HUTCHISONPORTS
ABU QIR

Tender SPECIFICATIONS

FUEL MANAGEMENT SYSTEM

(T/AQCT/ENG/02/2025)

Sep - 2025

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1. GENERAL REQUIREMNETS AND SCOPE OF WORK

1.1. INTRODUCTION

Hutchison Ports signed a long-term agreement with the Egyptian Navy to develop and operate a new container terminal Abu Qir Container Terminals (AQCT) at Alexandria, Egypt. The new terminal will have a total quay length of 1,200 meters capable of handling mega vessels of the future. The location of the terminal is inside the Abu Qir Naval Base.

1.2. PURPOSE

AQCT is seeking for a highly qualified contractor to carry out and implement a complete turnkey project that includes the supply, installation, commissioning, training and testing of an automated Fuel Management System (FMS) in the Terminal that ensures accurate monitoring and controlling of fueling processes at fuel station, Emergency Power Station and mobile tanker truck (bowser) and integrating the system with AQCT inventory system via 4G network, including firewall protection etc., for generating regular customized reports.

Main Offer	QTY
Fuel Management System – Turnkey Project Supply, Install, Programming, Commissioning, Integrate, Start up, and Train	1

The place of acceptance of the supplies shall be in AQCT Terminal (Free zone area).

1.3. DEFINITIONS

"Company/AQCT/Owner"	:	HUTCHISON ABU QIR – Private Free Zone Company Abu Qir Container Terminal (AQCT)– Private Free Zone Company
"Contractor(s)"	:	Bidder/Bidder System Integrator specialized in delivery installation/commissioning of the Fuel Management System (FMS).
"Vendor(s)/Supplier(s)"	:	It shall mean the individual or firm or company whether incorporated or not, undertaking the works and shall include legal representatives of such individuals or persons composing such firm or unincorporated company, or successors of such firm or company and permitted assigns of such individual or firm or company.
"Shall"	:	This is to be understood as a mandatory in relation to the requirements of this document
"Should"	:	This is to be understood as a strong recommendation to comply with the requirements of this document recommendation to comply with the requirements of this document
"AQCT"	:	Abu Qir Container Terminal – ABU QIR Port
"SOW"	:	Scope of Work

2. TECHNICAL SPECIFICATIONS

2.1. INTRODUCTION

2.1.1. PROJECT DESCRIPTION

AQCT intends to buy Fuel Management System (FMS) for managing the fueling of its facilities and equipment. The required system is a complete Fuel Management System for all AQCT's equipment fleet comprising but not limited to the following:

1. Main Fueling Station: Capacity approx. 100,000 Liter.
2. Mobile Fuel Tanker (Bowser): under procurement with capacity of 15000 liter.
3. Emergency Power Station: Capacity 2 x (approx. 150,000 Liter).
4. Cranes and Ground Equipment.

Please check the following items for more information:

1. ***[FIGURE-1 SYSTEM OVERVIEW OF THE FUEL MANAGEMENT SYSTEM]***
2. ***[FIGURE-2 MAIN FUEL STATION TANK DIMENSIONS AND DIPSTICK CALIBRATION TABLE]***
3. ***[TABLE 1 – EQUIPMENT LIST AND SOURCE OF REFUELING]***
4. ***[TABLE 2 LIST OF AQCT FUEL FACILITIES]***

TABLE 1 – EQUIPMENT LIST AND SOURCE OF REFUELING

	Description	QTY	Fueled by	Remarks
1	Storage Tanks Main Fuel Station	1	Fuel Supplier tanker	From Diesel fuel Supplier
2	Mobile Tanker (Bowser)	1	Fuel Station (Cam Lock)	
3	hRTGC	19	Mobile Tanker (Bowser)	
4	Terminal Trucks	3	Fuel station (dispenser) / Bowser	
5	Forklift (Optional)	2	Fuel station (dispenser) / Bowser	
6	Reach Stacker (Optional)	2	Fuel station (dispenser) / Bowser	
7	Emergency Power Station	2	Fuel Supplier Tanker/ Bowser	From diesel fuel supplier
8	Terminal Pickup (Optional)		Fuel Station/Mobile Tanker (Bowser)	
9	Vehicles	5	Fuel Supplier Tanker/ Bowser	
10	Shuttle Buses	3	Fuel Supplier Tanker/ Bowser	
11	Reefer Power Packs (Optional)		Fuel Supplier Tanker/ Bowser	

