

16 ton FLT			
PAR	Title	Sub Par	Description
1	Intended use	1.1	The FLT's will be used for port operations in Haifa port company ltd (HPC), in Israel. The FLT's will be used for quayside operations and inside ships warehouses hall .FLT's main use shall be steel material handling (inter-alia : long steel rebars, large steel plates ,structural steels sections, steel rolls, Coils of steel wire etc.),lifting and moving of heavy port equipment, placing and alignment of cargo on the ground.FLT shall be suitable for operating in marine environment (sea side) , dusty environment, driving on uneven roads surfaces with potholes, rough steel/wood debris found on the ground ,with ambient temperature reaching 45 c/degrees. The FLT will operate continuously in hard operational conditions in high working phase. FLT is normally loaded with the highest possible load @ max load center (based on FLT's rated load & L.C) .
2	design	2.1	All mechanical power transmissions systems/components , electrical equipment, heat exchangers, air conditioners, expansion joints, etc. shall be sized and designed to operate within temperature range of -10°C through +50°C and relative humidity of 95%. Design Factors: Ambient temperature 50°C, Relative humidity 95%.
		2.2	The FLT main systems, main frame, mast &carriage ,engine, transmission, torque converter, drive & steer axle, planetary gear,etc. must be capable to withstand the severe working conditions existing in the port (as shown on Par.1) and shall be protected against failure based on common practice..
		2.3	All systems shall be capable to withstand the changing of traveling direction without bringing the FLT to a full stop-taking into account that the truck is equipped with solid tires .
		2.4	FLT Stability And Safety The FLT stability, safety and structure shall be according to FEM 4.001, ISO 1074, ISO 2291 and ANSI B56.1 EN 1459 and ISO 3874 standards or equivalent
		2.5	Any place where a standard is pointed an equivalent standard may be offered. in case of a doubt ,the contractor's suggested standard shall have to be approved by the Israeli institute of standards
3	Mast & Carriage/ Attachments	3.1	The FLT shall be provided with the following attachment:
		3.1.1	► forks (see par. 4.5 for fork specification)
		3.1.2	► integral side shifter/fork positioner
		3.1.3	► Load backrest- not required
		3.2	FLT and attachments to be provided for quick connect / disconnect hydraulic and mechanical.
		3.3	Mast design standard duplex mast of Extra heavy duty construction , free view configuration with two (2) lift cylinders mounted on the back sides of the mast in protected location . Mast shall be designed to withstand the hard working conditions described in Par.1 taking into account FLT is normally loaded with the highest possible load @ max load center (based on FLT's rated load & L.C) . largest stiffness/strength safety factors shall be used in the design .mast frame structure and mast hanging/supporting points to the chassis shall be fabricated from the best quality high grade high strength steels. it is preferred that the Mast shall be provided with heavy duty side rollers (instead of slide blocks)
		3.4	Carriage & Attachments design Carriage to be of Extra heavy duty construction . Carriage shall be designed for maximum visibility ,simplicity and good access for maintenance and repair . Carriage shall be designed to withstand the hard working conditions described in Par.1 taking into account FLT is normally loaded with the highest possible load @ max load center (based on FLT's rated load & L.C) . largest stiffness/strength safety factors shall be used in the design. Components (Hydraulic ,El & other) mounted on the Carriage shall be well concealed/ protected against operational damages and properly anchored to the frame. Hydraulic tubing and El. wiring shall be routed in well concealed/ protected rout and properly secured to the frame. Fasteners (pins/axles/bolts/nuts etc.) shall be of heavy duty type and well concealed/ protected as applicable . Carriage shall be designed for simple and easy replacement of forks . forks lower locking point shall be heavy duty capable of withstanding the high forces/impacts acting on it during FLT's backing out from the load. Carriage & Attachment shall be fabricated from the best quality high grade high strength steels. it is preferred that the Carriage shall be provided with heavy duty side rollers (instead of slide blocks)
4	Performance characteristics	4.1	Capacity @ lifting height .
		4.1.2	Lift Capacity (residual-net load) ► Not less than 16000 kg @ all lifting height range.
		4.1.3	Max. Load Deration due to side shift/fork positioner ► not more than 5% @ all lifting height range.
		4.2	Load center ► not less than 1200 mm
		4.3	Side shift & forks positioner
		4.3.1	Side shift min range (+/- from center) 400 mm
		4.3.2	Fork positioner Max forks span (out to out) at least 2200 mm
		4.3.3	Fork positioner Min forks span (out to out) not more than 600 mm
		4.3.4	Forks size and span range shall enable transporting of shipping containers (open tops, flat racks, standard ISO containers etc.) by their ISO pockets.
