Steel
IS 6159	Recommended Practice for Design and Fabrication of Iron and Steel Products Prior to Galvanizing and Metal Spraying
BS 970	Wrought steels inform of booms, billets, bars and forgings
IS 2513	Boundary dimensions for rolling bearings for general engineering purposes
IS 277	Galvanized Steel Sheets, (Plain and Corrugated) - Specification
IS 814	Covered Electrodes for Manual Metal Arc Welding of Carbon and Carbon Manganese Steel - Specification
IS 816	Code of practice for use of metal arc welding for general construction in mild steel
IS 817	Code of practice for training and testing of metal arc welders
IS 818	Code of Practice for Safety and Health Requirements in Electric and Gas Welding and Cutting Operations
IS 823	Code of procedure for manual metal arc welding of mild steel
BS 2903	Higher tensile steel hooks
IS 15560	Point Hooks with Shank up to 160 Tonne - Specification
IS 2266	Steel Wire Ropes for General Engineering Purposes - Specification
IS 4826	Specification for Hot-Dipped Galvanized Coatings on Round Steel Wires
IS 3443	Crane rail sections
IS 2048	Specification for Parallel Keys and Keyways
IS 2291	Tangential keys and keyways
IS 2292	Specification for Taper Keys and Keyways
IS 2293	Specification for Gib-head Keys and Keyways
IS 2294	Specification for Woodruff Keys and Keyways
IS 2327	Straight sided splines for cylindrical shafts with internal centering - Dimensions, tolerances and verification
IS-4367	Alloy steel forgings for general industrial use
IS-1875	Carbon steel billets, blooms, slabs and bars for forgings
IS 3734	Dimensions for worm gearing
IS 4460	Gears - Spur and Helical Gears - Calculation of Load Capacity
BS 436	Machine cutgears, helical and straight spur
IS 3832	Hand-Operated Chain Pulley Blocks - Specification
IS 6216	Specification for Short Link Chain, Grade T (8), Calibrated for Pulley Blocks and other Lifting Appliances
IS 2429	Specification for Round Steel Short Link Chains (Electric Butt Welded), Grade L(3) Part 1 Non-Calibrated Load Chain for Lifting Purposes
IS 210	Grey Iron Castings - Specification
IS 305	Specification for Aluminium Bronze Ingots and Castings

IS 617	Aluminium and aluminium alloy ingots and castings for general engineering purposes (Superseded IS 20:1977)
IS-14329	Malleable iron castings
IS-3109	Code of practice conforming to Chains
IS 7261	Code of practice for Dimensions of top-plates for Castors
IS 7369	Code of practice for Specification for Wheels and Castors
IS 12359	Guide for selection of wheels and Castors
IS 8049	Code of practice for Platform trolley
IS-4215	Specification for Ring Type Needle Bearings
IS-5669	General plan of boundary dimensions for radial rolling bearings
IS-7460	Tolerances for tapered roller bearings
IS-7461 (Part 1, 2, 3)	General plan of boundary dimensions for tapered roller bearings Part 1 Single row bearings Part 2 Double row bearings Part 3 Flanged cups
IS 1363	Specification for Hexagonal Nuts & Bolts
IS 1364	Code of practice Hexagon Head Bolts, Screws and Nuts
IS 325	Three-phase induction motors
IS: 4029	Guide for testing of three phase induction motors.
IS 14578	Three-phase induction motors for use in nuclear power plants
IS 900	Code of practice for installation and maintenance of Induction motors
IS 732	Code of practice for electric wiring/installations
IS 1554 Part-I	PVC insulated (heavy duty) Electric cables (For working voltage up to and including 1100 V)
IS 1653	Rigid steel conduits for Electric Wiring
IS 694	Specification for PVC insulated cables (For voltages up to 1100 V) Part-I with copper conductors.
IS 3961	Recommended current ratings for cables
IS 13947	Specification for low voltage switchgear and control gear
IS: 4047	Heavy duty Air-break switches and composites units of Air-Break switches and fuses for voltage not exceeding 1100 volts.
IS: 6875	Control switches.
IS: 2959	Contactors for voltage not exceeding 1100 volts.
IS: 2208	HRC Cartridge fuse links for voltage above 650 volts.
IS 1893	Site spectra - Criteria for earthquake resistant design of structures
IS 2878	Fire Extinguisher, Carbon Dioxide Type (Portable and Trolley Mounted) - Specification
IS 5	Colours for Ready Mixed Paints and Enamels
IS:1477 (PART II)	Code of Practice for Painting of Ferrous Metals in Buildings
General	AERB Codes/ Guides/ Standards to be followed
AERB/NPP-	Safety classification and seismic categorization for

