



ATL

Ens d'Abastament
d'Aigua Ter-Llobregat

**SUPPLY OF SPECIFIC TECHNICAL SPECIFICATIONS
OF TEAMS RECOVERERS
ENERGY (ERI's) AND SPARE PARTS FOR ITAM TORDERA**

1-BACKGROUNDS:

Decree Law 4/2018, of July 17, which assumes the direct management of the water supply service to towns through the facilities of the Ter-Llobregat supply network owned by the Generalitat, establishes that ATL is a public law entity of the Generalitat of Catalonia with its own legal personality, administrative and financial autonomy, and full capacity to act for the fulfillment of its functions.

Given the arts. 2.1 and 3 of Decree Law 4/2018, of July 17, ATL is created with the aim of providing the public service of interest and competence of the Generalitat of production and supply of drinking water for the supply of populations through the facilities of the Ter-Llobregat supply network owned by the Generalitat, and to build, conserve, manage and exploit the Ter Llobregat supply network, which justifies the provision.

In view of the provisions of Article 116 of Law 9/2017, of November 8, on public sector contracts, this procurement justification report is issued to record the need or convenience of contracting these works externally as well as to report on the insufficiency of means available to the Ter Llobregat Water Supply Authority (hereinafter, ATL) to carry them out with internal means.

The need and suitability of this supply contract is justified because at ITAM Tordera energy recovery is done through ERIs.

When the plant was designed, energy recovery was done using Pelton turbines, but in 2012 when the plant was expanded from 2 to 4 racks, trains of ERIs were installed to do this recovery.

Each frame is powered by high-pressure seawater. The increase in pressure is carried out simultaneously with 2 different processes. One part passes through the high pressure pump, BAP, which is driven by a high voltage motor that has a very high energy consumption and the other part passes through the trains of ERIs that reuse the pressure of the brine and a pump that has just given the working pressure, usually gives 6 Bars extra.

At ITAM Tordera, each ERIS train is made up of 15 units of the PX-260 model. Each unit has a working flow rate range of between 50 and 59 m³/h. This means that each ERI's train can process between 750 and 885 m³/h. The nominal flow rate of each frame is 1400 m³/h, 630 m³/h circulate through the BAP's and 770 m³/h through the ERI's. Each ERI saves 57% of energy.

ERI's energy recuperator transfers the pressure from the high-pressure brine flow to the low-pressure seawater flow, this pressure transfer process

happens through the momentary contact of both flows in the rotor ducts. The rotor is inside a jacket and two caps made of ceramic with very precise tolerances, which create a hydrodynamic bearing with almost zero friction when filled with water at high pressure. The rotor rotating inside the hydrodynamic bearing is the only moving part of the PX.

At all times, half of the rotor ducts are exposed to high-pressure flow and the other half to low-pressure flow. As the rotor rotates, the ducts pass through the sealing area (which separates the low and high pressure area of the system). The ducts containing high pressure are separated from the ducts containing low pressure by the seal created between the rotor walls and the covers.

When the ceramic rotor does not rotate the pressure exchange does not occur and the high pressure brine returns to the racks. This causes an increase in salinity and a decrease in the performance of the installation.

Currently the installed rotors are starting to have cracks and this means that with a minimum of dirt they stop turning. When this happens, the frame must be stopped to be able to carry out adequate maintenance and with the consequent loss of production. In addition there are 3 rotors that are out of order because when assembled they do not turn. So there are 3 trains of ERIs with one less ERI.

The trains of ERIs can work with 14 units and give the same flow, but with 13 units they would be out of the working range.

2-JUSTIFICATION:

In view of everything set out in the previous point, it is necessary to have a "SUPPLY of ENERGY RECOVERY EQUIPMENT (ERI's) AND SPARE PARTS FOR THE ITAM TORDERA" contract. This supply will allow proper corrective maintenance of these equipment as well as being able to add a new energy recovery equipment to each of ERI's trains.

