

USP&E



2 x 10.2MW HFO/Diesel Wartsila 20V32TS Generating Sets



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0. Overview

USP&E Global hereby offers the sale of two (2) Wärtsilä 20V32TS engines and related equipment (the “Gensets”). The Gensets were purchased as components of a 60MW power plant. The attached Extract of Technical Description for certain equipment, provides engineering specifications relevant to the listed items.

Listing of Equipment included:

Generating Set

A1.1 Engine		Qty
Wartsila 20V32TS Engine		2
Common base frame		2
Flexible connection		2
Generating set assembly		2
Set steel springs		2
A1.2 Generator		Qty
Generator – 15000 V	2	
Flexible coupling		2
Flywheel cover		2
External enclosure incl. surge capacitors and lightning arrestors		2

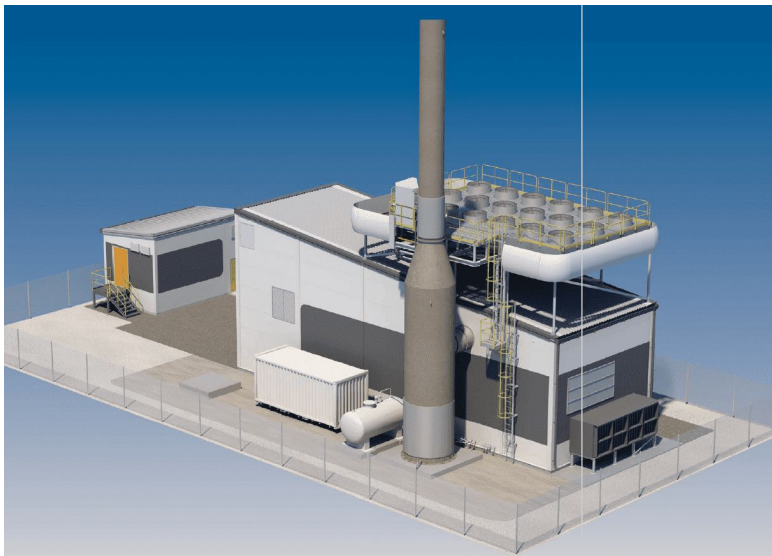
The AVR is not included as the AVR is mounted in a panel that is not part of the above scope of sale. Purchasers are made aware that they will need to separately furnish a control system for the engines and the balance of plant.

