ಭಾರತ್ ಹೆವಿ ಎಲೆಕ್ಟ್ರಿಕಲ್ಸ್ ಲಿಮಿಟೆಡ್
भारत हेवी इलेक्ट्रिकल्स लिमिटेड
Bharat Heavy Electricals Limited
(A Government of India Undertaking)
ELECTRONICS DIVISION
P.B.No 2606, Mysore Road, Bangalore - 560 026

NOTICE INVITING EXPRESSION OF INTEREST FOR IGBT BASED VFD

EOI REFERENCE NUMBER:
445/VFD-EOI/01

QUERIES AND REPLIES
ALONG WITH ORIGINAL EOI DOCUMENT

This document contains 18 pages

Consisting of:
Cover Page: 1 (this page)
Queries and Replies: 5 Pages
Original EOI Document: 12 pages

EXTENDED DUE DATE FOR SUBMISSION IN BOTH HARD AND SOFT COPIES: 16TH JANUARY 2010

QUERIES FROM VARIOUS PARTIES AND CORRESPONDING REPLIES OF BHEL-EDN		
Sl No	**Query**	**BHEL's Reply**

A. QUANTITIES OF DRIVES

1	With reference to your EOI Ref : 445/EOI-VFD/01 we need clarification for below - LV VFD Qty required(Consolidated requirement of BHEL- India) - MV VFD Qty required(Consolidated requirement of BHEL- India)	**Please refer Section-1, Clause 1.5 of the Expression of Interest document, where the approximate quantities required of LV and MV Drives have been indicated.**
2	This particular Clause tells in percentage we need approximate qty in MV drives& LV drives.	**As stated in Clause 1.5 of the EOI Document, the number of MV Drives annually required will be approximately 10 to 15 numbers, with the balance annual quantities from LV Drives.**
3	The qty mentioned for Medium Voltage Vfds is only 20% of 75 nos. Which means 15 nos. This appears too low . Kindly clarify .	**See Reply to Point 2 above**
4	Is it possible to give a more detailed overview of the actual requirement (rating, voltages, quantities etc.) for BHEL's expected annual requirement.	**See Reply to Point 2 above**
5	The per year requirement of MV Drives is 50-75 nos or 20% of 50-75 numbers?	**20% of 50-75 numbers will be in the MV Drives segment annually.**

B. TECHNICAL SPECIFICATIONS

1	On page 7/12 Clause 2.1 , technical spec Sl no.2 Application : calls for Mining / Metals , Oil&Gas and Cement . The power sector is not at all called for . BHEL has the biggest presence in Power Sector . Why then is this sector not called for in the Application areas ? Which product are you marketing for the Power sector ?	**Power Sector requirement is covered under the categories – Fans, Pumps and Compressors.**
2	Is the rated power of 20 MW for one motor only or is it a combination of several motors.	**Rated Power of 20MW is for 1 Compressor motor. Requirement of this rating is expected to be about 1 or 2 per year.**
3	What are the actual rated input and output powers for the Drive System, we assume that 6.6 and 11 kV is probably the input voltage of the transformer.	**Rated Input Voltage of Transformer is as detailed at Section-2 Technical Specifications Sl.4 of the EOI document.** **Rated Motor Input Voltage & Power is as detailed at Section-2 Technical Specifications Sl.6 of the EOI document.** **VFD Ratings shall be designed to meet the requirements as detailed in the Technical Specifications and shall be made suitable for the Input/Output Voltage ratings through step-up/step-down Transformers.**
4	Applications: Soft Starters? One product is VFD and a different one is a soft starter. Is this a mistake?	**VFD Drives can be used as Soft Starters in certain applications in both Induction Motor or Synchronous Motors. In your detailed proposal please furnish details of drives available with you for both these applications.**
5	Input supply: You miss low voltage values, 415V and 690V.	**415V and 690V could also be available as LV Input voltages**
6	Is 1.1kV common voltage in India?. Is not a common voltage to be used with VFD, in our opinion.	**It may not be a very commonly available voltage, but there could be some applications which has a 1.1.kV AC Input Voltage.**
7	Low voltage: 415V/690V. There is no problem to supply such voltages up to 1.5MW. Our Air/Liquid families of VFD Drives are from 380V up to 690V (most common 380V/400V/415V/440V/480V/600V/660V/690V) up to 4.5MW. Which would be the power range (min-max)? From up to 1.5MW.	**The Power range of LV Drives (415/690V) shall be 5kW to 1500kW**

