

<b>RAIL COACH FACTORY, KAPURTHALA</b>		
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Mech/M&P/3200/GM/23 Rev.- NIL	DC drive 40 kW & 75 kW with HMI interface & PLC for slitting line machine	

<b>Designation</b>	<b>Name</b>	<b>Signature</b>	<b>Date</b>	<b>Level</b>
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<b>Issue/ Rev</b>	<b>Changes</b>	<b>Date</b>

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## 1.0 IMPORTANT INSTRUCTIONS TO TENDERERS FOR FILLING TECHNICAL BID

- 1.1 Bidders are required to give clause wise comments on the technical specifications, confirming compliance/non-compliance with details of deviations if any along with their effect on the performance. Back references to be avoided, offers are likely to be ignored in case of non-compliance of these instructions for furnishing the information.
- 1.2 Unless otherwise stated, latest alterations/ revisions of specifications/ standards/ drawings shall be applicable. In respect of safety standards and environmental standards relevant to the machine, the machine manufacturers shall ensure compliance with international (CE/ISO/DIN/JIS)/National standards (IS) (wherever applicable).
- 1.3 Tenderers should offer and quote for all the specified concomitant accessories, as these are considered essential for commissioning and utilization of the machine. Even if bidder does not recommend the purchase any of these accessories, the price must be quoted for comparison purposes and their recommendation/suggestion indicated in the offer. Tenderers should also quote for optional accessories, spares and consumable spares as asked in the specifications.
- 1.4 In case, any item is required in sets, please specify nos./pieces per set. This is essential for proper technical evaluation of the offer. Offers received without this may be considered as incomplete and liable to be rejected.
- 1.5 The bidder should quote only for the specified make of sub-assemblies and equipment wherever specified. Makes of sub-systems other than the specified ones will normally not be acceptable. In case, some other make is quoted, specific reasons for the same including its features/advantages over specified makes must be brought out in the offer.
- 1.6 In case there is a contradiction in any information provided (some parametric values given in the specification and those given in the brochure or some other document enclosed by the tenderer), unless specifically mentioned in the deviation cum confirmation statement the values as given in the specification shall be taken as confirmed by the tenderer and offer evaluated accordingly.
- 1.7 The Purchaser may accept internationally accepted alternative specifications which ensure equal or higher quality than the specifications mentioned in the Technical Specification. However, the decision of the Purchaser in this regard shall be final.
- 1.8 Purchaser reserves the right to verify the details submitted by the bidder by actual site visits.
- 1.9 Other terms & condition of the contract will be as per Indian Railway Standard conditions of contract.

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## 2.0 PURPOSE

Retro-fitment of drives on slitting line machine with suitable motors, HMI, PLC and associated panels installed in sheet metal shop of RCF kapurthala.

## 3.0 DESCRIPTION AND SCOPE OF SUPPLY

- 3.1** The scope of supply shall include Supply, installation , commissioning , testing and proving out of complete electrical panel with DC/AC Slitter drive (40 KW) and Re-coiler DC/AC drives (75 KW) on slitting line machine including motors of reputed make for slitter and Re-Coiler. Drives shall be of make Allen Bradley, L&T, Siemens, Fanuc, ABB and Schneider.
- 3.2** Enclosure: Supply of enclosure for control panel shall be of MS sheet 1.2 mm thickness , Painted with gray colour powder coating and should be of Rittal make only. It should withstand degree of protection IP24. Electrical Control panel should have arrangement for Panel AC for cooling the drives and associate Printed circuit boards.
- 3.3** Control panel should have suitable HMI and PLC of reputed make designed to control all the motors and devices mounted on the machine and interfacing with operator panel to operate the machine.
- 3.4** Cabling from control panel to motors should have H connector or Square connector.
- 3.5** It includes all the concomitant accessories/ equipments as detailed in the specification and other concomitant accessories/ equipment, which the manufacturer considers essential to make the machine fully operational, when installed and commissioned.
- 3.6** It shall also include installation and commissioning of related equipment, training of personnel in operation and maintenance of machine and supply of technical documentation.
- 3.7** The total value of the offer will be calculated on.
- i. The cost of the basic equipment.
  - ii. Cost of the concomitant accessories according to tenderer specification.
  - iii. Cost of any other accessory treated as concomitant accessory.
  - iv. Applicable duties and taxes, insurance, freight and installation and Commissioning charges.