PHWR/SG/D-1	systems, structures and components of pressurized heavy water reactors
IEC 62262	Degrees of protection provided by enclosures for electrical equipment against external mechanical impacts (IK code)
IEC 60309	Plugs, socket-outlets and couplers for industrial purposes
IEC 61984	Connectors - Safety requirements and tests
IEC 60694	Common Specifications For High-Voltage Switchgear and Control gear Standards
ASME Sec. II A	Ferrous material specification
ASME Sec. II C	Specifications for welding rods, electrodes and filler metals
ASME Sec. II D	Material properties
ASME Sec. V	Non-destructive examination
ASME Sec. IX	Welding and brazing qualifications
ASTM: A106	Standard specification for seamless C.S. pipes for high temperature Services.
IEEE 344	Recommended practice for seismic qualification of Class-IE equipment for Nuclear Power Generating Stations.

7.0 The details of Group-2 :

The scope of works covers Receipt of Free Issue Materials Handling Equipments and Lifts from Clients stores, shifting to location, erection, testing at site, commissioning, performance testing and handing over of the following Material Handling Equipments and Lifts. The equipments are intended to confirm in all respects to high standards of erection and high quality of workmanship and to be capable of performing continuous operation. The erection, commissioning and testing of the following free issue MHE shall be done as per Russian/AERB codes & standards to be issued to the vendors after placement of LOI.

Sr. No	Description of cranes	SWL (T)	Span (m)	Lift (m)	Quantity (nos.)	Approx. weight of the equipment
1	Polar Crane (Circular)	350/190+32	42	22	2	581 MT each
2	Trestle Crane	350/190+32	10.5	48	2	325 MT each
3	Turbine Hall Crane	180+180/32	41	36	2	270 MT each
4	EOT cranes	20 to 32	13.5-16.5	16-18	3	45 MT each (Max.)
5	Single beam EOT	2T	6	6	1	
		5T	3.6-15	12-15	1	
6	Electric hoist	5T	NA	12	1	
7	Passenger Lift	400-630 Kg	NA	NA	14	
8	Cargo Lift	5000 Kg	NA	NA	2	
TOTAL					28	

7.1 Polar Crane (Sl. no.1) : Polar Crane is a circular crane with a working range from 0° to 370° with full capacity at all ranges and located at an elevation of +43.900 m inside the Reactor building for lifting various reactors components and other equipments during erection and maintenance. The crane is to be installed on the circular crane rail which is having a diameter of 42 m at an elevation of +43.900 m inside the reactor hall containment. The major components of polar crane are bridge with drive units, trolley with hoist, travel mechanisms and fork swing and axle extension mechanisms, Auxiliary hoist trolley with hoist mechanisms, dome maintenance platform, current supply line maintenance platform, current supply line to trolley, Buffer, Control system sensors, Temporary current supply line, Traverse, Platform, Anchor tie rod, Hydraulic loader, Gantry, platforms, stairs, railing, etc. The crane bridge includes the metal structure, horizontal roller, pedestal, circular travel mechanisms & bridge railing. Total weight of each polar crane is approximately 581 MT.

Major activities involved in polar crane are de-preservation of parts, assembly of Bridge Metal Structure, Assembly of Roller Pedestal with Bridge Girder, Assembly of Bridge Drive Mechanism, Assembly of Main Hoist & Auxiliary Hoist Trolley, Assembly of Main Gantry, Assembly of Auxiliary hoist Gantry with Monorail, Erection of the assembly of Bridge Metal Structure with Roller Pedestal and Bridge Drive mechanisms (R.H & L.H) on rail using Heavy duty crawler crane of NPCIL, Erection and alignment of the end beams with the respective bridge beam assemblies, erection of the MH & AH trolleys on girders separately and connect two trolleys with main hoist carriages by pin and bolts, erection of Grapples (four pieces), erection of assembled main gantry over the pedestal on the Bridge metal structure, erection of assembled Auxiliary hoist gantry over the pedestal on the Auxiliary hoist trolley, erection of dome maintenance platform on roller pedestal units, rope reeving of main hoist suspension and auxiliary hoist with rope drum, fixing of permanent current supply platform, lubrication at all specified points, oil filling in gear boxes, thrusters, application of rope preservative compound and commissioning and load testing.