2.1.2. LIST OF EXISTING FUEL FACILITIES

TABLE 4 LIST OF AQCT FUEL FACILITIES

#	Fuel Facility	Item	QTY	Specification	Manufacture	Part Number
1	Main Fuel Station	Fuel Tank	1	Capacity (lit): 100,700 Liters Double wall tank **with manual dipstick**		T101H243VM 4
		Low Flow Dispenser (Dual nozzles)	1	Type: Dual Fuel Gun Flow rate: up to 120 LPM Communication protocol: 1FSF	TOKHEIM	TKEQFSR224D2 - MOB
		Submersible Pump for Dispenser	1	1.5 HP – 380 volts - Type: ATEX FE PETRO STP	Franklin Systems	TF07-00033
		High Flow Outlet (from tank)	1	Type: camlock 3'' - then pumps then flow meter	2.5'' hose attached at meter outlet	
		High Flow Inlet (to tank)	1	Type: Camlock Size (inch): 4"		
		Fuel Flowmeter (Outlet)	1	Type: Rotary Positive Displacement Flowrate: Min = 189 LPM, Max = 1892 LPM Size(inch): 4" (Flange) + OGV valve (24VDC – 1.4 A) for TCS 3000 Panel	TCS 700-Series + TCS 3000 + OGV valve	TS01-00415 (for the Flow meter TCS 700-40)
		ATG Sensor	2	(TS-LL2) VDC 9 ~ 18 volt 10 ~ 50 mA	Franklin Systems	TF06-00046
		ATG Console	1	ATG Monitoring for (2) ATG Sensors Vac= 110 ~ 240 volt & 50/60 Hz Max current = 1 A & Pow = 100 watt	Franklin Systems EVO200D	TF06-00031
		Leak Detection Sensor	2	TS-LS 12~30 VDC & 10~20 mA	Franklin Systems	TF06-00039
		Overfill Valve	2	Mechanical Valve	Franklin Systems	TL02-00005
		Wireless Forecourt Communication Controller	1	Type: Wireless forecourt controller Function: Controlling dispenser, flowmeters, monitoring and acquiring data Communication: RS485	FUELTRANS	FT2000
2	Fuel Tanker Bowser	Low flow Outlet	15000 Liters Under Procurement			
		High flow Outlet				
		High flow Inlet				
		Fuel Tank				
3	Emergency Power Substation	Fuel Tank	2	150,000 liters		
		High flow Inlet	1	Type: Camlock Size (inch): 4"	Flow meter 4'' manufacturer: PIUSI type: K900 - Max flow : 500l/min 4 – 12 Vdc & 100 mA	
		ATG Sensor	2	(GLT 622) 12~24VDC 20~50 mA	YANGZHOU HUADONG	SRYUFTM-3000
		Fuel Controller	1	Controller of fuel system and ATG	YANGZHOU HUADONG	HD-PCP-2301

2.2. ENTIRE FUEL MANAGEMENT SYSTEM

2.2.1. SYSTEM OVERVIEW

1. The FMS is needed for preventing unauthorized use of fuel, and automatically recording accurate amount of dispensed fuel, ensure precise integration between the Fuel Management System (FMS) and the Automatic Tank Gauging (ATG) system and the manual measurement of tank dipstick, such that the discrepancy between the recorded fuel quantities in both systems be minimum as possible. Between manual dipstick, the integrated ATG System and the New FMS System also to provide real-time inventory status of fuel to assure proper fuel inventory control. The system will provide complete information about fuel consumption end-to-end cycle from fuel station, fuel tanker and emergency power station, and collect/store information about fuel inventory for comprehensive and detailed analysis of fuel usage history – System log.
   Please revert to hereunder figures ***[FIGURE-1 SYSTEM OVERVIEW OF THE FUEL MANAGEMENT SYSTEM]***, ***[FIGURE-2 MAIN FUEL STATION TANK DIMENSIONS AND DIPSTICK CALIBRATION TABLE]*** which elucidates the conceptional system workflow.

2.2.2. SYSTEM FUNCTIONALITY

The main functions of FMS shall include, but not limited to:

1. Mandatory Requirements:
   a. Record incoming fuel transactions received from fuel supplier so that the same reading is obtained from inlet flow meter, ATG and manual dipstick.
   b. Monitor and display accurate fuel levels of storage tanks and tankers.
   c. Authenticates vehicle/equipment, identity and record fuel dispensed quantity, time, and vehicle/equipment ID on every transaction not only ensure fuel is delivered in the right vehicle/equipment in right quantity but also maintain a fuel ledger for each vehicle.
   d. Automatically reconciles fuel stock on daily basis.
   e. Remote access to the software for viewing and monitoring all data.
   f. Provide provision to input centralized management of fueling limits, addition Equipment ID and other configurations.
   g. Provision to add additional number of vehicles information in the system in future.
   h. Managing fuel operation through digital fuel automation.
   i. Increase the accuracy of fuel dispensing and fuel receiving from suppliers.
   j. Automate the Fuel process to eliminate human risk and mistakes.
   k. Remotely monitor the fuel operation through GUI interface.
   l. Live Monitoring & reporting of utilization and performance.
   m. Dashboard and KPI's regular reports.

2. Optional Requirements:
   a. Integrate with inventory ERP system.
   b. Mileage/kilometrage/hours monitoring AQCT Equipment.
   c. Remotely monitor the fuel storage from tanks.

2.2.3. CONTRACTOR SCOPE OF WORK

1. The supplier must supply a turnkey solution of Fuel Management System (FMS).
2. The scope of the supplier includes supply, installation of FMS components, & equipment tags, test, commissioning, calibrate and get the international and supply local certification of the system.
3. Integrate the existing fuel system components including flowmeters, dispensers, input/output receiving and dispensing ports and ATG to delivered FMS with a minimum error percentage.
4. Integrate the existing Oracle inventory system to the FMS.
5. Supply and install the suitable and approved firewall need by Information Technology to connect the FMS over the private 4G network.
6. The following are the main system components that will be described hereunder in details:
   a. Fuel Controllers.
   b. RFID Readers.
   c. RFID Tag.
   d. Universal Tag/Key.
   e. Tag for single Fuel Transaction.
   f. Fuel Flowmeters
   g. FMS Communication.
   h. Fuel Management System Software.
   i. Firewall for FMS application.
   j. Integration with existing ATG
   k. Integration with existing Flowmeters
   l. Fuel Management system Parameters.
   m. System Logging.
   n. System Failsafe Functionality.
   o. Documentation and Software.
   p. License for Software.
   q. Warranty and Technical Support.
   r. Certification and Calibration.
   s. Training.