## 4.0 GENERAL FEATURES

- 4.1** Equipments are to be quoted inclusive of with 3 years maintenance from date of commissioning. No extra Charge shall be paid for maintenance apart from consumable accessories & any other part specified & agreed in the tender.
- 4.2** Environmental Factor.
- a) The unit should be capable of being stored continuously in ambient. Temperature of 0-50 degree Centigrade and relative humidity of 15-90%
  - b) The unit should be capable of operating continuously in ambient temperature of 10-40 degree centigrade and relative humidity of 15-90%.
- 4.3** Documentation- user manual in English or each type.

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- 4.4 Firm should quote all product of one OEM firm. Multi brand products are likely to be rejected. Compliance report to be submitted in a tabulated and point wise manner clearly mentioning the page / Para number of original catalogue / date sheet. Any point, if not substantiated with authenticated catalogue / manual, will not be considered.
- 4.5 The manufacturing, testing and commissioning of drives and panels should be in accordance with latest Indian Standards.
- 4.6 At the time of submission of tender, the tenderer should furnished the following information.
- i) Technical details of the drives, motors , HMI, PLC, Panels regarding overall dimension, capacity, construction features, maneuverability etc. along-with necessary drawings.
  - ii) Any other information which in the opinion of the tenderer is important for the consideration by the purchaser.
  - iii) The tenderer should separately explain the special features, if any, of the equipment offered by him.

## 5.0 TECHNICAL SPECIFICATIONS

- 5.1 This specifications covers supply, installation, commissioning and testing of complete electrical panel with two variable DC/AC drives rating 40 Kw and 75 Kw on turnkey basis for the movement of slitter and Re-coiler motors and others motors installed on slitting line machine.
- 5.2 All the operator panels should be replaced with new panels, new switches and indicator lamps.
- 5.3 Drive: Enclosure shall have sufficient space for the mounting of two AC drives (Rating 40 and 75 KW) and other switch gears for the controlling and operating of others motors on the machine.
- 5.4 Two numbers DC motors of following details are mounted on slitting line machine:
- a) Direct current motor ( Re-coiler motor), 70 kw, Speed 720, 1950 RPM, Armature : 400 Volt, 194 amp, Field : 220 Volt, 8 amp, Motor maximum speed : 1950 RPM
  - b) Direct Current Motor ( Slitter Motor) 40 kW , Armature voltage: 440 volt, Field voltage : 220 Volt DC, RPM 1500 , field current 4.78 amp, Frame size: ILFC225 K
- 5.5 These motors are required to be replaced with suitable motors of reputed make having same capacity with necessary modifications and interfacing of gear box mounted on the machine.
- 5.6 There should be facility to run both the motors synchronously and in individual mode.
- 5.7 Following switches /indicators should be provided on the electrical panels of drives. Necessary switches should also be provided on operator panel
- i) Run