7.2 Trestle crane: (Sl. no.2) : Trestle crane is electrical operated overhead travelling crane with the load lifting capacity of 350/190+32 T. The crane is installed over the transport portal beam at an elevation of +52.850 m outside the reactor building. The crane is erected over the crane rail of type KP120.

The major components of Trestle crane are trolley, Hook of 350 T load capacity, Cable drum, Trolley frame, Main hoist mechanism, Auxiliary

mechanism, Trolley travel mechanism, Anti-seismic mechanism, Crane security holds, Trolley railing, Main hoist suspension, Auxiliary hoist suspension, Cabin, Crane rail tracks, Limit switches and encoders, Current supply line to trolley, Crane trestle depot, Gantry, Metal structure of gantry, Platform, Hoist maintenance platform, Stairs, Shelter, Electric wiring equipment of current supply line to trolley, etc. Total weight of each trestle crane is approximately 325 MT.

Major activities involved in Trestle crane are de-preservation of parts, assembly of frame parts on supports (concrete blocks/ wooden sleepers) with sufficient heights accommodating bogies assembly and leveled to ensure the bolting position, fixing of Trolley hand railings, ladder and platform, assembly of Gantry frame metal structure at ground with bolts and geometric dimensions, assembly of trolley shelter with metal sheeting at ground assembly, Metal structure for Shelter for Hoist at ground, erection of gantry & shelter at their place, erection of trolley frame on to the Trestle crane girder rail, erection of Reduction gear unit, Hoist drum, Sheaves, pulleys, rope reeving, suspension block, motors, brakes, floating shafts, load cells, security holds, fixing devices for main hoist & aux. hoist drive assembly, alignment of motor to the gear unit on the erected trolley, erection of part assembly of the gantry, erection of part assembly of the shelter, erection for current supply line to gantry shall be done manually at its place and commissioning and load testing.

7.3 Turbine hall crane (Sl. no.3) : Turbine Hall crane is Electrical operated Overhead travelling crane with the load lifting capacity of 180+180/32 T. The crane is located at an elevation of +29.205 m inside the Turbine Building. The crane is erected over the crane rail of type KP120.

The major components of Turbine Hall crane are Bridge of crane with control cabin consists of span girders and end carriages, Crane travel mechanism, Erection trolley with main and auxiliary hoists, Electrical equipment and cables, Mounting trolley having capacity of 180 T, etc. Total weight of each crane is approximately 270 MT.

Major activities involved in Turbine Hall crane are de-preservation of parts, assembly of end carriages with the travel mechanism, assembly and erection of metal platforms and hand railing around the bridge by welding, erection of the assembled bridge structure of the beam with travel mechanism shall be lifted and erected over the crane rails using Heavy duty crawler crane of NPCIL and commissioning and load testing. Additional mounting trolley of 180T is to be erected for carrying out erection of generator stator and the same is to be

dismantled and deposited to NPCIL stores after completion stator erection.

7.4 Other EOT cranes and Hoists (sl. no. 4, 5 & 6) : Assembly, erection, commissioning and load testing of EOT cranes in various buildings as per the general procedures followed in Industries.

7.5 Lifts: (Sl. no. 7 & 8) : Uncrating of materials, visual inspection to check for any damage, checking for completeness, scaffolding, assembly and erection including erection of EPs for the erection of brackets, Supply and fixing of Hilti bolts for the erection of EPs & concrete chipping & core cutting and supply, fabrication, assembly & erection of aluminum sheets & frames of 3 mm thickness for lift doors required for installation, alignment, commissioning and load testing of Passenger and Cargo Lifts.