7. The contractor must supply a turnkey solution of Fuel Management System.
8. The contractor to use all the existing components of AQCT fueling facility including flowmeters, dispensers, pumps, piping, manual dipstick ATG etc. for sake of integration with the new Fuel Management system.
9. Contractors must supply only the essential items to the system as listed in ***[TABLE-4 FUEL MANAGEMENT SYSTEM BOM]***, and any other suggested items must be submitted as an option.
10. The scope of the contractor includes supply, installation, programming, and commissioning, Testing, calibration, and getting the international and local certification of the overall Fuel Management system.

2.3. FUEL MANAGEMENT SYSTEM DETAILS

2.3.1. FUEL CONTROLLER

The following are the main specifications needed in the fuel controller:

1. The fuel controller shall authenticate the vehicle ID/TAG by using RFID reader, installed on nozzle of dispenser, and record every fuel transaction from the dispenser. It will also control the actuation of pump of dispenser.
2. The fuel controller shall have a provision of wireless RFID card scanning to allow dispensing of fuel after reading RFID Tag installed on equipment/vehicle's fuel tank neck.
3. It shall communicate and provide/transfer fuel data to AQCT server.
4. The Fuel controller shall allow manual entry of a driver's data through authorization card/keypad/touch screen. It shall also record the ID of driver who bypasses the system. (In case of tags are malfunctioning).
5. Fuel controller shall communicate with flow meters, installed at fuel receiving point, to measure the quantity received from fuel supplier and transfer that data to fuel management software. There should also be a manual input option in the software to enter the quantity of received fuel.
6. Fuel controller shall communicate with flow meters, fuel dispensers, and ATG installed at the fuel station, emergency power station, and fuel tanker, to measure the quantity supplied to equipment/cranes/vehicles and the available stock of fuel station tanks and transfer data to fuel management software.
7. The fuel controller should stop the fuel pump/solenoid valve immediately if dispensing nozzle is taken out from fuel inlet of tank.
8. The physical design should be water/chemical proof and must comply IP67 class.
9. The single controller shall be compatible with one hose dispenser and able to record the data simultaneously from both dispenser and main valve.
10. Fuel controller shall have provision to receive pulses from input and output flow meters and fuel dispensers.
11. The contractor should supply the complete solution to communicate both fuel dispenser's controllers and transfer data via wireless medium to AQCT server without the need for infrastructure requirements.

2.3.2. RFID READER

1. A Wireless RFID reader shall be installed on each nozzle and camlock which detects the passive RFID tags, installed on fuel inlet necks, and reads the programmed Identification number of vehicles/equipment, and sends them to fuel controller which authorizes the transactions. The communication from RFID reader to the fuel controller must be wireless. It shall only detect a tag when it is ensured that fuel nozzle will be completely inside the fuel tank.
2. The contractor shall select the RFID reader that suits the type of the existing outlet nozzles whether low flow nozzle or camlock coupling.
3. The sensing range of RFID reader should be within 0mm to 50mm which will be further adjusted by moving reader on the nozzle length.
4. In case, vehicles cannot be authorized, fuel dispenser would not enable fueling until manual entry by supervisor's card/keypad with proper inputs provided.
5. The RFID reader should be active type.
6. It should be a built-in battery operated with high lifetime.
7. Battery should be easily replaceable and must have operating time of at least 6 hours without charging.
8. The casing should be water/chemical proof, dust proof and meet IP67 class.
9. A proper indication of power and detection should be available on RFID reader for ease of use.
10. All dispensing outputs should be supplied with RFID reader.

2.3.3. RFID TAG

11. The RFID tag should be passive and read-only type. The tags will be coupled with inlet of the fuel tank of vehicles.
12. Tags should be ring-type or chip type and can be easily install at fuel inlet neck.
13. It shall require no power to operate, should be easy to install and Self-destruct mechanism with any tampering attempt.
14. Tags should cover around all Equipment as per AQCT equipment list stated in ***[TABLE 1 AQCT EQUIPMENT LIST AND SOURCE OF REFUELING]***
15. It must have connecting points for connection with fuel tank neck pipe.
16. The tag should be water/chemical proof, should be able to stand up to 70°C.
17. The tag should bear harsh marine environment and heavy jerks/vibration.
18. Supplier shall provide unique code with each RFID tag to register the tag into the software.
19. Tags should only be activated when nozzle is inserted into the fuel pipe neck (tank inlet pipe).

2.3.4. UNIVERSAL TAG/ KEY

1. The proposed fuel management system should have universal tag, which is RFID key, used by ONLY an authorized person. In case of broken or damaged passive tags, this specific universal
2. Tag will use for refueling which should be registered in system with some unique codes to read it as UNIVERSAL TAG.
3. Supplier shall provide at least (two) universal tags/keys with the system.

