

TECHNICAL SPECIFICATION FOR "BATTERY OPERATED MOTORIZED TROLLEY"
TECHNICAL SPECIFICATION NO. EMT -6769(Rev.01) , (QTY- 1 No.)

SL NO.	DESCRIPTION OF BHEL REQUIREMENT	REQUIREMENT	OFFERED	DEVIATION
1.0	PURPOSE :			
	Battery operated motorized trolley is required for transportation of stator winding bars after forming from one work center to various other work centre like taping area, impregnation area, curing area, finishing area, testing area etc. in CIM , BL-IV.	Vendor to note.		
2.0	SCOPE :			
	The scope of supply includes design, manufacturing, supply, commissioning and proving of performance of the "Battery operated motorized trolley" at BHEL works, Haridwar.	01 No.		
3.0	TECHNICAL SPECIFICATION OF BATTERY OPERATED MOTORIZED TROLLEY:			
3.1	The trolley shall be supplied generally in line with the sketch no. EMT-6770(Rev.-01) attached with technical specification.	Vendor to confirm.		
3.2	The trolley shall consist of structure fabricated out of aluminium pipe section as per IS : 1285 with OD 73 mm in fixed part ,whereas, OD 60 mm in detachable parts, extended parts and all bracing parts. Wall thickness of 5 mm is throughout the structure. The structure shall be capable of carrying bars of total weight 1500 kg maximum. Refer attached sketch no. EMT- 6770(Rev.-01). NOTE: These parameters are given for reference. However, vendor may select better parameters to achieve intended performance of the system it will be sole responsibility of vendor to prove the performance of BHEL works.	Vendor to confirm.		
3.3	Dimensions <ul style="list-style-type: none"> • Length: 7000 mm (total) • Width: 1350 mm (total) • Height: 1600 mm (from ground level to the top surface) Refer attached sketch no. EMT- 6770(Rev.-01).	Vendor to confirm.		
3.4	The trolley shall be used as total length 5500 mm (4000+2 x 750), 4000 mm in centre portion (FIXED PART) plus extensions of 750 mm each side from rigid part (DETACHABLE PART), or total length 7000 mm (5500+2 x 750), 5500 mm	Vendor to confirm.		

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	plus extensions of 750 mm each side from sliding portion of Detachable Part. Refer attached sketch no. EMT- 6770(Rev.-01).			
3.5	The extended portion of 750 mm of Detachable part can be adjusted to 100 mm minimum and 750 mm maximum on both ends. Movement of extended portion shall be telescopic with locking facility at any desired position. The structure shall be strong enough to avoid bending of pipes on full load. Refer attached sketch no. EMT- 6770(Rev.-01).	Vendor to confirm		
3.6	Semi round pieces of suitable material like Teflon base (1 mm thick minimum) over Neoprene Rubber sheet (6 mm thick minimum) shall be provided on the top of aluminium pipes of the frame so that bars can slide freely without any damage to its insulation. Teflon and Rubber sheet should be suitably clamped / screwed as shown in the attached sketch which shall not touch the bars kept over it. Refer attached sketch no. EMT- 6770(Rev.-01). SEC-AA. NOTE: These parameters are given for reference. However, vendor may select better parameters to achieve intended performance of the system it will be sole responsibility of vendor to prove the performance of BHEL works.	Vendor to confirm.		
3.7	The side supports (item no. 8) of aluminium, maximum height 60 mm, shall be provided on both sides of the frame to prevent the falling of bars. It shall be covered with Neoprene Rubber sheet (6 mm thick minimum) and over it Teflon base (1 mm thick minimum). Refer attached sketch no. EMT- 6770(Rev.-01). NOTE: These parameters are given for reference. However, vendor may select better parameters to achieve intended performance of the system it will be sole responsibility of vendor to prove the performance of BHEL works.	Vendor to confirm.		
3.8	The frame shall be equipped with solid rubber wheels (8 Nos.) (item no. 5) of reputed make such as Rex Arts /Apex/ Rexello, having OD 250 mm, bore 25 mm with ball bearing and width 56 mm, suitably located along the length of the frame. The tyres should be of suitable capacity to withstand maximum loading capacity of 1500 kgs.	Vendor to confirm.		