		4.4	Lifting height & configuration
		4.4.1	Full free lift ► not required
		4.4.2	lift height (T.O.F) ► about 4500 mm , but not less then 4000 mm.
		4.4.3	overall lowered height (from top of mast) ► not more than 4600 mm.
		4.4.4	overall extended height (from top of mast) ► not more than 6400 mm.
		4.5	Forks :
		4.5.1	Forks type- quick connection/disconnection type (hook type or equivalent solution)
		4.5.2	FLT forks length ► min. 2,400 mm
		4.5.3	forks should be heavy duty type suitable for steel products & general cargo handling
		4.5.4	forks suitable for handling ISO containers with ISO pockets
		4.6	Tilt angle ► maximum manufacturer standard, according to lift height.

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		4.7	Overall dimensions-FLT has to operate in narrow aisles, therefore compact design ,minimum length and turning radius are most important.
		4.8	Speeds :
		4.8.1	top travel ladden ► over 24.0 km / hr
		4.8.2	top travel unladden ► over 24.0 km / hr
		4.8.3	lift speed ladden ► over 0.35 m / sec
		4.8.4	lift speed unladden ► over 0.35 m / sec.
		4.8.5	lowering speed ladden ► over 0.4 m / sec.
		4.8.6	lowering speed unladden ► over 0.4 m / sec.
		4.9	Ground clearance (ladden below mast & between wheels & under steer axle) ► over 170 mm.
5	Power plant	5.1	ENGINE: The engine should be suitable to the FLT according to the specifications. The exhaust emission shall conform the updated pollution / emission regulations in Israel. The FLT shall be equipped with high power & torque engine. Diesel engine- Cummins engines are preferred, highest power shall be preferred.
		5.2	Engine cooling rated for work in the tropical zone, (see para. 1 for ambient temperatures), water cooled engine equipped with a coolant recovery bottle. The radiator shall be provided with a screen to eliminate radiator clogging when working in application involving fibrous materials. The radiator shall be easily accessible for screen checking & cleaning. High coolant capacity shall be preferred.
		5.3	Engine air inlet engine air inlet will be provided with a heavy duty double stage donaldson type or equivalent cyclonic pre-cleaner and multi tube dry paper filter element with an air restriction indicator. Intake to be high as possible above ground level.
		5.4	Exhaust -exhaust pipe mounted in upswept position.
		5.5	Engine oil filter-full flow heavy duty replaceable element type.
		5.6	Transmission system
		5.6.1	Transmission -shall be of heavy duty design , power shift type with torque converter .
		5.6.2	the transmission system shall have a separate oil cooler and a full flow heavy duty oil filter with a replaceable element and differential pressure indicator . There will not be any connection between the transmission oil system and the hydraulic system.
		5.6.3	Transmission to be equipped with safety features to prevent starting of travel motion with full load, in high gear.
		5.6.4	Forward /reverse gear change lock out should be provided in order to prevent gear change during movement.
6	travel system	6.1	Tires: Solid type tyres shall be preferred. Tyres shall be of heavy duty type suitable for severe port work conditions (mentioned in Par.1) . tyres shall be of wear resistant compound & type with thicker treads which can withstand the rough port terrain (rough steel/wood debris laying on the work ground) . Tire size to be compatible to the common standard in the Tyre market. front and rear wheels shall be of the Same size . Tires manufactured by Bridgestone/Toyo /Yokohama/Michelin /Goodyear/Continental or Simex will be offered.
		6.2	Steer axle and steering cylinder steering cylinder shall be of the double acting double ended single cylinder and a fixed length rod type, heavy duty and well protected. (pivoting steer axle with dual steer cylinders is not acceptable). The steering wheels shall be equipped with protection ring for Hub bolt/ nuts protection against operational damages
		6.3	Drive axle extra heavy duty with planetary final dual drive. Special care should be given to drive axle configuration, to withstand the working condition described in para. 1. Four (4) front wheels drive axle to be provided. Screw-in studs type (screwed to threaded bore in the hub)- are no acceptable
		6.4	Brakes Wet brake system shall be included. Brake lining should be of asbestos-free material. Brake inlet/outlets tubing shall be routed in well concealed/ protected rout and properly secured to the frame.