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- ii) Potentiometer to control speed from 0-1950 RPM for re-coiler motor
  - iii) Potentiometer to control speed from 0-1500 RPM for slitter motor motor
  - iv) ON/OFF switches
  - v) Digital speedometer from 0-2000 rpm for individual motors
  - vi) Emergency switch
  - vii) Reverse/Forward toggle switches.
  - viii) Synchronising switch-gear to run both drives/motors.
  - ix) Isolator switch/MCCB ( Moulded Case Circuit Breaker) to ON/OFF the main supply
- 5.8 Overload protection at input and output of the drive with thermal overload relay of proper rating should be provided.
- 5.9 A digital voltmeter and ammeter should be provided for indicating Voltage and current of slitter and Re-coiler motors.
- 5.10 Protection should be provided for overloading, single phasing, under voltage, no voltage, short circuit etc.
- 5.11 Arrangement should be provided for direction of rotation in CW/CCW directions.
- 5.12 Control equipment shall be mounted in drip proof enclosures. Enclosures shall be so designed as to give adequate protection against ingress of water, dust, oil, coolant or chips etc. All electrics shall be installed that they are readily accessible when covers are opened. Hinged covers shall be interlocked with the machine control to prevent operation when cover is open.
- 5.13 The electrical equipment shall comply with the requirement of Indian electricity act and rules
- 5.14 All the terminals shall be clearly, neatly and indelibly marked to correspond with the wiring diagram for easily identification.
- 5.15 Semiconductor and other components used in drive and electrical panel shall be of industrial grade with minimum operating temperature range -25°C to + 85°C.
- 5.16 All connections shall be made through crimped eyelets and shall be number with PVC cablemarker rings/ inkjet printing on cables corresponding to the numbers/letters shown in the schematic wiring diagram. Soldering shall be used only where use of crimped eyelets is not possible.
- 5.17 All wiring shall be neatly secured in position by bunching /strapping & adequately supported. Where wires pass through any part of metal panel or cover, the hole through which they pass shall be provided with rubber grommets.
- 5.18 Fluke 190/502/s Scopemeter test tool( Display colour LCD with fast update rate, 500MHz bandwidth with two input channel and DMM) for the measurement of current, voltage and wave form on drive. Fluke scopemeter should be supplied with necessary accessories (Protective carrying case for scopemeter, AC current clamp fluke i200s, fluke view software for scopemeter, TL175 test leads, probes and clips, Li-ion Battery backup, battery charger/main adapter, scopemeter manual hard copy and on CD extra).
- 5.19 All the Pushbuttons, indicator lamps, Power contactors , MCB, MCCB etc should be of reputed make (Schneider, Klockner moeller, Siemens, ABB, L&T ).

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- 5.20 Firm should be supplied the essential spares and critical PCBs for the maintenance of these drives.
- 5.21 **Programming and data storage Unit:** Programming unit for trouble shooting and downloading the software should be supplied with drive. Technical specification for programming unit is as given below.
- a) Processor: 8th Gen Intel Core i7 processor
  - b) Operating System: Windows 8.1 Single Language (64Bit) English
  - c) Microsoft Office 2013: Microsoft Office Trial (Multi-Language)
  - d) Security Software: Loaded with 01 year Anti-virus software
  - e) Memory: 16GB DDR4 2400MHz
  - f) Hard Drive : 256 GB PCLE SSD
  - g) Video Card : NVIDIA GTX 1050 with 4GB GDDR5
  - h) Optical Drive: Slot-Loading 8x Super Multi Drive (DVD±R/RW)
  - i) Display : 15.6 inch (1920 x 1080) IPS Anti-Glare Display
  - j) Wireless : 802.11ac Dual Band 2x2 AC Wi Fi +Bluetooth 4.0 Primary  
Battery : Primary 6-cell 69W/HR
  - k) Power : 6-cell Lithium Ion (97 wHr)
  - l) Power Adapter: 150W AC Adapter
  - m) Keyboard : Backlit keyboard with finger print reader
  - n) Ports: 1HDMI , 2 USB 3.0 with powershare, 3.1 USB Gen2 (10Gbps) , VGA
  - o) Make: HP, Dell
  - p) Miscellaneous :
    - i) Programming and storage device should be supplied with two USB hard disk, SSD type capacity 1TB
    - ii) Programming and storage device should be Supplied with all the essential software including window 8.1 software (64 Bits), Anti Virus, Microsoft office 2013, drivers , Generation drive data, software for uploading the drive parameters, Recovery data software in extra CD's/DVD's.
    - iii) Should be Supplied with 04 Numbers data storage USB drive, Capacity 16 GB.
    - iv) Should be Supplied with Carrying Bag for the protection of Programming Device.
    - v) Programming device should be equipped with RS 232 Port for data communication from device to Drive and vice versa. RS232 data cable should also be supplied with Programming unit.
    - vi) Facility should be provided to scan and print the fault diagnosis report on A4 size with EPSON 565 model or equivalent (ink jet printer).
- 5.22 Above subjected modifications required to be carried out in minimum possible time. Machine will be spared as per the convenience of RCF. Tenderer shall keep the sub assemblies in ready condition and will do the prior testing before dismantling of existing arrangement.
- 5.23 All dismantling of existing panels , switchgears , motors, wirings etc will be in the scope of tenderer.