2.3.5. TAG FOR SINGLE FUEL TRANSACTION

The proposed fuel management system should have the tool that has same function as passive tag and can be used for leased equipment that are not installed with the passive tag. It can be used for rental generators, and rental equipment, one time filling of company car and miscellaneous.

2.3.6. FUEL FLOWMETERS

1. The supplier must supply the following flowmeters and to be integrated to the fuel management system:
    a. Conditional Supply of fuel flowmeters of fixed fuel station, mobile tankers and Emergency Power Station flowmeters in case the existing flowmeters are not compatible with the proposed FMS and must supported with technical justification by the supplier. ***"Conditional Supply"***
    b. ***All flow meters must have a reading that is equal to the difference between the before supplying fuel reading and after supply fuel reading for both ATG and manual dipstick with minimum percentage of error.***
2. Those flow meters will measure the amount of fuel supplied to main fuel station and emergency power station and the output supply of mobile bowser
3. This flow meter should have provision to send data to fuel controller via wireless signal.
4. The flowmeter shall be a positive displacement type. And shall be equipped with filter, air eliminator, and mechanical/electronic register.
5. Accuracy of the flow meter should be 1% Full Scale Deflection or lower value.
6. The calibration certificate and calibration procedure shall be provided with the flow meter installed on fuel station.
7. The fuel management system should also have provision to enter the received quantity of fuel manually into the system if flow meter is not working.
8. The fuel management system shall check the fuel inventory at specific or predefined intervals to reconcile the received and issued fuel and simulate the balance fuel inventory in the tanks.

2.3.7. FMS COMMUNICATION

1. The FMS shall communicate via AQCT private 4G network to AQCT Server with all devices including fuel controller, Fuel Station, Mobile Fuel Tanker, and Emergency Power Station and the application software. It controls the system for any abnormality and provide redundancy, and to check the compatibility of the system to run over the private 4G provided by the AQCT and ensure the CPE computability whenever needed.
2. All the fuel transactions data from fixed fuel station, emergency power station and mobile fuel tanker will be transferred via 4G protocol without any infrastructure required by the purchase's side.
3. The FMS communication data transmission protocol must be TCP/IP to meet AQCT approved data transmission protocols.

2.3.8. FUEL MANAGEMENT SYSTEM SOFTWARE

1. The software should be server-based Application and to be installed in AQCT server without any need for infrastructure or data storage, servers, etc. The contractor must provide the technical specification with the offer submission.
2. The supplier to specify the Server Requirements that shall be compatible of FMS software.
3. A comprehensive user/role-based security model should be part of software to cater various type of users e.g., Admins, Supervisors, read-only users etc.
4. The software shall manage storing all data in the database.
5. Software should log all fuel transactions with complete details.
6. The software should have feature to add additional vehicles/equipment and should provide an easy user interface to keep vehicles and other setup data.
7. Software should provide standard & customize reports in multiple documents format. (Excel, PDF, CSV, and Image etc.)
8. Software should also provide flexible reporting system to extract reports from system by end user.
9. Generates analytical reports customized by user with flexible search criteria of periods equipment ID, Equipment group, total fuel consumption, tank, driver, equipment running hours, Kilometers, Fuel/Hr., etc.
10. Generates graphs, charts, and other graphical analysis.
11. The software shall provide a feature to generate periodic reports.
12. The software shall provide option to enter current fuel prices and should maintain the history of the same for correct reporting purpose.
13. The Contractor should be able to support remotely for any bug/issue in the software.
14. The software should be full version without a need for license renewal.

2.3.9. INTEGRATION WITH EXISTING AUTOMATIC TANK GAUGING AND MANUAL DIPSTICK

1. AQCTs have fuel storage tanks in fixed fuel station and emergency power station. Each tank is already equipped with ATG sensor and manual dipstick at main fuel station.
2. The contractor must ensure precise integration between the Fuel Management System (FMS) and the Automatic Tank Gauging (ATG) system and the manual dipstick, such that the discrepancy between the recorded fuel quantities in all systems does not exceed 0%. This requirement is mandatory to guarantee accurate inventory control and fuel reconciliation.

2.3.10. INTEGRATION WITH EXISTING FLOWMETERS

1. The contractor shall integrate the existing flowmeters in main fuel station and mobile tanker with fuel Management system.
2. In case the integration of flowmeters is not possible, the contractor can supply flowmeters and provide a technical justification of reasons.

2.3.11. ENGINE HOURS

1. Fuel management system shall have feature of entering the engine running hours of the equipment whether for the fueling at fuel station or fueled by the portable fuel tanker.
2. These readings will be transferred to fuel management software to record the engine running hours and odometer at the time of fueling.
3. Supplier shall provide the provision to enter the engine running hours and odometers of the equipment into the software through keypad of fuel controller or through manual entry into the software after fuel transactions.

