

	PURCHASE SPECIFICATION AUTOMATIC VERTICAL STORAGE SYSTEM	Spec. No	EP: PVM: EQS: 02
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**TECHNICAL SPECIFICATION
FOR
AUTOMATIC VERTICAL STORAGE SYSTEM**

**ELECTROPORCELAINS DIVISION,
BHARAT HEAVY ELECTRICALS LTD.,
IISc POST, BANGALORE, INDIA 560012**

REVISION: 01
The addendum / corrigendum to the technical specification are highlighted in this revision.
Vendors / bidders shall consider these changes while formulating their offers.

REVISION (01)	DETAILS: PREPARED	DATE
	APPROVED	11.12.2015

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A	SCOPE	Supply installation & commissioning of the vertical Storage and retrieval system as per the following specifications.	Vendor's confirmation
B	TECHNICAL SPECIFICATIONS:	Offer shall be corresponding to the parameters under the specifications below and point wise compliance to the following specification is required	
C	Description of operation	Automated Vertical Modular Storage System having static trays with mobile extractor system, on lean lift type of operation. The system shall have series of trays positioned at both front & rear columns. A retriever unit, controlled by an on-board controller, shall identify the required tray and position the same at the access window for loading and unloading of components. The operation and movement of trays shall be safe, jerk free by deploying precision guiding system for the movement of trays on linear mode.	
D	Quantity	4 Nos (FOUR)	
E	Component Storage & Retrieval	Shall also be accessible by location number with 6 digits numeric or alphanumeric coding.	
		While loading and retrieving; only the desired tray shall move and be made available at the access window.	
		Trays shall be placed on rubber or plastic loads to avoid vibrations.	
		The driving system for the extractor movements has to be provided with suitable drive mechanism which ensures stability & balance.	
		Maximum component dimension : 275x280x1050mm Unit weight of the component - 50 kgs The Components as per details as given above are required to be loaded for a minimum of 400 nos per AVRS at full capacity.	
F	Model No	Bidders to specify	
G	Load Capacity of the system	Min 25000 Kg	
H	INTEGRATING WITH CENTRAL AIRCONDITIONING UNIT	Suitable provision shall be provided for connecting ducting for internal environmental control from the central air conditioning unit.	

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Slno	Description	Specification	
I. UNIT DIMENSIONS			
1	Unit depth	Bidders to indicate	
2	Unit width	Bidders to indicate	
3	Unit height	8750 mm max	
4	Working height of operator	800- 900 mm	
5	Kind of installation	working floor	
6	No of access points	For material retrieval - 1 (one)	
7	Front door lock type	Front door manual with key lock	
8	colour scheme powder coated	RAL 7035-Light grey	
II.SHELF / TRAY DETAILS			
1	No of shelves	Bidders to indicate	
2	Minimum tray inner depth	850 mm	
3	Minimum inner width	3200 mm (1050 x 3 = 3150 + 50mm)	
4	Weight of empty shelf	Bidder to indicate	
5	Payload for shelf	450 kg min	
6	Distance between shelf	280 mm min	
7	Surface area per shelf for storage	Bidders to indicate	
8	Total surface area in AVSRS for storage	Bidders to indicate	
9	Total Storage Volume	Bidders to indicate	
10	Material of construction	Galvanized Steel	
III. OPERATION			
1	Average Access time	25 - 40 sec	
2	Maximum goods height	270 mm	
3	Total unit capacity	Bidders to indicate	
4	Power supply required	3/ PH/415VAC/ 50Hz	
5	Total connected electrical Load	Bidders to specify	
6	Operator panel type	TFT color display with touch screen	
7	Operator panel fixing on arm	Swivelling, fixed on the right hand side	
8	Speed-Vertical,	Bidders to specify	
9	Speed-Horizontal,	Bidders to specify	
10	Vertical motor drive	Bidders to specify	
11	Retrieval motor	Bidders to specify	

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12	Safety switches	Safety switch in front of the lift, at front and maintenance door	
IV. OTHER FEATURES			
1	Photo curtain at access point	LED safety light curtain in the access	
2	Illumination at access point Tube	Dazzle free light in the access	
3	Motor protection	Motor protection relays	
4	Limit switch at door	Limit switch at door	
5	Single phase preventer	Single phase preventer	
6	Power supply	Through Switch mode power supply (SMPS)	
7	Battery back-up for PLC	Battery back-up for PLC	
8	Access service door	Manual access service door with safety switch.	
9	Inner Door	Automatic	
10	Access door	Manual with lock & key	
11	Display Language	Display in English	
12	Function keys	Alphanumerical function keys	
13	Communication Port	Port for PC, Printer, barcode	
14	ERP enabled	Connectivity with SAP Module	
15	Improvised picking method	Compartment identification system for better picking	
16	Customisation	Customisation of trays / partition	
V. SAFETY FEATURES			
1	Emergency stop	Emergency stop button switch on control Panel	
2	Over load protection	MCB for over load protection in control panel	
3	Indication of failure or any other dysfunction	Above safety features to be indicated by safety status LED's with error code on the panel, which will enable operator to identify the problem immediately.	
4	Failure of detecting sensor	Bypassing of failed sensor, to operate the system	
5	Power failure	In case of power failure the extractor should not free fall to the access opening even when loaded after a power resumption the extractor will resume operation and complete the task that was interrupted. No loss of memory like tray content information.	
6	Tray overload protection	Inbuilt overload prevention on extractor	
7	Safety factor of Chain / Belt	Safety factor 1 : 10	
8	Installation	Floor mounted no special foundation	