8	Inside our product portfolio we miss 6.6kV and 11kV VFD. We are working now in 6.0kV up to 6.9kV family and it is almost finish. In the other side, 11kV will take at least some more years.	**For 6.6kV and 11kV Motors, lower voltage MV Drives with a Step-up Output Transformer is acceptable to us.**
9	Protection class IP42 is for Air/water solution or it is only for water?	**Please specify in your detailed proposal, the various Protection Class options separately for Air cooled and Water cooled Drives being manufactured by you.**
10	We have proven MV Drives with SGCT power device in place of IGBT. Is SGCT based inverter acceptable to BHEL?	**You may give your proposal with Information / Documents as per Section 5 of the EOI Document.**
11	We have proven MV Drives with current source SGCT inverter. Are these acceptable to BHEL in lieu of VSI specified here?	**See Reply to Point 10 above**
12	IS BHEL EOI limited to IGBT based MV Drives OEM only?	**See Reply to Point 10 above**
13	Does BHEL want one series MV Drives to cater to all applications listed here?	**Please offer the MV Drives best suited for the applications. Different series of Drives tailored for different applications specified is acceptable to us.**

C. BUSINESS MODELS

1	Business Models a) A typical BHEL Transfer of technology agreement, identifying anticipated milestones the duration and content. b) A Typical BHEL Business sharing agreement, identifying the core content.	**As you are aware, BHEL is looking for an Expression of Interest at this stage, and as such, the expectations of BHEL have been brought out in Clauses 1.5, 1.7 and 1.8 of the EOI Document. Further, as stated in Clause 1.9, BHEL will choose the business model to be adopted on analyzing the responses to this Notice inviting EOI. Hence, at this stage, we request you to kindly submit your proposal along with all documents as listed in Section - 5 of the Notice inviting EOI including your proposed business model indicating milestones and content.**
2	For the Business Sharing agreement , do you wish to procure complete customized units from us ? If yes whats the specification governing the same ?	**BHEL intends to progressively indigenize and manufacture in-house the items listed in Section 1 Clause 1.7 A. In response to the EOI, the partners are required to submit information as per Section 5 – Sl. No. 5 to 8, with respect to TOT and BSA.**
3	First of all, we would like to thank you so much for your time and your attention to our business. We are pleased to bring to you and your company info of our company as below: Our business focuses 03 main parts: 1. Maintenance and Inspection service for electrical and automation system. 2. Engineeing, installation, and commissioning for electrical and automation with high quantity products that are manufactured by: Rockwell Automation, Emerson, GE, ABB, etc. 3. Supply electrical and automation spare parts as well as field device. We are looking forwarding to getting a chance to have cooperation from you. Please DO NOT hesitate to contact us if you have any question about us	**See Reply to Point 1 above**

D. SCHEDULE

1	With respect to your notice inviting EOI for the above , we would like to inform you that we are currently evaluating the proposals ; however since this entails extensive internal discussions with our principals, may we request you to extend the date by a month . We will revert to you with our proposal by then .	**The last date for submitting your responses (both in hard and soft copies) to the EOI has been extended to 16/01/2010. Kindly ensure that your responses reach BHEL-EDN on or before this extended due date.**
2	We could not able to upload our questions in your web site, Hence we are forwarding this mail for necessary reply. We also request you to kindly extend the date of submission of documents.	**See Reply to Point 1 above**

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NOTICE INVITING EXPRESSION OF INTEREST FOR IGBT BASED VFD

EOI REFERENCE NUMBER:
445/VFD-EOI/01

This document contains 12 pages

BHARAT HEAVY ELECTRICALS LIMITED,
ELECTRONICS DIVISION (BHEL-EDN),
INVITES EXPRESSION OF INTEREST FROM OEMs FOR
TRANSFER OF TECHNOLOGY / BUSINESS SHARING AGREEMENT
FOR IGBT BASED VARIABLE FREQUENCY DRIVE SYSTEM
FOR INDUCTION AND SYNCHRONOUS MOTOR CONTROL.

CONTACT PERSON AND SCHEDULE

Contact Person
Mr Gautam Sarkar
Senior Deputy General Manager (CE-MM Purchase)
BHEL Electronics Division
Mysore Road
Bangalore – 560026.
INDIA
Phone : +91 80 26989069

e-mail ID for correspondence
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Schedule of Events
Last date for receipt of queries/clarifications from prospective partners: 21st November 2009

Consolidated Reply to all queries/clarifications by BHEL-EDN: 2nd December 2009.
(All queries and replies will be available only on BHEL websites on this date – www.bhel.com and www.bheledn.com)

Last Date for Receipt of Response to EOI at BHEL-EDN: 16th December 2009.