2.3.12. SYSTEM LOGGING

Logging data must include but not limited to the following:

1. Date and time of transaction
2. Duration of the transaction
3. Tag ID
4. Dispenser/Pump number & RFID Reader ID
5. Vehicle identification number
6. Fuel Counter Start, stop and Quantity.
7. Equipment hours (manual entry)
8. Fuel type, Fuel pump counter start and end with resolution of 0.1 liter
9. Fuel Consumption per equipment and equipment group
10. Fuel Consumption/Hour

2.3.13. SYSTEM FAILSAFE FUNCTIONALITY

1. The system should be made fail-safe and should alarm in case of any abnormal behavior of devices.
2. The system should provide an authorized bypass by the system administrator but record all transaction to minimize downtime.

2.3.14. DOCUMENTATION AND SOFTWARE

1. Licensed copy of Fuel Management system software shall be provided.
2. Origin and Brand of the software.
3. All Maintenance and operation manuals shall be provided.
4. Component's datasheet and system equipment list shall be provided.
5. As-built Electrical/Mechanical drawing shall be provided.

2.3.15. WARRANTY AND TECHNICAL SUPPORT

Supplier should warrant the following items:

1. (2) Two years warranty of all the Fuel Management System components against manufacture defects over its expected lifetime.
2. (5) Five years of continuous parts production of delivered models.

2.3.16. TRAINING

1. The Supplier's qualified resource shall conduct training for at least (5) five days for AQCT Technical Team, FMS Operators, and software users at its own cost and expense.
2. The training shall include the operation, maintenance, software dashboards and system functionalities.

2.3.17. CERTIFICATION AND CALIBRATION

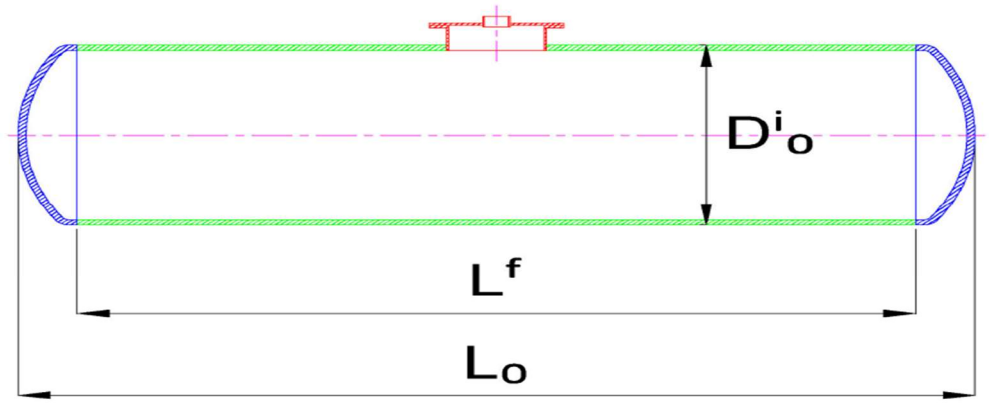
1. The supplier must provide certificates of all devices that should meet petroleum products environment specifications and explosion atmosphere like ATEX.
2. The system instrumentation shall be OIML and MID certified.
3. The contractor must calibrate all the Fuel Management System including flow meters before startup by the local governmental legal metrology authorized for calibration. And to provide the calibration certification including the overall system accuracy before handing over the project.
4. All electronic devices shall be FCC (Federal Communications Commission) approved.
5. The wireless devices should comply with (Egypt Telecommunication Authority) regulations for using radio communication services.

2.3.18. GENERAL SYSTEM REQUIREMENTS

1. The system must be expandable for future expansions in number of vehicles, dispensers, tankers, tanks etc.
2. The system must be based on private and internal 4g communication.
3. Wireless nozzle shall be used for detection of RFID tag/s of equipment.
4. All outdoor equipment should be of IP66 compliant and should be able to work in harsh environment e.g., hot temperature, humidity, and corrosion.
5. All material should be listed separately with separate cost.
6. The supplier should list out the entire hardware and software to implement the Fuel Management System.
7. All the electronic devices that will be installed in Mobile Tanker should accompany with power supplies that operate at 12 ~ 24VDC system and the system to be supplied with surge protection.
8. Origin and brand of the hardware provided, should be specified.

Figure-2

Internal tank outer diameter (D^i_o)	3000 mm	Tank overall length (L_o)	14815 mm
Tank straight length (L^f)	13810 mm	Total tank volume (V^T)	101013 Liter



دقة قراءات الجدول تعتمد على التالي:

1- عدم وجود تغيير فى الشكل الهندسى الاسطوانى للخزان سواء اثناء عمليات الردم او النقل الى الموقع.
2- ضبط مستوي ميل الخزان علي المستوي الأفقى –(زاوية الميل تكون صفر).
3- ضبط مستوي ميل مسطرة القياس علي المستوي الرأسي –(زاوية الميل تكون صفر).
4- الحفاظ المستمر علي نظافة الخزان من الداخل.
5- استخدام المسطرة السليمة (التدريج واضح – مسطرة مستقيمة)