		6.5	Parking brake -shall be included . Brake activation/release lever shall be provided with safety feature for preventing accidental release of the brake.
7	Hydraulic system	7.1	All hydraulic components to be of heavy duty type, and to be made of highest quality steel. All cylinder rods to be chrome plated.
		7.2	All hydraulic hoses (fix and flexible) ,valves blocks ,are to be well protected against operation damage (Well concealed or covered by protective robust shield) .special attention shall be given for protection of components (hydraulic/EL.) mounted on the carriage front.
		7.3	hydraulic tubing and components that might get in contact with ground obstacles shall have heavy duty protection in general and the braking system in particular.
		7.4	Flexible hoses to be as short as possible and easily replaceable.
		7.5	Hydraulic system to be designed in such a way that use of pipes and hoses will be reduced to a minimum.
		7.6	A filter with restriction indicator shall be provided. Tank strainers to protect the hydraulic pumps shall be provided.
		7.7	Multi stage control valve shall be provided to control basic FLT systems.

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		7.8	Hydraulic oil will be according to ATF type A suffix specification.
		7.9	A load "free fall "protector valve shall be provided- this shall prevent possibility of load drop accidentally (without operator's command).
		7.10	A load "shock absorber " shall be provided- this shall reduce the dynamic impacts induced to the truck by the load during work
8	Fuel system	8.1	double stage fuel filter:
		8.1.1	► first stage - sediment bowl.
		8.1.2	► second stage - replaceable cartridge.
		8.2	Fuel tank capacity to be sufficient for at least 20 operating hours.
9	Electrical system	9.1	24 volt system shall be provided .
		9.2	heavy duty alternator.
		9.3	battery capacity(amp/hr) to be max. available , low maintenance / maintenance free type. Battery should be located separately and far as possible from the main electrical cabinet.
		9.4	Manual & Lockable battery disconnect switch
		9.5	All electric components to be heavy duty type and rated for 24 volt operation.
		9.6	Start aid connector -NATO 24V type
		9.7	Fuses and relays will be mounded in central electrical box.
		9.8	CAN-BUS electrical control system shall be preferred.
		9.9	Power Provisions for TOS & radio communication systems Two Electric, fused connecting sockets (+/-) shall be installed in the CAB's panel with 10A fuse, definitions of the supply voltage (12/24VDC) and EL. power requirements shall be provided by HPC directly to the supplier during HPC's Review of final technical details (before order is placed). Power shut-off shall be 15-30 minutes after engine turned off , Power turn on shall be immediate with engine start up.
		9.10	Lights:
		9.10.1	All light lamps shall be of LED type
		9.10.2	Four (4) front working lights on the cab.
		9.10.3	Two (2) rear work/drive lights on the cab.
		9.10.4	Two (2) front head lights. Preferred location to be as high as applicable (advantage) ,less desirable location is on the front fenders.
		9.10.5	Tail, stop rear driving lights.
		9.10.6	Four (4) direction indicators with hazard switch.
		9.10.7	Rotating amber light : Pos1. on top the cab mounted , Pos2. on the counter weight (only for trucks with rated lifting capacity of 16 ton and over).
		9.10.8	Reverse warning alarm, with flashing lights.
		9.10.9	All Lighting to be operated only at engine start-up provided the light-switch is ON. All lighting to be terminated automatically at engine shut off.
		10.1	The following controls shall be provided :
		10.1.1	Brake pedal, and separate Brake/inching pedal.
		10.1.2	Acceleration pedal with integral directional selector for forward / reverse movement shall be provided
		10.1.4	Hydraulic system motion controls by levers (Joystick not acceptable), mounted on the right side of the steering wheel .levers shall be ergonomically designed for easy/effortless activation by the right hand operator's fingers without the need to remove his hand from the seat harm-rest . Each motion will be by a separate control lever. At least the the next controls shall be included : ► raise / lower control. ► tilt control. ► side shift control. ► forks positioner controls including : 1. capability for position of each one of the forks separately 2. capability for position both forks simultaneously (open/close forks span) ► additional attachment control (bale/paper role clamp etc.)- NOT TO BE INCLUDED
		10.1.5	Two rear view mirrors- one on each side.
		10.1.6	Audio alarm for reverse movement (when shifting to reverse).
		10.2	Cab configuration- Enclosed operators cab Cab layout drawing including graphical illustration of visibility angles for front and back views and cab height from ground level (including chair height) shall be submitted with the proposal. Cab general layout drawing showing the internal design and all inner equipment (instruments ,controls ,gauges ,auxiliary devices etc.)shall be submitted with the proposal.