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9	Surface coating	All components to be finished with Powder coating	
10	Colour Code	Available options may be indicated, selection as per BHEL Choice	
VI. MAKE OF COMPONENTS			
1	Control	Microprocessor control / PLC	
2	PLC Make	Mitsubishi / Siemens / Allen Bradley / SBC Honeywell	
3	Drive	Nord / SEW	
4	Gear box unit	SEW / Leroy somer or Equivalent	
5	Bearings	FAG / TNT /SKF /TIMKEN	
6	Chain	Rollax	
7	Roller material	Nylon and or PU	
8	Electrical & Electronic components	Schneider / Siemens	
9	Sensors	Cognex, Keyence, Omron	
10	Relay	Schneider/Siemens	
11	Safety Light curtain	CEDES Safe, Sick, Omron, P & F	
12	VFD	Nord, ABB, Danfoss, Siemens, Yaskawa	
VII. Document to be submitted along with technical offer:			
1	Details of authorized service agents to be furnished indicating the location and establishment for spares and trained personnel availability.		
2	All commissioning/service requirements such as power, compressed air, water, lubricants, coolants, consumables and any civil requirements like special foundation arrangements etc. have to indicated.		
3	Installation and commissioning shall be submitted along with techno-commercial offer.		
4	Drawing & Schematic of internal arrangement		
VIII. Documents to be furnished along with equipment (in English language):			
1	Three ORIGINALS of operation, maintenance, service & spare parts manual have to be supplied along with the equipment.		
2	Detailed Electrical and Electronic circuit diagram have to be provided in triplicate.		
3	The lubrication points are to be identified on the machine with respect to O&M manual. The schedules for lubrications are to be provided.		
4	Test certificate/Inspection Report shall be submitted prior to dispatch along with the equipment serial number details.		
5	Warranty certificate mentioning serial number of the unit, customer name, date of supply etc. shall be provided with original documents of shipment.		

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<u>IX. General Terms:</u>		
1	Supplier shall guarantee trouble free performance of equipment. Shall carry out preventive maintenance periodically as recommended during the warranty period and train BHEL personnel for further usage period.	
2	The equipment and accessories shall carry on-site, comprehensive warranty of 12 months from the date of commissioning or 18 months from the date of despatch whichever is earlier. Warranty includes spares, consumables and Service.	
3	Training shall be provided to minimum 3 BHEL personnel for operation & maintenance.	
4	The software upgrades during warranty period shall be provided free of cost.	
5	Immediately after the purchase order, vendor shall survey the proposed site and identify the location and modification required for civil, electrical, mechanical works if any.	
<u>Qualification criteria:</u>		
A	The vendor should have supplied and commissioned Automated Vertical Storage & Retrieval system similar to the one called in this specification with a minimum dimensions of 3.0 m (W) x 3.0 (D) x 7.5 (H) meter, tray carrying capacity of minimum 400Kg and net loading capacity of 20,000 kg. The supplies shall be to a minimum of 5 (five) reputed firms in India in Public or Private sector. The system should be working satisfactorily for a minimum of 5 (five) years. User certificate from these references in the format prescribed in page no.12 shall be furnished. BHEL reserves the right to independently verify the performance of the references provided.	
B	Offers can be submitted by Indian or Foreign vendors. However a foreign vendor shall have an authorized India dealer(s) / representative (s) for sales and service who has handled the sales and service of this system for at least 2 years.	
C	If the offer is submitted by the dealer/representative, authorization letter from the original equipment manufacturer (OEM), shall be enclosed along with the offer.	
D	No authorized representative shall quote for more than one OEM.	
E	The offer shall be only for new equipment and not for any refurbished/used Equipment. A declaration to the above effect to be furnished.	
F	All the parts used in the machine shall also be new and not used /refurbished Ones. A declaration to the above effect to be furnished and may be verified.	
G	The vendor shall be in a position to provide service and spare support for the installation in India .The vendor/India representative should stock critical spares required for the system in their warehouse in India and should be able to attend to service calls in one day time	
H	The vendor or their authorized service representatives should have trained engineers in India for commissioning and service for the offered equipment .A declaration to the above effect to be furnished.	

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I	The vendor shall be in a position to undertake AMC for the equipment with BHEL after the expiry of the warranty /guarantee period either directly or through a service representative .The vendor should have successfully completed AMC for familiar machines for at least one year in India and necessary proof to be furnished.	
J	The vendor shall arrange for a demonstration of their machine or a similar system operating in India, if required by BHEL.	

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USER CERTIFICATE

This is to certify that the vertical storage system Model No.....
.....supplied by M/s
.....On.....(Date) is working satisfactorily at our works
till date.

The vendor response for periodical maintenance and scheduled maintenance
of the system and providing necessary spares and consumables is satisfactory.

The dimension of the machine supplied
is.....(height),.....(width),.....(depth) and carrying capacity of
each tray isKg and the Net loading capacity of AVRS is.....
.....Kg

Date:

Signature:

Name of the user:

Department:

Phone no.of the user:

(landline)

Address of company:

Company seal

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