3-SCOPE:

The supply subject to this contract will be:

- 8 whole sets of ERI's model PX-Q260 from Energy Recovery Inc.
- 8 ceramic rotors with their caps for PX-Q260 rotors

Of the 8 complete teams supplied, four (4) of them will be placed in position nº 15 of each train of ERI's. The rest will be placed in the following very deteriorated positions:

- ERI nº 3 Frame A
- ERI nº 4 Frame B
- ERI nº 8 Frame C
- Reserve ERI for future replacements.

Regarding the 8 ceramic rotors with their covers, these will be replaced as the existing equipment deteriorates.

4-REQUISITES TO BE FULFILLED IN THE EXECUTION OF THE CONTRACT:

4.1.- Complete ERI equipment model PX-Q260 :

The energy recovery equipment must be the PX-Q260 model of Energy Recovery Inc. This model is completely compatible with the models currently installed in the ITAM Tordera, both in terms of operating characteristics and operating parameters.

Annex I of this Specification, the technical specifications Date of this model of energy recovery equipment is attached. The main technical characteristics of this entire set are:

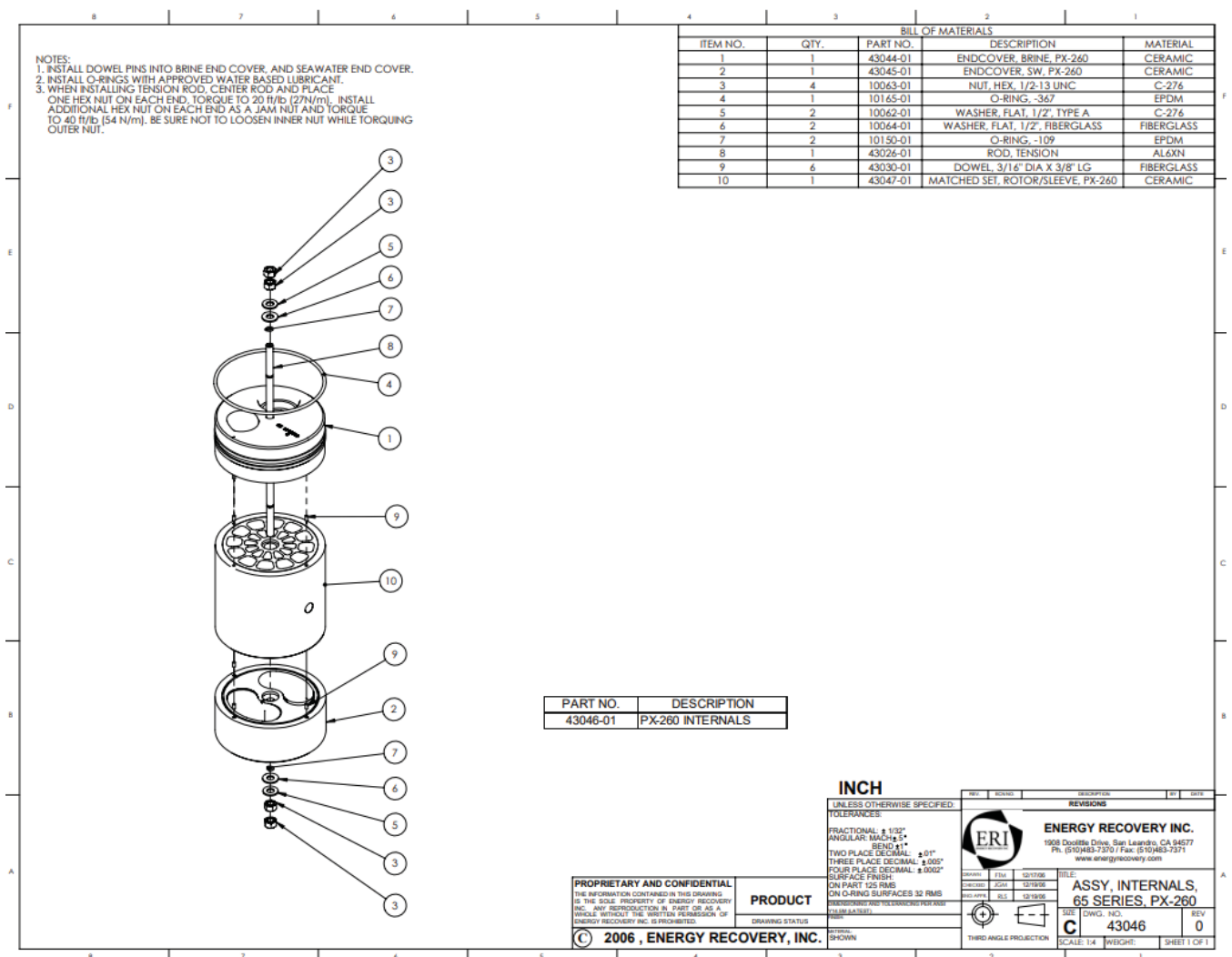
Operating power:	40.9-59 m³/h
Maximum lubrication flow:	0.57 m³/h
Guaranteed efficiency:	96.8%
Maximum inlet pressure (brine):	82.7 bar
Maximum inlet pressure (sea water):	20.7 bar
Minimum discharge pressure:	0.6 bar
Maximum turning speed:	1,400 rpm
Shell material:	GRP
Rotor material:	Ceramic-alumina
Input/output port material:	Austenitic steel CN3MN
Whole equipment weight:	83.9 Kgs
Operating sound level:	< 85 dB (according to ISO 3744)