Mode of Submission of Documents

In sealed cover to the above person / mail to the e-mail ID so as to reach on or before the date mentioned above. The cover shall be superscribed with Reference number and the words "Expression of Interest – IGBT based VFD". In case of offer by e-mail, the words "Expression of Interest – IGBT based VFD" shall be in the Subject field of e-mail.

In case of submission of EOI through mail to the e-mail ID, hard copy shall be enclosed along with printout of e-mail and sent to the above person so as to reach on or before 24th December 2009.

EXPRESSION OF INTEREST FOR TRANSFER OF TECHNOLOGY / BUSINESS SHARING AGREEMENT FOR DESIGN, MANUFACTURE, SUPPLY, TESTING, COMMISSIONING AND TRAINING FOR IGBT BASED VARIABLE FREQUENCY DRIVE SYSTEM FOR INDUCTION AND SYNCHRONOUS MOTOR CONTROL

TABLE OF CONTENTS

SECTION - 1
EXPRESSION OF INTEREST

1.1 ABOUT BHEL

Bharat Heavy Electricals Limited (BHEL) **(www.bhel.com)**, a Government of India Undertaking, is a major electrical equipment manufacturer for both the Indian and export markets. It is one of the largest engineering and manufacturing enterprises in India and is one of the leading international companies in the field of power generating equipment with an annual revenue of over INR 275 Billion (US$ 5.5 Billion).

BHEL offers a wide spectrum of products and services for core sectors like Power, Transmission, Industry, Transportation, Oil & Gas, Non Conventional Energy Systems etc.

1.2 ABOUT ELECTRONICS DIVISION

The Electronics Division (EDN) **(www.bheledn.com)** of BHEL was formed in 1976 mainly to establish a strong base in the areas of Automation and Power Electronics to supplement the Company's pioneering efforts in the above areas. Most of the power plants and industries in the country today are equipped with electronic products and systems which have been manufactured and supplied by BHEL-EDN. We also have a good international reference by way of our exports to Europe, Middle-East and South-East Asian markets. EDN has been accredited with ISO 9001, ISO14001 and OHSAS18001 standard certifications.

1.3 BHEL-EDN's EXPERIENCE IN VARIABLE FREQUENCY DRIVES (VFD)

Manufacture of DC and AC Drives for Industrial and Power Plant applications is one of the business areas which EDN has been pursuing since inception. BHEL-EDN has supplied a number of Variable Voltage Variable Frequency Low Voltage Drives up to 1MW rating for Induction Motors and a large number of Medium Voltage AC Drives for Synchronous Motors and DC Drives up to 10 MW rating.

BHEL-EDN foresees a good market for Medium Voltage (MV) / Low Voltage (LV) Induction and Synchronous Motor Drives using the latest controllers and Insulated Gate Bipolar Transistors (IGBTs).

1.4 EXPRESSION OF INTEREST (EOI)

BHEL-EDN proposes to design, manufacture, supply and commission IGBT based Medium Voltage / Low Voltage Variable Frequency Drives for Induction and Synchronous Motors from its Electronics Division. This EOI is published for seeking response from Original Equipment Manufacturers (OEMs) who are willing to be associated with BHEL-EDN to enable BHEL-EDN meet the above requirement. This association and partnership could be based on any one of the business models detailed in Cl. 1.8, with Transfer of Technology option being the preferred one.

1.5 A COLLABORATIVE APPROACH

BHEL-EDN intends to have a long term understanding with the prospective partner to enable BHEL-EDN to bid for, design, manufacture, supply, test, commission and thus achieve a significant increase in the share of the IGBT based Drives market in a phased manner. BHEL-EDN's share of this market is expected to be approximately 50-75 sets of various ratings with the majority of business value from MV Drives. Around 20% of the number of sets will be in the MV Drives segment.

1.6 TECHNICAL SPECIFICATIONS

Technical Specifications of IGBT based Variable Frequency Drives is covered in Section – 2.