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5.24 Tenderer will prove out the machine at existing working capabilities and tolerances.

5.25 Tenderer can visit the site to access the condition and working of machine with prior permission of competent authority.

#### **6.0 CONCOMITANT ACCESSORIES:**

6.1 Any other accessory/equipment, which the manufacturer considers essential to make the machine fully operational, when installed and commissioned connected to power source and give the specified output/productivity.

6.2 The cost of each of the listed concomitant accessory should be quoted separately. Wherever, for any reason, the cost of any concomitant accessory is included in the basic price of the machine, the same should be specifically mentioned.

6.3 The tenderer shall supply a list of concomitant accessories, which will be supplied along with the machine. The cost of each listed concomitant accessory should be quoted separately. Wherever for any reason the cost of any concomitant accessory is included in the basic price of the machine the same should be specifically mentioned.

#### **7.0 SPARES**

7.1 The tenderer should furnish details of spares covered under warranty.

7.2 List of important spare parts and accessories with their part number and costing.

7.3 The tenderer should be furnishing the price list of spare parts required for two years normal maintenance of the equipment. Sources of supply of spares used other than that of manufacturer should be furnished by the tenderer.

7.4 List of recommended spares for normal maintenance after expiry of warranty period to till useful life of the equipment.

7.5 List of recommended consumables for two years shall be quoted separately.

7.6 Useful life estimated/expected for each equipment and its sub assembly should be indicated by the tenderers

#### **8.0 COMMISSIONING & PROVING OUT**

The tenderer shall arrange commissioning and proving out the drives with complete electrical panels, HMI and PLC on slitting line machine at site of RCF, Kapurthala (Punjab), and after successful commissioning will demonstrate the performance of the equipment to the staff of RCF, Kapurthala at consignee's premises .

#### **9.0 TRAINING**

The firm shall provide proper training for the staff of RCF for a period of one week after successful installation of the drive. The total of three employees nominated by RCF shall be trained thoroughly in the field of operation, maintenance and software/parameters uploading on the drive , HMI and PLC.

#### **10.0 ELIGIBILITY CRITERIA**

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- 10.1 The tenderer shall be registered on IREPS website ([www.ireps.gov.in](http://www.ireps.gov.in)) to participate in the tendering process.
- 10.2 The tenderer shall have established quality control system and organization to ensure adequate control at all stages of the manufacturing process.
- 10.3 The tenderer shall provide a performance statement giving a list of major supplies of same/similar equipments effected in last 5 years to the reputed organizations giving details of the order no. and date and the quantity supplied and whether the supply was made within the delivery schedule. Such period shall be reckoned from the date of opening of tender. Tenderer should also provide the prove out test certificate of his supply/supplies.
- 10.4 Tenderer not submitting the requisite information may note that his offer is liable to be ignored.

#### **11.0 TECHNICAL LITERATURE**

- 11.1 One copy of the printed illustrative catalogue showing isometric view/sketch & features of the machine and its elements must be enclosed with each copy of the bid.
- 11.2 The successful tenderer will have to furnish for each machine 02 copies of spare parts catalogue giving the part list number of each component with exploded views and assembly drawings, maintenance manual, trouble shooting guide, operational manual of the machine and all electrical circuit diagrams including PCB circuits to the consignee directly within 1 month of placement of order. The bidder should provide a list of literature they will supply along with the Machine. The technical literature shall be provided for complete machine including important and indigenously purchased components/sub-assemblies.
- 11.3 Document in the service / technical manual. Firm shall also provide time within which all service calls shall be attended.