H (cm)	V (Lit)	H (cm)	V (Lit)	H (cm)	V (Lit)	H (cm)	V (Lit)	H (cm)	V (Lit)	H (cm)	V (Lit)
1	84	55	6634	109	17020	163	28647	217	39782	271	48448
2	129	56	6803	110	17230	164	28863	218	39972	272	48566
3	180	57	6973	111	17440	165	29078	219	40162	273	48682
4	236	58	7144	112	17651	166	29294	220	40351	274	48795
5	297	59	7317	113	17861	167	29509	221	40538	275	48906
6	363	60	7490	114	18073	168	29724	222	40725	276	49015
7	433	61	7665	115	18284	169	29939	223	40911	277	49121
8	507	62	7840	116	18496	170	30154	224	41097	278	49225
9	584	63	8017	117	18708	171	30368	225	41281	279	49326
10	665	64	8195	118	18921	172	30583	226	41464	280	49424
11	749	65	8374	119	19134	173	30797	227	41647	281	49520
12	837	66	8553	120	19347	174	31010	228	41828	282	49613
13	927	67	8734	121	19560	175	31224	229	42009	283	49703
14	1021	68	8916	122	19774	176	31437	230	42188	284	49789
15	1117	69	9099	123	19988	177	31650	231	42367	285	49873
16	1216	70	9282	124	20202	178	31862	232	42544	286	49953
17	1318	71	9467	125	20417	179	32074	233	42721	287	50029
18	1422	72	9652	126	20632	180	32286	234	42896	288	50102
19	1529	73	9838	127	20847	181	32497	235	43070	289	50171
20	1638	74	10026	128	21062	182	32709	236	43244	290	50236
21	1750	75	10214	129	21277	183	32919	237	43416	291	50296
22	1864	76	10403	130	21493	184	33130	238	43587	292	50351
23	1980	77	10592	131	21709	185	33340	239	43757	293	50400
24	2099	78	10783	132	21925	186	33549	240	43925	294	50444
25	2219	79	10974	133	22141	187	33758	241	44093	295	50480
26	2342	80	11166	134	22357	188	33967	242	44259	296	50507
27	2466	81	11359	135	22573	189	34176	243	44424	297	
28	2593	82	11553	136	22790	190	34383	244	44588	298	
29	2721	83	11747	137	23007	191	34591	245	44751		
30	2852	84	11942	138	23223	192	34798	246	44912		
31	2984	85	12138	139	23440	193	35004	247	45072		
32	3118	86	12335	140	23657	194	35210	248	45230		
33	3254	87	12532	141	23874	195	35416	249	45388		
34	3392	88	12730	142	24091	196	35620	250	45544		
35	3531	89	12928	143	24308	197	35825	251	45698		
36	3672	90	13128	144	24525	198	36029	252	45851		
37	3815	91	13327	145	24743	199	36232	253	46003		
38	3959	92	13528	146	24960	200	36435	254	46153		
39	4105	93	13729	147	25177	201	36637	255	46301		
40	4253	94	13931	148	25394	202	36838	256	46449		
41	4402	95	14133	149	25612	203	37039	257	46594		
42	4552	96	14336	150	25829	204	37240	258	46738		
43	4704	97	14539	151	26046	205	37439	259	46880		
44	4857	98	14743	152	26263	206	37638	260	47021		
45	5012	99	14948	153	26480	207	37837	261	47160		
46	5168	100	15153	154	26697	208	38035	262	47297		
47	5326	101	15359	155	26914	209	38232	263	47432		
48	5485	102	15565	156	27131	210	38428	264	47566		
49	5645	103	15771	157	27348	211	38624	265	47698		
50	5807	104	15978	158	27565	212	38819	266	47828		
51	5970	105	16186	159	27782	213	39013	267	47956		
52	6134	106	16394	160	27998	214	39206	268	48082		
53	6299	107	16602	161	28214	215	39399	269	48206		
54	6466	108	16811	162	28431	216	39591	270	48328		