8.0 Erection and Testing of both Group-1 and Group-2 Equipments at Site :

The vendor shall be responsible for all stages of erection, commissioning and load test, performance test and over load test of all the above Material Handling Equipments of both Group-1 and Group-2 in various buildings and locations at KKNPP-3&4. All necessary tools and tackles for the same except load for load testing of the crane shall be supplied by the vendor. The necessary loads for carrying out full load and overload tests of the crane at site will be provided by the Purchaser.

Equipment documents/drawings of free issue materials shall be issued to vendor for preparation of procedure, QAP and erection work. The erection work shall be carried out as per procedure and QAP submitted by vendor and approved by Purchaser. Prior to taking up the erection work, the crane vendor shall ensure that the provisions made by other agencies like runway girder etc. are in order and within the required tolerances. All the pre commissioning checks shall be identified and carried out in the presence of purchaser's representative. All commissioning records shall be maintained and handed over to the purchaser after successful testing of the crane.

Upon completion of erection, commissioning and testing of the crane in all respects, the vendor shall prepare and submit a detailed report of the entire work done including the tests carried out and the test results to the purchaser at site. Acceptance of the work done will be conveyed by the purchaser by issuing a Construction Completion Certificate to the vendor certifying that the work has been done as

required and the crane is taken over by the Purchaser. The vendor shall be deemed to have completed the erection and commissioning work only on issue of Construction Completion Certificate as above.

9.0 TIME SCHEDULE :

The various activities involved for execution of entire work are as follows:

1. Preparation of drawings, documents and QAP and submission for purchaser's approval for manufacturing of Group-1 MHE (1965 nos.).
2. Procurement of materials and components, manufacturing, assembly, testing at manufacturer's shop and packing and forwarding of Group-1 MHE (1965 nos.) to KKNPP site.
3. Erection, commissioning, testing and handing over of both Group-1 & Group-2 of MHE.

Bidder shall submit a time schedule proposed by them from the date of award of work for above mentioned activities as per **Annexure- 10**.

10.0 QUALIFICATION CRITERIA:

It is envisaged to have a single package contract having a scope of work "Design, manufacturing, supply, erection, commissioning and testing of Group-1 MHE and Receipt, shifting to location, erection, commissioning and testing of Group-2 MHE together." The total estimated cost is approximately ₹ **47.00 Crores**.

OEM (Original Equipment Manufacturer) having in-house Design, Engineering, Manufacturing and testing facilities of Material Handling Equipments will be preferred. The interested bidders should attach all relevant documents as a proof in support of the same along with the Expression of Interest.

The bidder shall submit the list of Materials Handling Equipments executed by them in the last 10 years involving design, detailed engineering, preparation of drawings, materials, construction features, manufacture, shop inspection & testing at the manufacturer's works, supply, installation, commissioning and testing at site and performance testing. Bidder should attach all relevant documents such as work completion certificate/ performance certificate by the clients as a proof in support of the same with the Expression of Interest in **Annexure-2**.

Average Annual Financial turnover during the last 5 years, ending March 31st of the previous financial year (i.e.2015-2016, 2014-15, 2013-14, 2012-2013, 2011-2012), should not be less than ₹ **14.10 Crores**. For proof of Annual turnover, the following documents/ photocopy must be submitted along with the EOI:

- i) Certificate from a Chartered/Cost Accountant with membership No /Firm Registration No. certifying annual turnover for last 5(Five) years.

OR

- ii) Audited copy of Profit and Loss account for last 5 year.

If required, Bidders can make joint venture to meet the above criteria. Joint ventures are acceptable, subject to the conditions that joint venture partners would be limited to two (including the lead partner) and both the partners must be based in India.

11.0 SUBMISSION OF EOI :

Interested Indian companies may submit Expression of Interest in sealed envelopes duly super-scribed with the name of work up to

13-03-2017 at CENTRALIZED TENDER CELL (CTC), C-BLOCK, GROUND FLOOR, OFFICE COMPLEX, KKNPP, KUDANKULAM, TIRUNELVELI DIST, TAMIL NADU, PIN:627106 along with following documents / details:

- (a) Company profile giving details of Organization setup. State whether proprietor ship, partnership, private Limited or Public Limited.(Annexure-1)
- (b) Staff strength of organization (Annexure-5) with bio-data of key personnel. (Annexure-6)
- (c) Particulars of similar works completed satisfactorily along with performance certificates issued by the client in the last ten years ending 31st March 2016.(Annexure-2)
- (d) Details of similar works in hand at present with their value along with copies of acceptance / award letters. (Annexure-3)
- (e) Annual turnover including profit and loss account duly audited by the Chartered Accountant for the last five years sending 31st March 2016. (Annexure-4)
- (f) Latest solvency certificate issued by their bankers.
- (g) Details of construction plant & equipment available with the organization either owned or leased. (Annexure-7)
- (h) Safety, Health & Environmental compliance (Annexure-8)
- (i) The documents in support of data given under various annexures

shall be listed in Annexure-9

- (j) Time schedule to execute both Group-1 & Group-2 MHE (Annexure-10)
- (k) Undertaking to the effect that the company has never been black listed by any of the State / Central Government Department.
- (l) Names and credentials of the associates referred to in Para 2 above with whom the firm intends to have tie up for execution of work.
- (m) Whether the bidder would like to participate in individual capacity or Joint venture with any other party is proposed.
- (n) All the supporting documents in soft form (CD/DVD) and hard form.
- (o) Signed check list (Annexure-11)

Note: Similar work means “Design, manufacturing, supply, erection, commissioning and testing of Material Handling Equipments” either by themselves or through joint venture.

12.0 GENERAL CONDITIONS:

1. Joint ventures are acceptable, subject to the condition that joint venture partners would be limited to two (including the lead partner) subject further to the condition that both the partners must be based in India.
2. This notice is only for inviting Expression of Interest and not for Pre-qualification. Response to this call shall not confer any right whatsoever for being considered for award of work at any stage.
3. This notice may also be seen at NPCIL website www.npcil.nic.in.
4. Correspondence/enquiries if any may be made to CTC, KKNPP.

-sd-

Chief Construction Engineer,
Kudankulam Nuclear Power Project 3&4,
Kudankulam - 627106

DOCUMENTS TO BE SUBMITTED

BY THE COMPANIES

Annexure-1

General information of the company

1. Name & Address of the company
2. Name & Designation of the concerned officer to whom all references shall be made.
3. Fax nos.:
4. Phone nos. / Mobile Nos.:
5. E-mail ID:
6. Chief of the Organization:
E-mail Id:
Telephone:
7. Total No. of Employees / Manpower Strength:
8. Type of the Organization (Public Sector/Limited/Private limited/Partnership/Proprietary/Society/Any other.)
9. Company CIN No:
10. No. of Offices/Branches (enclose the list):
11. Any other information that company may like to give in order to highlight their core competence.

Note : Separate sheets may be used wherever necessary.

Place:

Authorized signatory

Date:

Seal of the company

Annexure-2

Past Experience

List of MHE executed in the last 10 years involving design, detailed engineering, preparation of drawings, materials, construction features, manufacture, shop inspection & testing at the manufacturer's works, supply, installation, commissioning and testing at site and performance testing. (Which best illustrate the experience/qualification of the vendor for the subject works)

Sl. No.	Name of Client	Description of work (attach all relevant documents such as work completion certificate/ performance certificate by the clients as a proof in support)	Value of work	Period		The work is done directly or through sub contractor (Also indicate name of Consultant, if any)	Remarks
				From	To		

Note: Photocopy of Performance Certificate / Completion Certificate of Client in support of the work mentioned above is required to be enclosed.

Note: Separate sheets may be used wherever necessary.

Place:

Authorized signatory

Date:

Seal of the company

Annexure-3

Existing commitments

Sl. No.	Full postal address of client & name of Officer-in-charge with Contact Details	Description of the work done	Value of Contract	Date of commencement of work	Scheduled /Revised completion period	% age completion as on date	Expected date of completion	Remarks

Note: Separate sheets may be used wherever necessary.

Place:

Authorized signatory

Date:

Seal of the company

Annexure-4

Annual turnover statement

The company shall indicate their annual turnover during preceding 5 years based on the audited balance sheet / profit & loss account statement.

FINANCIAL YEAR	ANNUAL TURNOVER (₹)	NET WORTH (₹)
2011-2012		
2012-2013		
2013-2014		
2014-2015		
2015-2016		

Note:

1. Copies of audited balance sheets with profit and loss account of 5 years shall be submitted in support of above entries.
2. Company shall work out net worth on the following basis:
Net worth: Reserve + Capital – Accumulated loss
3. Indicate whether Company's profit was positive in at least two of last three years
4. Indicate whether the Company has applied for Corporate Debt Restructuring (CDR) in last 5 Years.
5. Separate sheets may be used wherever necessary.