		10.3	at least the following indicators shall be provided:
		10.3.1	Hour meter
		10.3.2	engine coolant temp
		10.3.3	fuel gauge
		10.3.4	ammeter
		10.3.5	engine oil pressure gauge
		10.3.6	transmission oil pressure gauge
		10.3.7	transmission oil temperature gauge
		10.4	At least the following warning lights shall be provided:
		10.4.1	low engine oil pressure
		10.4.2	high transmission oil temperature
		10.4.3	low transmission oil pressure
		10.4.4	engine coolant temperature

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10	Driver cab, controls and instruments	10.4.5	Low coolant level
		10.4.6	alternator
		10.5	At least the following warning buzzer shall be provided:
		10.5.1	low engine oil pressure
		10.5.2	engine coolant temperature
		10.5.3	coolant level
		10.6	Overhead guard shall be provided. The Overhead guard shall be according to ASME B56.1 standard or equivalent.
		10.7	Tropical zone air condition. Air condition system shall be of heavy duty /High Performance type .the A/C is incorporating with the heating system and installed inside the cab. The temperature in the cab should be lower than 22 °C at ambient temperature described in para.1. All components are to be heavy duty /High Performance type suited for automotive equipment.
		10.8	The Cab shall be provided with sound and heat insulation. Extra insulation should be provided also between cab and engine.
		10.9	The cab shall be mounted on rubber elements (or equivalent measures)to ensure low level of vibration in operator's compartment.
		10.10	The FLT shall enable automatic power tilt of the operator's cab for granting easy access to the engine/transmission compartment for maintenance/repair works .Tilt function shall be performed automatically when the command is given (El/hydraulic power or equivalent)
		10.11	Great care shall be given to the operator's visibility (front, rear and sides). The cab, front and rear windows shall be large to assure unobstructed front & back visibility of the operator.
		10.12	A full suspension full adjustable with double sided adjustment mechanism seat shall be provided . seat is to be covered with durable , "breathable fabric" upholstery . Additional trainer seat shall be provided .
		10.13	Operator's presence safety system shall be provided .The system shall prevent any operation of the FLT in case the operator is not properly seated and not buckled with seatbelt . In addition the system shall automatically shut-off the engine when no operator is present for more than a defined delay time (default delay time is 10 minutes , delay time shall be adjustable) ,and shall not enable engine turn on when no operator is present.
11	engine & transmission protection system	10.14	Safety belt with warning buzzer & light (for unbuckled condition).
		10.15	Steering wheel shall be equipped with spinner knob
		10.16	Sound level sound level at operators ears shall not exceed 80 db(a) the manufacturer shall attach to his proposal data regarding the noise level of the offered equipment, tested according to din 45635 t36. The results of the tests shall be entered onto the appropriate form attached to din 45635 t36 bbl1 noise level tested according to s.a.e. J88 or bita rp20 standard is acceptable.
		10.17	windows: Windows shall be as wide as possible and allow good visibility at day and night and also in harsh weather conditions. All Windows glass shall comply with at least one of the next standards/regulations: Israeli standard 546, ECE REG.43 , 92/22/EEC ,FMVSS 205 (Equivalent standard may be offered) The glass shall be of anti-sun type with filtering capability in order to reduce sun dazzling & heat radiation into the Cab in day time ,yet still allow good visibility at night/dark times.