FIGURE 1 SYSTEM OVERVIEW OF THE FUEL MANAGEMENT SYSTEM

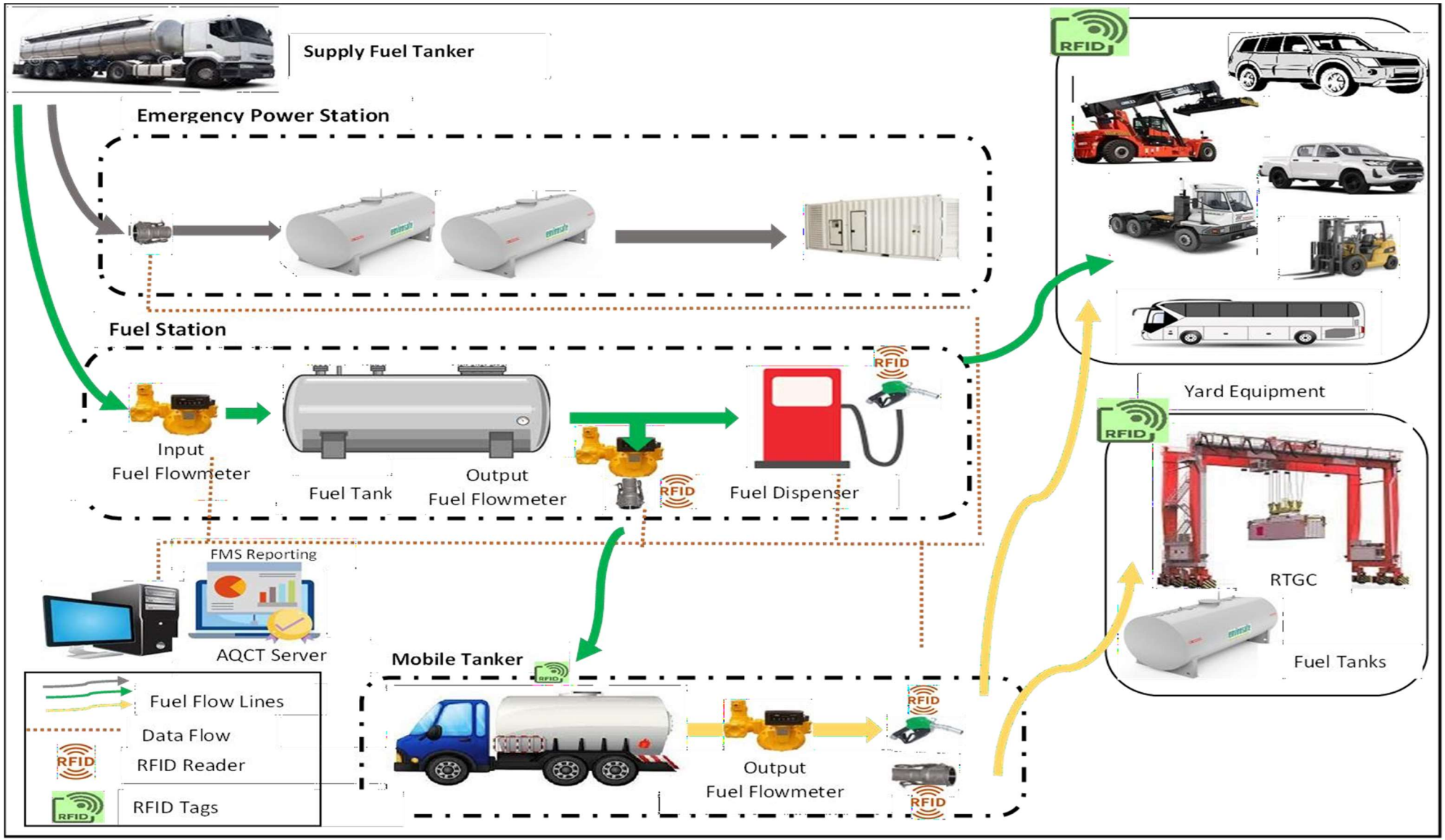


TABLE 3 DEVIATION LIST

AQCT's Specification		Description of deviation from AQCT's specification
Item No	**Description**	

TABLE 4 FUEL MANAGEMENT SYSTEM BILL OF MATERIAL [BOM]

Item No	Item Description	QTY	Price (US$)		Remarks
			Unit	Total	
1	**Complete Fuel Management System for (Fixed Fuel Station), include the following items:** 1. Supply, install, and commissioning of FMS Components 2. Authorized Fueling of Equipment via RFID Technology 3. Monitor of fuel receiving, dispensing, and inventory process 4. Integration with existing flowmeters, Dispensers, and ATG	1			
1-1	Fuel RFID Controller	1			*Breakdown of Item (1)*
1-2	RFID Readers (WIRELESS) for low flow Fuel Nozzles	2			
1-3	RFID Readers (WIRELESS) for high flow Fuel camlock	1			
1-4	Integration with existing fuel station system of flowmeters, Dispensers, and ATG	1			
2	**Complete Fuel Management System for (Mobile Fuel Tanker), include the following items:** 1. Supply, install, and commissioning of FMS Components 2. Authorized Fueling of Equipment via RFID Technology 3. Monitor of fuel receiving, dispensing, and inventory process 4. Integration with existing flowmeters, Dispensers, and ATG	1			
2-1	Fuel RFID Controller	1			*Breakdown of Item (2)*
2-2	RFID Readers (WIRELESS) for low flow Fuel Nozzles	1			
2-3	RFID Readers (WIRELESS) for high flow Fuel camlock	1			
2-4	Integration with existing Fuel Tanker system of flowmeters and Dispensers	1			
3	**Complete Fuel Management System for (Emergency Power Station), include the following items:** 1. Supply, install, and commissioning of FMS Components 2. Authorized Fueling of Equipment via RFID Technology 3. Monitor of fuel receiving, and inventory process 4. Integration with existing flowmeters, Dispensers, and ATG	1			
3-1	Fuel RFID Controller	1			*Breakdown of Item (3)*
3-2	Passive Tags	2			
3-3	Integration with existing fuel system and ATG	1			
4	**RFID Passive Tags**				Refer to table (1) List of Equipment
5	**Fuel Monitoring and Management System Server-based Software**	1			

Item No	Item Description	QTY	Price (US$)		Remarks
			Unit	Total	
6	**Input Fuel Flowmeter 4" for both main fuel station and emergency power station**	2			*Optional in case (Item 1-4), and (2-3) are not applicable, and technical justification must be provided*
7	**Output Fuel Flowmeter 4" for main fuel station and mobile fuel tanker (size will be determined when purchased)**	2			
8	**TCP/IP Customer Premises Equipment (CPE)**				*Optional*
9	**Miscellaneous items**				*To be added by the Contractor for any missing items*
Grand Total (US$)				$	