1.7 METHODOLOGY OF BUSINESS ARRANGEMENT BETWEEN BHEL-EDN AND PROSPECTIVE PARTNER

The IGBT based VFD for Induction and Synchronous Motor Drives basically comprises 2 types of items:

A. Items in the manufacturing range of the partner and manufactured at their works, either at a single location or at multiple locations. These generally comprise items like IGBT stacks, Electronic controllers, hardware, software etc.
B. Items other than (A) above to be procured by BHEL-EDN. The specifications for these items are to be given by the prospective partner and comprise items like circuit breakers, transformers, reactors, braking resistors, cables etc. The detailed purchase specifications will be in line with the specifications provided by the partner for these items. Specifications for Induction/Synchronous Motors are also to be furnished.

1.7.1 Typical Arrangement

The partner shall indicate in their response to this EOI the typical arrangement for transfer of technology to BHEL-EDN along with the milestones and time frame.

This shall however be mutually agreed considering the long term support implications at the time of entering into a final agreement.

1.7.2 Information Sharing

In the response to the EOI, the prospective partner shall clearly state his willingness to share the following with BHEL-EDN.

a. Engineering information and selection criteria of power devices, controllers and other boughtout components.
b. Technical documentation for manufacture of various sub-assemblies including processes employed, testing methods, source code and software.
c. Details of special purpose equipment for manufacture and testing.
d. Training and assistance in system design, manufacturing and testing of the equipment.
e. Support for commissioning and training of BHEL-EDN engineers for handling the equipment at site.
f. Technology upgrades.
g. A commitment has to be given by the partner for long-term association with BHEL-EDN to address issues of obsolescence and availability of spares. The partner to forward details regarding methodology and duration for which they can provide support.

1.8 BUSINESS MODELS

BHEL-EDN proposes to have an understanding with OEMs with reference to technology transfer and/or business sharing in the areas of IGBT based Medium Voltage/Low Voltage Induction and Synchronous Motor Drives as per any of the following suggested business models, with Transfer of Technology option being the preferred one.

1.8.1 Transfer of Technology

In the Transfer of Technology model, the Partner should be willing to transfer the technology to BHEL-EDN for design, purchase, manufacture, inspection, testing, commissioning, trouble shooting, servicing/maintenance, quality assurance methods, etc., for the IGBT based MV/LV Drives to meet the market requirement.

1.8.2 Business Sharing Agreement (BSA)

In the BSA model, BHEL-EDN intends to procure IGBT based MV/LV Drives in phased manner (CBU and/or SKD/CKD kits) from the prospective partner and the Partner agrees to develop / customise the IGBT based MV/LV Drives jointly in association with BHEL-EDN

engineers to meet the market requirement. The procurement will be on the basis of total cost to BHEL-EDN.

The emphasis for Transfer of Technology / Business Sharing Agreement is for MV Drives segment. Partners could indicate their willingness to share the same details for LV Drives segment also or alternatively their willingness to supply the requirement in LV Drives segment on dedicated long term supply arrangement at competitive market prices during the period of Agreement for any one of the above options.

1.9 RESPONSE TO THE "EXPRESSION OF INTEREST" – (EOI)

BHEL-EDN will analyze the responses received towards this EOI to shortlist prospective partners.

BHEL reserves the right to choose the business model to be adopted.

A separate Request for Quotation (RFQ) along with detailed Technical and Commercial Specifications will be issued to these shortlisted partners for submitting Techno-Commercial and Price offers.

1.9.1 Qualifying Requirements

Only OEMs meeting the Qualifying Requirements (QR) as described in Section–3 may respond to this Expression of Interest and will be considered for further evaluation.

1.9.2 Checklist of Documents

The information required to be submitted along with the EOI by the interested OEMs are given in Section–5.

