

REQUEST FOR PROPOSAL DESIGN, MANUFACTURE, SUPPLY, AND COMMISSIONING OF ONE (01) MOBILE HARBOUR CRANE (MHC)

TECHNICAL SPECIFICATIONS



TITLE	PARAGRAPH	DESCRIPTION	PROPOSAL	COMMENTS / DEVIATIONS	REF. OR DESCRIPTION IN BIDDER'S PROPOSAL
1. GENERAL REQUIREMENTS	1.1	Scope of deliveries	One mobile harbour crane, with 2 mechanical grabs, spare parts and tools.		
		A- Configuration	4 ropes, 2 hoist winches		
		B- Power Pack	Diesel Engine Tier 4f + generator		
		C- Mode of delivery	Fully erected or semi-assembled (limited work on-site)		
	1.2	Main traffics	Dry bulks (Manganese ores, clinker, grains), containers, iron products		
		A- Dry bulk traffic	Crane can operate mechanical grab		
		B- Container traffic	Crane can be compatible with spreader type EHSU		
		C- Heavy lift	Heavy lift mode		
	1.3	Principal duty	Compact crane which designed for heavy duty handling at economically variable working speeds and with a service life appropriate to the application		
	1.4	Operated vessels	Panamax and Post Panamax, barges, feeders		
1.5	Main Capacity	Capacity of 120 t under hook at min. radius			
1.6	Capacity grabs on rope				
	A- Capacity under rope at 20m	55t			
	B- Capacity under rope at 30m	55t			
	C- Capacity under rope at 40m	40t			
1.7	Capacity in heavy lift mode				
	A- Capacity under hook at 20m	110 t			
	B- Capacity under hook at 30m	60 t			
	C- Capacity under hook at 40m	45 t			
1.8	Minimum outreach	48 m			
1.9	Type of boom	Preference for a 4-chords lattice boom			
1.10	Certification	CE			
2. SITE DEFINITIONS	2.1	Climatic conditions			
		A- Atmosphere	Salt laden marine environment with fine sand		
		B- Temperature	From 5°C to +40°C, direct sunlight		
		C- Winds	Operating Wind speed=24 m/s Stowed Wind Speed=42 m/s Max wind speed during travelling=20 m/s		
		D- Humidity	Max 100%		
		E- Local Environment	Rain Exposure to snow (up to 20 cm) and rarely ice during winter months		
	2.2	Operations			
		A- Vessel's width	Maximum 36 m		
		B- Fender's width	1.5 m		
		C- Distance supporting pad-quay edge	2.4 m Between the seaside and the edge of the crane an installed electrical canal has been constructed by Specimas Company		
	D- Max. slope during travelling	2% without load in transverse direction 5% without load in longitudinal direction			
2.3	Quay requirements				
	Normal conditions	all static loads included			
	Extreme conditions	all static and dynamic factors are included			
	A- Maximum axle set loading	Normal = 25,0 t Extreme = 25,0 t			
	B- Maximum corner loading	Normal (static excluding wind, boom 90°) = XXX.X t Normal (static including wind, boom 45°) = XXX.X t Normal (static including wind, boom 90°) = XXX.X t Extreme (dynamic including wind, boom 90°) = XXX.X t Extreme (dynamic including wind, boom 45°) = XXX.X t			
	C- Maximum area pressure	Normal (static excluding wind, boom 90°) = XXX.X t/sqm Normal (static including wind, boom 45°) = XXX.X t/sqm Normal (static including wind, boom 90°) = XXX.X t/sqm Normal (static including wind, boom 45°) = XXX.X t/sqm Extreme (dynamic including wind, boom 90°) = XXX.X t/sqm Extreme (dynamic including wind, boom 45°) = XXX.X t/sqm			
	D- Uniform Distributed Load	Max UDL= 5 t/sqm			
3. STANDARDS	3.1	Design	BS 2573 ; FEM1.001(1998) ; BS 5400-10		
	3.2	Structure	FEM1.001(1998) ; EN 10025		
	3.3	Drawing Plans	ISO 128 ; ISO 14617-1 ; ISO 4306-5		
	3.4	Access	ISO 11660-5 ; ISO 14122-1-4		
	3.5	Mechanical	ISO 6336-1:6 ; ISO 14556 ; ISO 9018 (2013)		
	3.6	Welding	AWS D 1-1:5 ; ISO 15609 (2004) ; ISO 15607 (2003) ; ISO 2560 (2005)		
	3.7	Fasteners	AISC for bolted joints		
	3.8	Hydraulics	ISO 5781 (2016) ; ISO 4413 (2010)		
	3.9	Diesel Engine	ISO 8528-1:12 ; ISO 3046-1:6		
	3.10	Electrical	IEC 60929 ; ISO 10245.5 (1995) ; IEC 6024 ; IEC 60304 ISO 775-5 ; ISO 8866-1:5 ; ISO 2631-1 ; ISO 5349-1 ; ISO 10816-8 ; ISO 11690-1:2 ; ISO 15667		
3.11	Cabins				
3.12	Safety	ISO 12100-1:2 ; EN 954-1 ; ISO 12480-1 (1997) ISO 12944-1:8 ; ISO 8501-1:2 (2007) ; ISO 14713 ; ISO 11124-1:4			