TABLE 5 FMS TECHNICAL SPECIFICATIONS

No	Item	Sub-Item	Specifications
1	Fuel Management System	Brand	
		Country of Origin	
		Accreditation	
		Certification	
		Overall System Accuracy (%)	
2	Fixed Station RFID Controller	Communication Type	
		Ingress Protection (IP)	
		Built-in Card/Key Reader *[yes/no]*	
		Communication with terminal network	
3	Mobile Tanker RFID Controller	Communication Type	
		Ingress Protection (IP)	
		Built-in Card/Key Reader *[yes/no]*	
		Communication with terminal network	
4	Emergency Power Station RFID Controller	Communication Type	
		Ingress Protection (IP)	
		Built-in Card/Key Reader *[yes/no]*	
		Communication with terminal network	
5	RFID Active Readers (WIRELESS) for low flow Nozzles	Type	
		Sensing Range	
		Battery Lifetime	
6	RFID Active Readers (WIRELESS) for high flow Nozzles	Type	
		Sensing Range	
		Battery Lifetime	
7	RFID Tags	Type *[Passive/Active]*	
8	Universal Tags/Keys	Type	
9	Fuel Flowmeter 4" of Emergency Power Station	Type: Pulsar included: Accuracy: Air eliminator: Filter: Mechanical/electronic register:	
10	FMS Software	Model *[Server-based software]:*	
		License and Subscription	
		Data Backup	
		Reporting	
		Communication with AQCT network	
		Server Requirements *"Please specify the requirements."* CPU/RAM/HD: Operating System: Data Transmission Protocol:	
11	Possibility of Integration with different system components of Fuel facilities (fixed stations, tankers, ATG, dispensers, and flowmeters) *[Please specify your requirements for integration]*		
12	Calibration of FMS	By local governmental legal metrology authorized for calibration	
13	Fuel Flowmeter ***"Optional"***	Input Flowmeter: Output Flowmeter:	
14	CPE ***"Optional"***	Type: Communication Protocol:	
15	Lead Time (Weeks)		
16	Implementation Time (Weeks)		
17	Warranty (Years)		

TABLE 6 FMS EQUIPMENT LIST

Item No.	Item Description	Manufacturer	Model	Part no.	QTY
1	Fixed Station RFID Controller				
2	Mobile Tanker RFID Controller				
3	RFID Active Readers (WIRELESS) for				
4	low flow Fuel Nozzles				
5	RFID Active Readers (WIRELESS) for high flow Fuel Nozzles				
6	RFID Passive Tags				
7	RFID Universal Tags				
8	FMS Software				
9	Fuel Flowmeter 4”				
10	Fuel Flowmeter for mobile bowser				
11	Communication CPE				

3. COMMERCIAL TERMS & CONDITIONS:

1. Tender Submission Format

- The tender shall be submitted in **two separate sealed envelopes**:
  - **Technical Envelope**:
    - Compliance to specifications.
    - Completed BOQ (Table 4) without prices (unit only).
    - Catalogues/datasheets.
    - Deviation List (Table 3).
  - **Financial Envelope**:
    - Prices as per BOQ (Table 4).
    - Grand Total Lump Sum Offer.

2. Prices

- All prices shall be quoted in **US Dollars (USD)**.
- Payment will be made in **Egyptian Pounds (EGP)** equivalent at the **CBE official exchange rate** on the date of payment.
- Prices must be **on a turnkey lump sum basis**, including supply, installation, commissioning, training, calibration, certification, and handover.
- The BOQ provided in the tender (Table 4) must be filled for **breakdown and evaluation purposes only**. Final contract is **lump sum fixed price**, not re-measurable.
- Prices must be **exclusive of customs duties and taxes** (project is within Free Zone).

4. Payment Terms

- **25%** advance payment upon contract signing and submission of an Advance Payment Guarantee in the form of a non-conditional Letter of Guarantee (LG).
- **65%** after delivery of all equipment and materials to site, completion of installation, commissioning, calibration, and **Final Acceptance** of the turnkey Fuel Management System.
- **10% retention** shall be withheld during the warranty period and may be released against a Letter of Guarantee (LG) valid until the end of the warranty period.
- All payments shall be made in **Egyptian Pounds (EGP)** equivalent at the **CBE official exchange rate** on the date of payment.

4. Warranty

- Minimum **two (2) years comprehensive warranty** covering all system components, software, and installation.
- Supplier to guarantee **five (5) years availability of spare parts** after handover.

5. Delivery & Implementation

- Delivery Location: **Abu Qir Container Terminal (AQCT), Alexandria, Egypt – Private Free Zone**.
- Term: CIF Cost must be included.
- Supplier to state clearly:
  - **Lead Time for Supply** (weeks from PO).
  - **Implementation / Installation & Commissioning Period** (weeks from delivery).

6. Other Key Commercial Terms

- Supplier must provide **certification & calibration** by authorized local metrology authority.
- Supplier must provide **licensed software (lifetime license, no renewal fees)**.
- Supplier must conduct **training (minimum 5 days)** for AQCT staff at site.
- Supplier must provide full **operation & maintenance manuals, certificates, and as-built documentation**.
- Any deviations from the technical specifications must be listed in the **Deviation Table (Table 3)**.

7. Penalties

- **Delay in delivery or commissioning**: penalty of **1% of contract value per week**, up to a maximum of **20%**.
- If penalty cap is reached without delivery/acceptance, AQCT reserves the right to **terminate the contract and claim damages**.