		11.1	An engine & transmission automatic protection system shall be provided . the protection system shall shut off the engine or go into "crawl home" mode (the "Crawl Home" mode should lower and limit engine performance - reduce RPM/power/torque etc.). The engine shut off protection (gradual/impidate) is the preferred solution as applicable technically and safety vice. The protection system shall be activated at least at the following cases :
		11.1.1	High Coolant temperature
		11.1.2	Low Engine oil pressure.
		11.1.3	Low Coolant level.
		11.1.4	High Transmission oil temperature
		11.1.5	Low Transmission oil pressure.
		11.2	It shall be preferred that the aforesaid systems shall monitor, using audible and visible warnings ,at least the following functions:
12	Paint	11.2.1	High coolant temperature.
		11.2.2	Low Coolant level (in case of low level it is preferred to shut off the engine).
		11.2.3	High transmission oil temperature.
		11.2.4	Low engine oil pressure.
		11.2.5	High engine oil temperature.
		11.2.6	High air inlet temperature.
		11.2.7	High fuel pressure
		11.2.8	Low fuel pressure
		11.2.9	Engine over-speed
		12.1	Paint system and color shall be according manufacturer standard. Paint shall be suitable to withstand weather conditions & sun radiation in Israel (see par. "Intended use"). Paint system shall be also compatible for working in marine environment.

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13	Special attachments and accessories	13.1	Side shift / fork positioner an integral side shift and fork positioner system shall be included in the FLT. The side shift and positioning cylinder shall be mounted in a protected location, to protect them against operation damage. Manufacturer to provide a drawing showing the type of forks & fork connection proposed, with its proposal.
		13.2	<u>Steel coil pin (ram)</u> Two Steel Coil Pins will be offered as an option and shall be priced seperately . ► Pin capacity according to FLT capacity. ► Pin length - 1,800 mm. ► Load center about - 900 mm.
		13.3	<u>Lifting lugs</u> shall be provided and shall be integral part of the FLT (for lifting and transporting the FLT to a ships inner storage hall).it is preferred that all lifting lugs shall be located in reachable position & at around same height from ground (to avoid the need of using special equipment/lifting gear during tie the lifting gear to the lugs)
		13.4	Rear towing hook to be installed.
14	quality control	14.1	The Manufacturer must be certified for a Quality Control in accordance with the ISO-9001 standard, or equivalent standard. (In case of a doubt, the equivalent standard shall be approved by the Israeli Institute of Standards).
		14.2	The manufacturer shall submit a certificate issued by independent organization showing that he meet ISO 9001 requirement.
		14.3	The manufacturer shall be responsible for providing the necessary Quality Assurance and Quality Control procedures, maintaining continual surveillance and inspection activities during the entire periods of the Fabrication and Testing.
		14.4	Reports of inspections and tests are to be provided to the HPC during the fabrication period and before shipment of the FLT .
		14.5	list of all main Vendor items installed in each and every supplied FLT (by FLT S/N) . For each vendor item the next details shall be specified : FLT S/N ,manufacturer name ,Model type ,S/N .
		14.6	Certificate of Testing (COT) and Certificate of conformity (COC) shall be furnished for at least : (a) engine (including engine/transmission protection system) (b) transmission (c) hydraulic pumps and cylinders (d) Mast and carriage. (e) brakes (f) safety devices. (g) lifting attachments (forks, spreader ,coil pin ,side shift/fork positioner frame etc.) (h) Material certificates for steel used in load bearing structural frame members (mast ,carriage etc.)
15	final adjustment and testing (pre-shipment)	15.1	The manufacturer shall submit to HPC for approval the full testing program. The testing program shall be detailed and included the following: ► Content of test (including dynamic and static test). ► acceptance criteria and actual results data (based on FLT S/N). ► Method of conducting control and measuring.
		15.2	Pre-Shipment final test shall be conducted at the manufacturer plant. HPC representatives presence during the test shall be optional . The test reports to be submitted to HPC for approval before shipment of the FLT.
16	Safety arrangements	16.1	General assembly and detail design of the FLT shall conform the safety regulations and codes.
		16.2	All nuts, connecting the moving and rotating parts (couplings, drums, sheaves, etc.) Shall be of the self-locking type to prevent their loosening due to vibration.
		16.3	All exposed rotating parts shall be provided with rigid safety guards.
		16.4	Unavoidable hazardous points shall be marked with a special warning paint (yellow and black stripes).
17	Maintenance	17.1	Operator's daily routine maintenance easy access shall be provided to enable the performance of all daily maintenance checkout and liquids replenishment tasks without the necessity to tilt the driver cab or to dismantle obstructing components or to use special tool/equipment.
		17.2	Near each fluid filling opening an information sticker shall be placed showing the correct type of fluid according manufacturer instructions. The sticker has to stick firmly, be durable and chemical/oil resistant .