SECTION - 2

TECHNICAL SPECIFICATION FOR IGBT BASED VARIABLE FREQUENCY DRIVE SYSTEM FOR INDUCTION AND SYNCHRONOUS MOTOR CONTROL

2.1 TECHNICAL SPECIFICATIONS

Sl.No	Item Description	Requirement
	GENERAL REQUIREMENTS / APPLICATION DATA	
1.	Type of Drive	IGBT based Inverter for Speed Control of Induction Motor and / or Synchronous Motor
2.	Application	Fans, Pumps, Compressors, Gas Turbine Starters, Soft Starters, Drives in Mining & Metals (including Rolling Mill Drives), Oil & Gas, Cement
3.	Applicable Standards	IEC 61800, IEC 60146
4.	Input Supply Data	a) Voltage: 1.1/3.3/6.6/11 kV ± 10% b) Frequency: 50Hz ± 5%, 3ϕ
5.	Environmental Parameters	a) Ambient Temp.: 50°C b) Relative Humidity: < 95% (non-condensing) c) Altitude: Max. 1000m above mean sea level
6.	**Motor Parameters**	
	Type of Motor	Squirrel Cage Induction Motor / Synchronous Motor
	a) Medium Voltage	
	(i) Rated Power	Upto 20MW
	(ii) Rated Voltage	1.1/3.3/6.6/11 kV
	(iii) Rated Frequency	50Hz
	b) Low Voltage	
	(i) Rated Power	Upto 1.5MW
	(ii) Rated Voltage	415/690V
	(iii) Rated Frequency	50Hz
7.	Manufacturer's VFD Ratings & Cooling System	IGBT based VFD Range for the MV/LV ratings specified at Sl.6 above. Partner shall specify the cooling system used in the above range – Air / Liquid Cooled.
	VFD REQUIREMENTS	
8.	Transformer	(a) Option 1 – Integrated in Drive Cubicle (Dry Type) (b) Option 2 – External, Outdoor (Oil Cooled/Dry Type) Partner to confirm if both options are available
9.	Converter Type	Full Wave Diode Rectifier/Active Front End
10.	Inverter Type	Voltage Source PWM IGBT Inverter
11.	Efficiency at nominal power	>97%
12.	Power Factor	>0.95 (at 100% load and rated speed)
13.	Protection Class	IP 42
14.	Harmonic Limitations	In accordance with IEEE 519
15.	Redundancy	Partner shall confirm whether redundancy is available in the VFD System being offered. If available, partner to indicate how this is achieved.
16.	Control Modes	V/F Control, Vector Control (With or without speed sensor), Direct Torque Control

	CONTROLS AND MONITORING	
17.	Speed Regulation without speed sensor	± 0.5% (min)
18.	Output frequency	0 to 50Hz
19.	Switching Frequency	>1kHz
20.	Noise Level	<80dbA
21.	Overload Requirement	As per IEC 60146-1
22.	Additional features	a) Power Loss Ride through for 2 secs, Auto-Restart & Flying Restart b) Adjustable Motor Overload feature c) Field adjustable torque limits & acceleration/deceleration ramps d) Multi-function and user programmable I/Os e) Selectable reverse run prohibition f) Settable minimum and maximum operating frequency
23.	Protection Features	Motor Overload, Overvoltage, Undervoltage, Ground Fault, Short-Circuit, Phase failure, Overtemperature, Stall prevention etc.
24.	Local / Remote Operation	Local Mode – Graphic Operator Keypad Remote Mode – Operation from Plant Distributed Control System (DCS) via a 4-20mA external signal and start/stop signal through wired and networked communication
25.	Communication Protocol	Ethernet/Profibus/Modbus Partner to specify other optional protocols, if available
26.	Parameters Monitoring	Voltage, current, speed, frequency, torque, power, kWHr, DC Bus Voltage on digital operator interface. Provision for annunciating the same in DCS to be available.
27.	Options required	a) Brake Chopper & Braking Resistor b) Output Sine filter c) Other options available shall be listed by partner
28.	Catalogues	Partner shall submit catalogues of the various ranges of VFDs being manufactured by them. These catalogues shall cover the entire range and include details like semiconductor device used, cooling system types, applications and features.

2.2 CONFIRMATIONS /DEVIATIONS TO SPECIFICATIONS

Point-wise confirmation to this specification to be given along with response to this Expression of Interest. Deviations if any, shall be indicated separately. This shall be furnished in the format below:

Sl.No.	Point No.	Confirmation / Deviation	If Deviation, Details	Remarks, if any

SECTION - 3
QUALIFYING REQUIREMENTS

3.1 Technical Capability

The Partner shall be an OEM who should have designed IGBT based LV/MV Drives for various applications, manufactured, supplied and commissioned in any industrial/power plant setup. At least 5 numbers of MV drives of ratings 1 MW or more should have been supplied in the last 3 years for Power Plant/Industry Applications and the equipment supplied should be working satisfactorily for at least 1 year as on the date of response to EOI. This data may be furnished as per the format below:

PROFORMA FOR PARTNER'S QUALIFYING EXPERIENCE

SL. NO.	CUSTOMER NAME, ORDER REFERENCE & DATE	ITEM DESCRIPTION, MW RATING, APPLICATION	QTY	CUSTOMER'S CONTACT DETAILS • NAME • DESIGNATION • PHONE NO. • FAX NO. • EMAIL ID	DATE OF SUPPLY/ COMMISSIONING	PERFORMANCE CERTIFICATE FROM CUSTOMER REGARDING SATISFACTORY PERFORMANCE

3.2 Information Transfer

Partner should be willing to transfer the information to BHEL-EDN for design, manufacture, inspection, testing, commissioning, trouble shooting, servicing/maintenance, quality assurance methods etc., for the IGBT based equipments. Specific confirmation on the points listed in Section–1, Cl. 1.7 is to be furnished. This is expected to facilitate indigenisation of the IGBT based tendered equipment to ensure cost reduction and long-term sustenance of the equipment in India

SECTION – 4
COMPANY PROFILE

4.1	**GENERAL INFORMATION:**
4.1.1	NAME OF COMPANY:
4.1.2	DETAILS OF HEAD OFFICE: ADDRESS: TELEPHONE: FAX: E-MAIL: WEB SITE:
4.1.3	DETAILS OF FACTORY / WORKS: ADDRESS: TELEPHONE: FAX: E-MAIL:
4.1.4	DETAILS OF MARKETING AGENT (OUTSIDE INDIA, IF ANY): ADDRESS: TELEPHONE: FAX: E-MAIL:
4.1.5	DETAILS OF INDIAN AGENT, IF ANY: ADDRESS: TELEPHONE: FAX: E-MAIL:
4.1.6	CHIEF EXECUTIVE:
4.1.7	CONTACT PERSON(S) FOR PRODUCT OFFERED: NAME(S): DESIGNATION: ADDRESS: TELEPHONE: FAX: E-MAIL:
4.1.8	YEAR OF ESTABLISHMENT:
4.1.9	PRODUCTION CAPACITY PER ANNUM FOR VARIABLE FREQUENCY DRIVES:
4.1.10	PARTICULARS OF PRODUCT INCLUDING SPECIFICATION AND RANGE: (ATTACH BROCHURES AND CATALOGUES)
4.2	**COUNTRY OF ORIGIN FOR OFFERED PRODUCTS AND TECHNOLOGY**

4.3	**FINANCIAL INFORMATION:**
4.3.1	ANNUAL TURN OVER AND PROFIT AFTER TAX FOR LAST 3 YEARS: (attach copies of audited Balance Sheet and P&L Account) YEAR – 2008-09: YEAR – 2007-08: YEAR – 2006-07:
4.3.2	DUN AND BRADSTREET REPORT FOR THE COMPANY
4.4	**QUALITY AND ENVIRONMENTAL MANAGEMENT SYSTEM:**
4.4.1	IS THE COMPANY ISO:9001 CERTIFIED : YES / NO. IF YES, ENCLOSE COPY OF CERTIFICATE
4.4.2	IS THE COMPANY ISO:14001 CERTIFIED : YES / NO. IF YES, ENCLOSE COPY OF CERTIFICATE
4.4.3	IS THE COMPANY OHSAS 18001 CERTIFIED : YES / NO. IF YES, ENCLOSE COPY OF CERTIFICATE
4.5	**EXPERIENCE LIST FOR OFFERED/SIMILAR ITEMS**
4.6	**ANY OTHER INFORMATION**

SECTION – 5
CHECKLIST OF DOCUMENTS TO BE SUBMITTED AS RESPONSE TO EOI

Information/documents to be provided along with response to Expression of Interest:

Sl. No.	Information / Document	Compliance
1	Covering Letter signed by an Authorised Signatory on Company letterhead, listing clearly the Enclosures.	Yes / No
2	Catalogue of IGBT Based VFD Drives for various configurations and applications, cooling arrangement, sizes, weights etc	Yes / No
3	Single Line Diagram for Redundant Operation of VFD along with Technical Writeup describing features	Yes / No
4	Reference list of VFDs supplied/commissioned	Yes / No
5	Acceptance for Transfer of Technology	Yes / No
6	Acceptance for Business Sharing Agreement	Yes / No
7	Details required in Section–1 – Clause 1.7.1	Yes / No
8	Details required in Section–1 – Clause 1.7.2 – a to g	Yes / No
9	Confirmation / Deviation to Technical Specifications – Section–2	Yes / No
10	Filled-up Qualifying Criteria Format – Section–3	Yes / No
11	Filled-up Company Profile – Section–4	Yes / No