Place:

Authorized signatory

Date:

Seal of the company

Annexure-5

Organisation chart

Organisation chart showing no. of qualified engineers & supervisory staff etc. on the rolls of company & proposed to be deployed.

Sl.No.	Class of manpower / engineer/supervisor	Details of Personnel to be deployed on this work		Numbers
		Available with the company	To be employed	

Note:

1. Names and short resume of their qualification & experience may also be given for key personnel in the prescribed format at Annexure-6.
2. Separate sheets may be used wherever necessary.

Place:

Authorized signatory

Date:

Seal of the company

Annexure-6

Resume of key personnel

Name of the Employee:	
Date of Birth(DD/MM/YYYY):	
Year with Firm(in years):	
Nationality:	
Detailed Tasks Assigned:	
Key Qualifications:	
Education: Institution: Year: Course:	
Employment Record:	
Summary of relevant Experience:	

Note: Separate sheets may be used wherever necessary.

Place:

Authorized signatory

Date:

Seal of the company

Annexure-7

List of available plant & machinery and Manufacturing and Testing facilities

Sl.No.	Name of equipment	Make / capacity / log no / year of manufacture	Numbers

Note: Separate sheet may be used wherever necessary.

Place:

Authorized signatory

Date:

Seal of the company

Annexure-8

Safety, Health & Environment compliance

Sl.No.	Description of certification	Remarks

Note :

1. Separate sheet may be used wherever necessary.
2. Company's EH&S policies/ highlights of the achievements and awards may be furnished.

Place:

Authorized signatory

Date:

Seal of the company

Annexure-9

List of supporting documents attached

Document No.	Description	Ref Annexure No	Remarks

Place:

Authorized signatory

Date:

Seal of the company

Annexure-10

Time schedule to execute both Group-1 & Group-2 MHE.

S.No.	Activities	Period in Months
1	Preparation of drawings, documents and QAP and submission for purchaser's approval for manufacturing of Group-1 MHE (1965 nos.).	
2	Procurement of materials and components, manufacturing, assembly, testing at manufacturer's shop and packing and forwarding of Group-1 MHE (1965 nos.) to KKNPP site.	
3	Erection, commissioning, testing and handing over of both Group-1 & Group-2 of MHE.	

Place:

Authorized signatory

Date:

Seal of the company

Annexure-11

CHECKLIST

Please note:

To help you prepare the best application possible, all items below need to be considered and ticked off. This will also assist us with assessment of your application.

During EOI Submission, please keep this page after the cover page.

(Put ✓ / ✗ in the appropriate box under remarks column)

Have you checked and enclosed:-

Sl.No.	Description	Page Number	Remarks
1.	Photo-copies of Credentials /work experience / Supporting documentary evidence – for technical and financial capability.		<input type="checkbox"/>
2.	Photo-copies of VAT/ST Registration Certificate.		<input type="checkbox"/>
3.	Photo-copies of Provident Fund Registration Certificate		<input type="checkbox"/>
4.	Photo-copies of IT/ PAN		<input type="checkbox"/>
5.	Photo-copies of Service Tax Registration Certificate		<input type="checkbox"/>
6.	Photo-copies of CIN		<input type="checkbox"/>
7.	Annexure-1		<input type="checkbox"/>
8.	Annexure-2		<input type="checkbox"/>
9.	Annexure-3		<input type="checkbox"/>
10.	Annexure-4		<input type="checkbox"/>
11.	Annexure-5		<input type="checkbox"/>
12.	Annexure-6		<input type="checkbox"/>
13.	Annexure-7		<input type="checkbox"/>
14.	Annexure-8		<input type="checkbox"/>
15.	Annexure-9		<input type="checkbox"/>
16.	Annexure-10		<input type="checkbox"/>
17.	All the above documents in soft form (CD/DVD)		<input type="checkbox"/>
18.	Final envelope containing all the above documents in hard form & soft form		<input type="checkbox"/>

Place:

Authorized signatory

Date:

Seal of the company