	As-Made	18.1	no later than two month prior the FLT's delivery date, the following technical manuals and information shall be provided in 5 hard copies .additional 3 copies shall be provided on magnetic media (pc disc or CD-ROM)-all file types shall be free/unlocked and "searchable" .All information / manuals / drawings shall be updated and related to the supplied equipment (As-Made). In addition one example copy is to be provided with the proposal-excluding Hebrew translations. Technical manuals and information to be supplied:
		18.2	Operation manual in English and Hebrew .
		18.3	Safety instruction in Hebrew
		18.4	Maintenance manual in english.
		18.5	Repair and overhaul manual. (engine, transmission, drive axle, steering etc...)
		18.6	Complete and comprehensive Parts Catalogue (including pictures if aplicable) manufacturer P/N, OEM P/N description and related data sheet.
		18.7	Engine operation and maintenance manual.
		18.8	Engine overhaul manual.
		18.9	Engine parts catalogue.
		18.10	Transmission operation and maintenance manual.
		18.11	Transmission overhaul manual.

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18	technical documentation	18.12	Transmission parts catalogue.
		18.13	Maintenance/repair manuals and parts catalogue for other repairable components if were not included in the FLT manual.
		18.14	All spare parts lists to be provided in "Excel" format. Data files in digital media shall contain the following information:
		18.14.1	Material catalog (Information as :Material catalog number, description, Unit of measurement, Material type...)
		18.14.2	BOM (Bill of materials)
		18.14.3	Complete Product Tree (based on "fathers", "sons" system all with p/n)
		18.15	List of all materials & liquids required for routine maintenance ,according manufacturer instructions ,for three (3)years of operation, based on 2000 working hours per unit per year .the list will contain at least the following data :description and position,Qty (also for liquids), replacement intervals ,manufacturer P/N , OEM P/N.
		18.16	Recommended spare parts list according manufacturer experience and recommendation. The list should cover all "foreseen" spare parts consumption for 3 years of operation (not routine maintenance), based on 2000 working hours per unit per year. The list shall include at least the following Information: manufacturer P/N, OEM P/N, part description, quantity required per FLT, prices, lead time (delivery time).
		18.17	Maintenance manuals will include "maintenance instructions" as a "Check Mark" lists for all instructed maintenance tasks.
		18.18	Note: the manufacturer can combine one or more manuals into one volume.
19	diagnostic & monitoring tools	19.1	diagnostic software & accessories (including all necessary hardware connection equipment) for laptop of at least the next Controllers shall be provided :
		19.1.1	Engine Control Module (ECM) Engine software for maintenance, adjustments and calibration work - complete with all its accessories & connections for linkage to two PC working stations shall be provided.
		19.1.2	Transmission Control Module (TCM) Transmission software for maintenance, adjustments and calibration work - complete with all its accessories & connections for linkage to two PC working stations shall be provided.
		19.1.3	Body Control Module (BCM) FLT software for maintenance, adjustments and calibration work - complete with all its accessories & connections for linkage to two PC working stations shall be offered.
		19.1.4	Instrument Panel (for operator Cab)
		19.1.5	Training for using the equipment shall be included also and executed by a qualified instructor.
		19.1.6	Diagnostic software permits ,licences & updates shall be included in FLT's price for the first five years of operation.
		19.2	Remote monitoring system to provide real time alerts via e-mail and other information on web portal as following: The system will send e-mail to addresses that the port will provide in cases of: <ul style="list-style-type: none"> • high oil pressure • low coolant level • high coolant temp. • high oil transmission temp. • low fuel level The following parameters shall be available on web portal: <ul style="list-style-type: none"> • Tires air pressure • Fuel level • Urea level The system shall enable keeping historical technical data of the certain vehicle , searching for data and issue report . Supplier shall provide information about all parameters available from the system. The system shall be fully operational for 5 years starting from the acceptance date without any extra cost (Any required usage fee to local/foreign vendor shall be included in the FTL's offer)
20	Training	20.1	The manufacturer shall perform operators and maintenance personnell training in israel. Training will include:
		20.2	Operators training: all information, explanation and instruction for FLT operating. Training shall be for at least 3 sessions of 1-2 hours each.
		20.3	Greasing technicians training in performing routine maintenance (lubrication, oil change/refill ,filters replacement etc.). Training shall be given in one session of max 3 hours with 3-4 participants.