SPECIFIC TECHNICAL SPECIFICATIONS FOR THE SUPPLY OF ENERGY RECOVERY EQUIPMENT (ERI's) AND
SPARE PARTS FOR THE ITAM TORDERA

4.2.- Rotors with covers:

Capped rotors shall be compatible with both Energy Recovery Inc. PX-260 and PX-Q260 energy recovery equipment. They will be manufactured with **ceramic-alumina material** and they will have on **maximum weight of 29 Kgs.** The joints will be manufactured in **EPDM**.

Attached below is the specification for the entire ceramic rotor assembly plus caps.



4.3.- Delivery term:

The delivery period for the entire supply is 3 months, from the formalization of the contract.



4.4.- Delivery address:

The shipment will be under INCOTERM CIP – Barcelona. This means that the ports are paid until Barcelona airport, before going through customs. Once it has been confirmed that the material is at Barcelona airport, a customs agency must be entrusted with the import with the payment of fees and tariffs and the fine transport to the ITAM Tordera plant.

- *ITAM Tordera (ATL): Road GI-682, km 3.4 Blanes*

4.5-Payment and invoicing of the equipment and spare parts supplied:

Payment must be made in advance and in US dollars upon receipt of the order confirmation from Energy Recovery Inc. To make this payment they will send a proforma invoice. The order will not be placed unless Energy Recovery Inc receives payment and your signed order confirmation document.

4.6-Guarantee of the equipment and spare parts supplied:

The equipment and spare parts supplied will have the following guarantee:

- **60 months for ceramic components** from the date of receipt/end of supply.
- **30 months for the rest of the components** from the date of receipt/end of supply.

The warranty will cover all incidents resulting from a manufacturing defect. Energy Recovery Inc shall be obligated to replace the damaged items at no cost to ATL.

5-OCCUPATIONAL SAFETY AND HEALTH:

The awarded company will undertake to comply with the requirements arising from Law 31/1995, of November 8, on the prevention of occupational risks and Royal Decree 171/2004, of January 30, by which the article is developed 24 of Law 31/1995, of November 8, on the prevention of occupational risks, in matters of coordination of business activities and to adopt as many measures of prevention and protection are necessary to preserve the safety and health of workers during the development of the works.

6-PRICE REVISION:

This contract is not entitled to any price revision.