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	Refer attached sketch no. EMT- 6770(Rev.-01). NOTE: These parameters are given for reference. However, vendor may select better parameters to achieve intended performance of the system it will be sole responsibility of vendor to prove the performance of BHEL works.			
3.9	The trolley shall be complete with driver's seat (item no. 9) on both sides conveniently located with the structure to steer the trolley along the desired route. Sufficient room shall be provided for comfortable seating of driver for steering the trolley. Refer attached sketch no. EMT- 6770(Rev.-01).	Vendor to confirm.		
3.10	The trolley shall have regulated acceleration with maximum speed of 50 Mtr. / Min. in both directions with maximum loading capacity.	Vendor to confirm.		
3.11	Suitable Electromagnetic braking system shall be provided.	Vendor to confirm and furnish details of the braking system.		
3.12	The trolley shall be driven by suitable capacity (3.0 HP or more) DC Motor (item no. 1), capable of desired application, operating at suitable voltage through DC battery (item no. 7). The DC motor shall be of reputed make such as Benn Electricals or equivalent make capable of driving the trolley in both directions with full load. The battery shall be suitably clamped with enough space between terminal and clamping strips. Refer attached sketch no. EMT- 6770(Rev.-01). NOTE: These parameters are given for reference. However, vendor may select better parameters to achieve intended performance of the system it will be sole responsibility of vendor to prove the performance of BHEL works.	Vendor to confirm and furnish details of the motor.		
3.13	Battery (item no. 7) of suitable capacity, of reputed make such as Exide / Bosch / Union, matching with motor shall be supplied by the vendor. Overall size of the battery should be such that it can be placed within the frame with ease. Refer attached sketch no. EMT- 6770(Rev.-01).	Vendor to confirm		
3.14	The built in battery charging facility shall be provided with the trolley as a separate unit. All necessary points and cables from the battery charger to the battery and to the supply point along with the battery charger shall be supplied by the vendor.	Vendor to confirm		

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3.15	The trolley shall be equipped with suitable capacity and reputed make such as Greaves / Elecon gear box (item no. 2) matching with motor for driving the trolley. Refer attached sketch no. EMT- 6770(Rev.01).	Vendor to confirm.										
3.16	The wheels on both ends shall be equipped with suitable steering system (item no. 4) on its axis. Refer attached sketch no. EMT- 6770(Rev.01).	Vendor to confirm.										
3.17	Suitable horn shall be provided on steering at both ends of Battery Operated Motorized Trolley.	Vendor to confirm.										
3.18	Manual toeing facility (with a toe – master BHEL Scope) shall be provided by declutching the drive in the event of battery discharge.	Vendor to confirm.										
4.0	OPERATION AND MAINTENANCE MANUAL :											
4.1	3 Sets of Operational and Maintenance manual shall be furnished along with the consignment	Vendor to confirm.										
4.2	Operational & Maintenance manual shall contain the following:	Vendor to confirm.										
4.2.1	Operational and Maintenance instructions.											
4.2.2	Drawing of the trolley, make and model of motor, gear box and fast wear out items.											
4.2.3	Mechanical assembly diagram of battery operated motorized trolley giving identification no. and name of each part											
4.2.4	Electrical circuit diagram.											
4.2.5	Wiring diagram with proper wire nos.											
4.2.6	List of all the spares and bought out items with identification no. including its source of supply shall be provided											
4.2.7	List of Do's and Don'ts											
5.0	SPARE OF BATTERY OPERATED MOTORIZED TROLLEY :											
5.1	Mandatory Spares : Recommended spares required for 2 year trouble free operation(for 1 No. of trolley) are to be quoted separately, giving description, quantity and price of each item separately along with the followings:-	Vendor to confirm.										
	<table border="1"> <thead> <tr> <th>Description of item</th> <th>Quantity</th> </tr> </thead> <tbody> <tr> <td>Rubber wheel</td> <td>1 set (08 nos.)</td> </tr> <tr> <td>Chain sprocket</td> <td>1 set</td> </tr> <tr> <td>Battery connector</td> <td>1 no.</td> </tr> </tbody> </table>	Description of item	Quantity	Rubber wheel	1 set (08 nos.)	Chain sprocket	1 set	Battery connector	1 no.			
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