		20.4	Mechanical, electrical technicians training in performing routine maintenance, fault monitoring, trouble shooting, using necessary diagnostic tools. Training booklets shall be handed by the instructor during the training . For every field (Electric & Mechanic...), training shall be for up to 4 sessions of at least 4 days each and for 5-8 participants each session.daily training hours : starting at 6:30 till 14:30 .
		20.5	The training shall include special chapter for the Engine and the Transmission. This chapter shall be done by the engine / transmission manufacturer or its Israeli representative
		20.6	The manufacturer will enclose to his proposal recommended detailed training program as well as training booklets etc.
		20.7	The manufacturer shall enclosed in his offer pricing breakdown extra training (over the a/m). including pricing of a single training day .
		20.8	Manufacturer shall issue, for each participant, a training certificate quoting participant name & I.D, dates of training, technical information covered, length of training (in terms of hours) supplier details and company's logo , trainer details & signature.
		20.9	The instructor should be a qualified technician.
		20.10	The manufacturer shall submit with his proposal detailed specifications for the FLT.

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		20.11	The manufacturer shall provide with his proposal a list of all standard equipment that are not included in the proposal price.
21	Handing over.	21.1	It is the responsibility of the manufacturer to deliver the equipment to israel ready for operation. The manufacturer will perform at least the following tasks upon the arrival of the equipment to HPC : ► Checking and repairing of voyage damages ► Remove all voyage protection materials. ► Assembly and installation as necessary ► Complete equipment checkup ► Handing over of the equipment to haifa port in a fully serviceable and operational status.
22	Acceptance Test Procedure of the FLT's at HPC (ATP).	22.1	The contractor shall submit (on his own expense) a valid certificate issued by an Israeli government authorized inspector for lifting of devices, which indicates that each of the supplied FLT's and each of supplied attachments complies with the requirements of the Law in Israel for lifting machines .
		22.2	The contractor shall submit all the relevant documents already sign and payed (on his own expense), which shall be issued by the Israeli Ministry of Transportation , in order to licence the applicable FLT(s).The contractor shall be responsible also the make any required pre-testing to validate the licence.
		22.3	Checking together with HPC's representative the actual FLT compliance with the technical specifications and order details.
		22.4	Verifying / approving arrival of all information / lists / manuals etc. according to the specifications.
		22.5	Performing of an operational test – running the FLT for 21 working days (about one month)in a trouble free manner in real operational conditions. the test shall start within 14 days from the contractor declaration stating that the FLT is in full serviceable and operational status.
		22.6	HPC Verifying / approving completion of supplier obligations according scope of supply (handing over : technical documentation, lists ,filters sets & special tools ,performing training etc.)
23	Service facilities and spare parts.	23.1	The manufacturer should have authorized workshop approved by ministry of transportation in israel for repairs and maintenance of forklift trucks, and / or agreement with such workshop (service station).Relevant documents (certificates from M.O.T and / or agreement) should be submitted.
		23.2	Service station shall be examined and approved by HPC. If the service station will not be approved by HPC the manufacturer / suplier will be obliged to present another station that should be, again, approved by HPC.
		23.3	Regular service and repair will be performed by HPC.
		23.4	The manufacturer will be obliged to supply spare parts in shortest time.
24	Suplying of Special tools, additional systems and spare parts	24.1	Supplying of Special tools and spare parts (to be included in the FLT's basic offer) The bidder shall submit a complete list of tools required for repair, maintenance and overhaul work for the supplied FLT no later than two month prior the FLT's delivery date. One set of special uncommon tools for repair ,maintenance and overhaul shall be supplied for each FLT .
		24.2	All spare parts and consumables for performing all periodical maintenance for 2 years of operation (warranty period) based on 2,000 working houres per year shall be provided for every FLT (not including liquids). A table of the a/m spare parts for periodical maintenance shall be provided with the parts as well. The table shall consist of at least the folowing columns : part description, suplier as well as original manufacturer P/N , replacement interval , total quantity required for 4,000 working houres, quantity supplied.
		24.3	The FLT's shall be equipped with an automatic greasing system to cover all greasing points -as applicable. Grease should be of a known manufacturer (SHELL RETINAX AM, or equivalent). system components are to be well protected against operation damage (Well concealed or covered by protective robust shield) but yet accessible for maintenance. the system shall enable greasing of all required greasing points on the main FLT's frame . greasing of points located on moving parts (e.g. inner masts/carriage/fork positioner etc.) may be manual, but automatic greasing shall be preferred and gain and advantage.