#### **12.0 SPECIAL FEATURES**

Special features incorporated into the machine, if any shall be indicated separately by the tenderer, clearly indicating the advantage of these features.

#### **13.0 MAKE**

- 13.1 The supplier shall clearly mention whether the system quoted is Indian make or imported. If Indian make, the tender should be accompanied by duly sanctioned factory license & relevant documents & also produce records of installation & satisfactory after sales service performance of their equipment from at least one govt. Institution of similar or large size for duration at least 3 Years duration.
- 13.2 If imported item, the OEM firm should be registered for operations in India for a minimum period of last 3 years. In case this is not so, the dealer should be authorised regional supplier & service provide for the late 3 years. He should also produce installation & satisfactory after sales service record of duration at least last 3 years from at least one govt. Institution for a system of similar or larger



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- size. Further the tender should be accompanied by authorisation certificate from OEM.
- 13.3 The supplier shall furnish the complete details of Model No. Make & Manufacturer's details/ address, Country and authorization details of Dealership.
- 13.4 The firm shall provide the calibration certificate of National / International Traceability along with validity of at least two years.
- 14.0 SERVICING FACILITIES**
- 14.1 Service facility in Punjab, Address and contract details including phone and fax no. to be provided. The facility should have the necessary equipments recommended by the manufacture to carry out preventive maintenance test as per guideline provided in the service / maintenance manual. Firm should provide list of equipment available for providing calibrations and routine maintenance support as per manufacturer.
- 14.2 Supplier will undertake for service repairs & replacement of any needed part as & when needed.
- 14.3 Maintenance contract to be quoted after the expiry of maintenance period quoted above with details of scheduled visits, part covered under contract & cost of parts not covered as well.
- 14.4 The tenderer shall clearly spell out in the offer about the facility available with him or his agent/dealer for providing adequate after sales service in Punjab during warranty period.
- 14.5 The tenderer shall also indicate the service organization located at various places in India and availability of trained staff, maintenance spares etc.
- 14.6 The contractor shall give a comprehensive spare part list with OEM details and price for all the sub systems.
- 14.7 The tenderer/contractor shall provide list of spares, consumables required for maintenance for 5 years after completion of warranty period
- 14.8 For maintenance during warranty following criteria shall be considered.
- A) Service engineer of the supplier shall be available for attending to the system faults during first 07 days after successful commissioning of equipments during 09.00 - 17.00 hrs on all working days including Saturdays.
  - B) Service engineers shall visit RCF on quarterly basis thereafter till the end of warranty/extended warranty period for Preventive Maintenance at least for one full day at a time.
  - C) In case of any breakdown affecting the performance of the system completely or partly, firm shall depute its service engineer as soon as and when informed by any suitable means like Fax, SMS or email possible after receiving such call.
  - D) Breakdown period shall be calculated from 8 hours after it's reporting to the firm upto the time it is attended. If intimation to the firm is delayed from Railway's side, then the breakdown period calculation will start from the time by which it is reported to the firm.

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- 14.9 Total up time of the system should be at least 90%. Up time shall be counted in following manner:-
- A) Total breakdown of less than 8 hours shall be ignored for the purpose of this calculation.
  - B) Penalty may be imposed if the down time is more than 10% without any valid reasons. The levy of token penalty as deemed fit based on the merit of the case may also be consider as per clause 17 (b) of GCC -201.
- 14.10 Warranty period for part or machine shall be extended after completion of warranty period by the duration under which the part or machine remains under breakdown during warranty.
- 14.11 Tenderer shall provide list of spares, consumables required for maintenance for 5 years after completion of warranty period as per annexure-A
- 14.12 Tenderer shall provide expected life for the components of the system and provide the maintenance schedule required for 10years for as per annexure -A
- 14.13 Tenderer shall provide the service charges /per day/per man for deputing service engineer on the machine on requirement separately for Indian and Foreign engineer.