7-TENDER BUDGET:

Details						
S.No	Product ID	Product	Quantity	Price	Discount %	Sub Total
1	PX-Q260	PX-Q260	8.00000	\$67,474.84	50.00	\$269,899.36
2	43133-01	CARTRIDGE, PX-Q260, CERAMIC	8.00000	\$51,241.47	50.00	\$204,965.88
3	FEE_FREIGHT	Freight Charges	1.00000	\$5,450.00		\$5,450.00
Total						\$480,315.24 USD

The purchase budget established for the "SUPPLY of ENERGY RECOVERY EQUIPMENT (ERI's) AND SPARE PARTS FOR THE ITAM TORDERA" amounts to **US \$480,315.24 (FOUR HUNDRED EIGHTY THREE HUNDRED FIFTEEN US DOLLARS AND TWENTY FOUR CENTS)**, investment subject to liability 21%.

On the date of writing of this prospectus, the Euro/US dollar exchange rate is €1.00=US\$1.11. Faced with the uncertainty of the evolution of the Euro-Dollar exchange, an estimate is made with a margin of devaluation of the Euro with respect to the Dollar of 15%. To process the Purchase Request (SC), the exchange rate of €1.00 = US\$0.9435 will be applied.

So once this change has been applied, the Net Bid Budget in euros established for "SUPPLY of ENERGY RECOVERY EQUIPMENT (ERI's) AND SPARE PARTS FOR THE ITAM TORDERA" amounts to €509,078.16 **(FIVE HUNDRED NINE THOUSAND SEVENTY-EIGHT EUROS WITH SIXTEEN CENTS)**, tax free

8-RELATIONSHIP WITH SUPPLIERS:

ATL has implemented an integrated management system in which part of the purchases / services are evaluated on the basis of energy performance, environmental performance and water quality, safety and harmlessness.

9-PENALTIES:

The only penalty applicable to this contract is a late delivery penalty at the rate of 1% per week up to a maximum of 10% of the contract amount. For the avoidance of doubt, other penalties provided for in any other contractual document shall not apply.



10-PRIORITY OF DOCUMENTS:

The English version of the contract documents will prevail over any other version.

Blanes at the date of the digital signature

Signat digitalment per:
Lluís Pasamonte Pelaez
Data: 06-11-2024

Maintenance Manager ITAM Tordera

Signat digitalment per:
Andrés Dueñas Jurado
Data: 06-11-2024

Head Maintenance North Zone

Signat digitalment per:
Jose Antonio Arias
Quevedo
Data: 11-11-2024
ATL Maintenance Director



SPECIFIC TECHNICAL SPECIFICATIONS FOR THE SUPPLY OF ENERGY RECOVERY EQUIPMENT (ERI's) AND
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APPENDIX I: TECHNICAL SPECIFICATIONS EQUIPMENT PX-Q260