		24.4	one (1) complete spare wheel with each FLT to be provided (ready for mounting on the hub)
		24.5	overload & over-moment protection system shall be provided. the system shall monitor the load & moment acting on the FLT by the lifted load.in case of overload/over-moment, the system shall warn the operator by visual and audio aids (e.g. buzzer ,lamp , gauge etc.)it is preferred that the system shall prevent lifting in case of overload/over-moment ("lift-interrupt")
		24.6	FLT's ignition keys (Original)- to be included 200 units with the complete order
		24.7	all systems shall be installed by the manufacturer during production. no local installation shall be accepted unless formally approved and documented by the manufacturer
25	Warranty period and conditions	25.1	The equipment will be supplied free from any defects in material or workmanship. warranty period, under normal use and/or service, will be for 24 months or 4,000 working houres whichever comes later , but in any case shall not exceed 2.5 years starting with the acceptance date.
		25.2	The warranty will include (on top of the standard warranty) but not limited to the following aspects:
		25.2.1	Cost of parts and labor, including: ► cost of parts shipment or technicians transportation to the port. ► cost of equipment shipment to and from the manufacturer's workshop (if necessary).
		25.2.2	Systems such as engines, transmissions, batteries, tires, etc., which are not manufactured by the manufacturer.
		25.3	Response time by the local service station / representative, for calls under warranty, oshall be not more than han 24 hours (twenty four hours).
		25.4	Urgent repairs - may be done by the port maintenance staff, without derogating from the manufacturer's obligations under the warranty.
		25.5	The manufacturer will reimburse the port the spare parts used and the cost of labor invested by the port for the urgent repairs.
		26.1	FLT technical specification.

16 ton FLT			
PAR	Title	Sub Par	Description
26	Data to be submitted with the proposal.	26.2	FLT general arrangement drawing showing at least the following dimensions: ► Overall width ► Overall length chassis ► Wheel base ► Total length ► Turning radius ► Cab height dimensions including hight of the chair from ground level. ► Cab inner dimensions ► Cab layout drawing including graphical illustration of visibility angles for front and back views.
		26.3	Operators cab Technical data and operation description including operator's visibility drawing in maximum, average & minimum working height.
		26.4	Drawing showing the operator's cab panels (controls , indicators etc.)
		26.5	FLT layout drawing showing the location of main components / systems.
		26.6	drawing showing the type of forks connection proposed.
		26.7	Technical manuals as mentioned on Par. "As-Made technical documentation" (one sample copy-full set)
		26.8	Sample of FLT 's maintenance instructions and in particular chapters dealing in daily checkups & accessibility for maintenance. Data shall be provided also in digital media (CD or flash memory stick).
		26.9	Certificate of sound level according to the specification.
		26.10	Completely filled out Data Sheet to be submitted in hard copy ,signed by the Bidder .Additioanly this formshall be submitted also in digital EXCEL format file (on CD or flash memory stick).
		26.11	Completely filled out Technical Mandatory requirments(TMR) to be submitted in hard copy ,signed by the Bidder .additioanly this form shall be submitted also in digital EXCEL format file (on CD or flash memory stick).
		26.12	The manufacturer shall return a copy of this specification and note at the end of each paragraph if the offered equipment complies or not with this specification. In case it doesn't complies , the manufacturer shall give an explanation or if possible suggest an alternative equivalent.
		26.13	Final test report and quality check list sample.
		26.14	Other manufacturers options (to be offered and priced seperately)
		26.15	Recommended spare parts list according Par. "As-Made technical documentation"
		26.16	Central lubrication system - complete technical data. (only if its included in scope of supply)
		26.17	Any "Recovery" procedure needed due to engine pollution / emission rules (especially if such procedure affects machine maintenance cost and/or machine availability).
		26.18	Declaration/technical data of any fuel additive or supplement or other material that is needed in order to operate the FLT according to pollution / emission rules.
		26.19	List of locations where the suggested FLT model (or equivalent) can be seen in Israel and in Europe, including also contact person detail. If such FLT's can't be seen in Israel, the contractor shall enclose with his proposal all necessary technical Data/Pictures to enable evaluation of the FLT maintenance & operational vise.