#### 15.0 DEVIATIONS:

The tenderer should clearly certify that the machine offered fully meets the specification various design features incorporated in the machine to fulfil different technical performance requirements should be fully explained in the offer. However, minor deviations from this specification, which do not affect or in any way interfere with the stipulated performance standards, or would result in improved safety/reliability or would reduce recurring maintenance/operating cost of the machine, can be considered for acceptance.

#### 16.0 SCHEDULE OF ANNUAL MAINTENANCE CONTRACT (AMC) FOR PERIOD OF 5 YEARS AFTER COMPLETION OF WARRANTY PERIOD

- 16.1 Tenderer shall provide proposal for 5 year Annual Preventive Maintenance schedule to be executed after completion of warranty period in the format as per annexure-B.
- 16.2 The firm shall maintain the machine in good working condition during the contract period and shall correct the fault or failures, repair or replace the worn or defective parts/equipment during the normal working hours of shop where the equipment has been installed. Unserviceable parts/equipment need to be replaced at no extra cost with brand new parts/equivalent or superior specification.
- 16.3 The firm shall respond by deputing service personal to oral / telephonic/ or other modes of intimation for repair and maintenance of the said machines within 2 hours.
- 16.4 The firm shall ensure that the machine is in proper working condition, to the full capacity, after repair and maintenance.

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- 16.5 To have a timely supply of spares during AMC, the contractor shall furnish a total list of spares which should contain list of spares that shall be arranged by the firm, both chargeable, duly mentioning the charge against each item, and spares which shall be non-chargeable, and list of spares to be held by RCF.
- 16.6 The contractor shall clearly list-out the list of consumables required for day-to-day operation of the machine. It shall be the scope of RCF to arrange the consumables once the completion certificate is issued for the retrofitted machine.
- 16.7 The tenderer/contractor shall provide suitable standby when repairs exceeds 2 hours. When any equipment is taken for repair to the tenderer/contractor's premises suitable standby equipment should be provided.
- 16.8 Besides attending the breakdown calls, the firm shall attend to the corrective and preventive maintenance of the machines once in a month.
- 16.9 The AMC is valid for five years from the date of completion of the warranty period . No freight is admissible.
- 16.10 During the AMC period, whatever equipment is defective shall be handed over to RCF. During completion of the AMC period the machines should be handed over in full working condition to its full capacity.
- 16.11 The firm should maintain a register duly indicating the nature of defects and repair attended and got signed by RCF authority. Preventive maintenance schedule should be made. The schedule should be made in such a way that more than one machine should not be attended on the same day. A copy of the schedule should be given to RCF at the beginning of the AMC and the schedule should be strictly followed and on carrying out the preventive maintenance the same should be entered in the register and got signed by RCF authority.
- 16.12 AMC charges shall be paid quarterly as one quarter of the total AMC charges applicable for that year on submission of bills duly certified by the engineers in charge with regard to the satisfactory execution of AMC during the period for which the bill is claimed. Duties & taxes as applicable at the time of payment shall be deducted at source.

#### ANNEXURE-A

S.N.	ITEM	PART NO.	SERVICE LIFE	PRICE

#### ANNEXURE –B

S.N.	YEAR	AMC CHARGES
1.	IST YEAR	
2.	IIND YEAR	
3.	IIIRD YEAR	
4.	IVTH YEAR	
5.	VTH YEAR	

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**17.0 WARRANTY**

As per IRS conditions or as quoted by the tenderer whichever is later.

**Note:** Tenderer to furnish following detail of the DC drive 40kW & 75kW with HMI interface & PLC for Slitting Line Machine offered

S.no.	Technical Parameter	Offered by Tenderer