3.13	Painting and coating	ISO 2808			
3.14	Quality Management	ISO 9001			
4. DESIGN CRITERIA	4.1	Design life	25 years 2,000,000 cycles		
	4.2	Crane structure	Classification of crane as a whole in appliance groups		
		A- Class of Utilization	U7		
		B- State of Loading	Q2		
		C- Group Classification	A7 (Mechanical grab operation, rated load)		
		D- Impact Factor	1.4		
		E- Duty Factor	0.9		
	4.3	Mechanical design life			
		A- Hoist, mechanical grab	M8, T6, L4		
		B- Hoist, heavy-load operation	M8, T6, L4		
	C- Hoist, spreader/normal operation	M6, T6, L3			
	D- Luffing	M6, T6, L2			
	E- Slewing	M4, T3, L3			
	F- Travelling	M4			
4.4	Operating speeds				
	A- Hoisting/Lowering	20 m/min with 100t 25 m/min with 80t 50 m/min with 40t 120 m/min without load			
	B- Slewing	0-1.6 rpm 280 m/min (max peripheral speed boom head) unlimited slewing range [360°] 75 m/min (average horizontal speed)			
	C- Luffing	45 s from max to min radius with rated load			
	D- Travelling	Up to 80 m/min			
4.5	Accelerations time (full speed)				
	A- Hoisting/Lowering	3 seconds			
	B- Slewing	5 seconds			
	C- Luffing	2 seconds			
	D- Travelling	6 seconds			
4.6	Capacity	Detailed load curves expected			
4.7	Position of luffing cylinder	Better above boom			
5. MAIN DIMENSIONS	5.1	Total weight			
		A- Undercarriage			
		B- Superstructure and counterweights			
		C- Column			
		D- Cabin			
		E- Boom and luffing cylinder			
		F- Rotator and wire ropes			
	5.2	Support base			
		A- Dimension	minimum 13m x 13m (169 sqm)		
		B- Size of supporting pads			
	C- Supporting area under pads				
	D- Number of axle sets				
	E- Axle sets DRIVEN				
	F- Axle sets STEERABLE				
	G- Number of wheel	4 per axle sets			
	H- Tyres	285/70 R 19.5 or 14,00-24			
	I- Tyre pressure	10 bar			
5.3	Overall dimensions				
	A- Overall width without pads				
	B- Overall width with supporting pads and deployed outriggers				
	C- Overall width in travelling mode				
	D- Overall length of undercarriage				
	E- Length of boom	minimum 48 m			
	F- Minimum operating radius	maximum 11 m			
	G- Height of boom fulcrum				
	H- Overall height of tower				
	I- Cabin height (eye level)				
5.4	Turning radius				
	A- Inner				
	B- Outer				
	C- Tail swing				
	D- Max. crab steering angle	Min. 25°			
5.5	Maximum Hoisting height				
	A- Above quay at min. radius	48 m			
	B- Above quay at max radius	35 m			
	C- Below quay	15 m			
6. POWER PACK	6.1	Diesel Engine			
		A- Brand	Cummins, MAN, Volvo, Mercedes, MTU, Liebherr		
		B- Model			
		C- Emission standard	Tier 4f		
		D- Number of cylinders			
		E- Cooling system	Water		
	F- Max. torque				
	G- Nominal output				
	H- Average consumption	m <sup>3</sup> /hr			
6.2	Tank capacity				
	A- Fuel tank	Integrated in the chassis steel structure, capacity in l to be detailed			
	B- AdBlue tank	1000 l			
	C- Possible operating time without refueling	200 hours			
6.3	Three-phase generator				
7.1	Hoist system				
		A- Motors			
	B- Brake system				
	C- Reduction gear unit/hydraulic pump				
	D- Milled rope drums				
	E- Easily accessible				
7.2	Slewing system				
	A- Motors				



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TITLE	ITEM	DESCRIPTION	NUMBER	REFERENCE	UNIT PRICE	TOTAL PRICE
1. SPARE PART LISTS	1	RECOMMENDED LIST, 4000 HOURS	1			
	2	REFUELING PUMP FUEL	1			
	3	TURBO FOR DIESEL ENGINE	1			
	4	STARTER FOR DIESEL ENGINE	1			
	5	WATER PUMP FOR DIESEL ENGINE	1			
	6	JOYSTICK	1			
2. CONSUMABLES KITS	1	FILTER KITS, 4000 HOURS	1			
	2	SEAL KITS, 4000 HOURS	1			
	3	GREASE KITS, 4000 HOURS	1			
	4	HYDRAULIC SEEL KIT	1			
	5	OTHER FILTERS AND CONSUMBALES	1			
3. TOOLS	1	Recommended tools for maintenance	1			
		A- Flat spanners				
		B- Open jaw spanner				
		C- Allen wrench				
		D- Pipe wrench				
		E- Dynamometric screwdriver				
		F- Universal plier				
		G- Pin punch				
		H- Hand hammer				
		I- Flat chisel				
		J- Locksmith hammer				
		K- Cross handle				
		L- Manometer				
	etc					