**ATL**Ens d'Abastament
d'Aigua Ter-LlobregatSPECIFIC TECHNICAL SPECIFICATIONS FOR THE SUPPLY OF ENERGY RECOVERY EQUIPMENT (ERI's) AND
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		1717 Doolittle Dr. San Leandro, CA 94577, USA Phone: 1-510-483-7370 FAX: 1-510-483-7371		Energy Recovery, Inc. Pressure Exchanger Specifications Sheet PX-Q260		REV	BY	CKD	REVISION	DATE
DESCRIPTION: TECHNICAL DATA SHEET, POSITIVE DISPLACEMENT ENERGY RECOVERY DEVICE		Sheet Page 1 of 1 Document number: 80343-01		0	TDR	JLA	INITIAL RELEASE	4/18/2012		
				1	AKP	RAB	UPDATED FLOW INFO.	4/12/2018		
1. Part number 40034		2. Service		3. Reference						
OPERATING CONDITIONS	4	Liquid	Seawater	44	TESTS	Performance	Standard			
	5	Operating Temperature	33°F-120°F (0.6-49°C)	45		Case Hydrotest	Standard			
	6	Max. Temperature	120°F (49°C)	46		Rotation Speed Test	Standard			
	7	Specific Gravity	1025.18 kg/cu.m	47		Die Penetrant Test (ceramics)	Standard			
	8	Viscosity	1.060 cP @ 70°F (21.1°C)	48		Cavitation Test	Standard			
	9	Flow range	180 - 260 gpm (40.3-59 m3/h)	49		Witnessed Test	Optional			
	10	Maximum High-Pressure Inlet Flow	260 gpm (59 m3/hr)	50						
	11	Maximum Low-Pressure Outlet Flow	260 gpm (59 m3/hr)	51						
	12	Maximum Inlet High Pressure	1200 psig (82.7 bar)	52						
	13	Maximum Inlet Low Pressure	300 psig (20.7 bar)	53						
PERFORMANCE	14	Minimum Discharge Pressure	9 psig (0.6 bar)	54	INSPECTION	Outside Dimensions	Standard			
	15	Filtration Requirement (Nominal)	20µm	55		Internal Components	Standard			
	16			56		Housing Dimensions	Standard			
	17			57		Ceramic Dimensions	Standard			
	18	Peak Efficiency	98%	58		Material Certificates	Standard			
	19	Maximum High Pressure Differential	15.7 psig (1.1 bar) @ 260 gpm	59		Visual	Standard			
	20	Maximum Low Pressure Differential	11.7 psig (0.8 bar) @ 260 gpm	60		Packing and Crating	Standard			
	21	Maximum Lubrication Flow	2.5 gpm (0.57 m3/hr)	61						
	22	Maximum Rotational Speed	1400 rpm	62						
	23	Maximum Salinity Increase at Membranes	3% @ 40% Recovery	63						
MATERIALS	24	Warranted Efficiency***	96.8%	64	SHIPPING WEIGHT AND DIMENSIONS					
	25	Noise Per ISO 3744	Less than 85 dB (A)	65						
	26	Housing**	GRP	66		PX-Q260 unit Shipping Dimensions	47x17x14 Inch 119.3 43x35.5 cm			
	27	Rotor, Sleeve, Endcover Assembly	Ceramic-alumina	67		Cartridge Shipping Dimensions	20x12x12 Inch 50.8x30.5x30.5 cm			
	28	Low Pressure Inlet Port Fitting	CN3MN	68						
	29	Low Pressure Outlet Port Fitting	CN3MN	69		PX-Q260 unit Shipping Weight	196 lbs. (88.9 kg)			
	30	High Pressure Inlet Port Fitting	CN3MN	70		Cartridge Weight	65 lbs. (29 kg)			
	31	High Pressure Outlet Port Fitting	CN3MN	71		Dry PX-Q260 unit weight	185 lbs. (83.9 kg)			
	32	Internal Low Pressure Interconnector*	Titanium, AL6XN* or Super Duplex	72						
	33	Fasteners/Hardware (non-wetted)	316SS	73						
PIPING CONNECTIONS	34	Tension Rod Assembly*	AL-6XN* / C-276	74	MISCELLANEOUS					
	35	O-rings	EPDM	75						
	36			76						
	37	Low Pressure Inlet Port Fitting	3" Grooved-end Flexible Pipe Coupling	77						
	38	Low Pressure Outlet Port Fitting		78						
	39	High Pressure Inlet Port Fitting		79						
	40	High Pressure Outlet Port Fitting		80						
	41			81						
	42			82						
	43			83						
*AL-6XN is a registered trademark of Allegheny Ludlum **Housing designed in accordance with the engineering standards of the Boiler and Pressure Vessel Code of the American Society of Mechanical Engineers. ***The standardized efficiency test is conducted under conditions of balanced flow, 1000psi pressure and the mid-flow for the PX model under test. ERI RESERVES THE RIGHT TO MAKE SPECIFICATION CHANGES AT ANY TIME WITHOUT PRIOR NOTICE.										
PRICE: sales@energyrecovery.com										
MANUFACTURER: Energy Recovery Inc		MODEL: PX-Q260								