1. Generating Sets Description

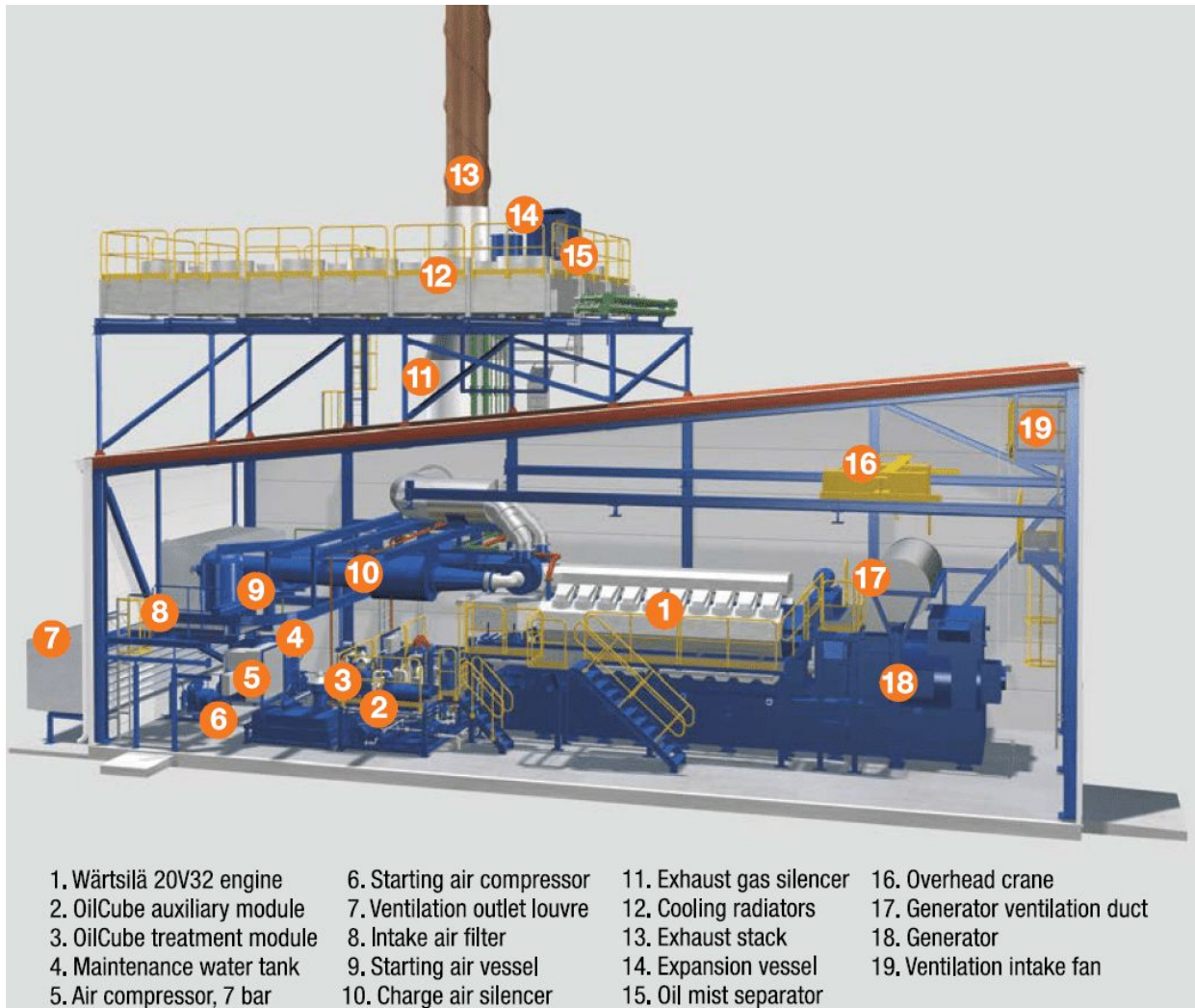
1.1 Technical Data

Cylinder Configurations	20V
Cylinder Bore	320mm
Piston Stroke	400mm
Speed	750rpm (50Hz)
Brake Mean Effective Pressure	26 bar
Mean Piston Speed	10m/s (50Hz)
Cooling Method	Air Cooled
Enclosure	IP23
Year of Manufacture	2017

**Generator packages are available from a cancelled project.*



Engines	Wärtsilä 20V32, 20V32TS
Ambient temperature	0...+50 °C
Noise level	70 dB(A) 100 m
Oil Cube auxiliary module	Fuel booster pump Fuel mass flow metering Fuel viscosity metering Automated HFO heating Automated LFO cooling Thermostatic valves HT pre-heater Sludge collection
Oil Cube treatment module	2 x fully automated HFO separators HFO heating with engine HT water Separated fuel tank LO separator with LO/LO heat recovery
Control system local	Local control in engine hall, remote monitoring station
Cooling radiator	Single circuit, low noise on the roof
Ventilation	Forced in, free out



1.2 Related Electrical Power

Generating Set Type	50Hz	60Hz
20V32TS	10,200kW	9,790kW

General Conditions

Rated electrical power is given at generator terminals and ISO 3046 conditions.

All Wärtsilä engines, in a standard configuration, have engine-driven lubricating oil, low- and high temperature circuit cooling water pumps. Gas LHV >28 MJ/Nm³. Gas methane number >80. Gas pressure >5.1 bar(g) at plant inlet.

Please contact us for project-specific performance figures in case the gas does not fulfil the aforementioned criteria.

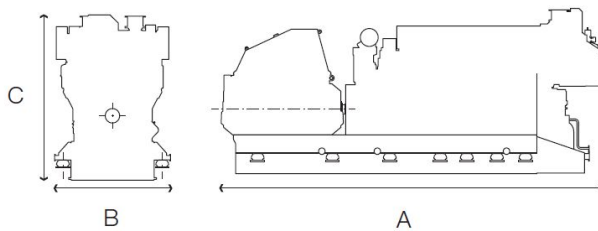
Special Conditions

Site conditions and applicable emission limits may have an impact on the heat rate and efficiency. Please contact us for project-specific performance figures.

1.3 Dimensions and Weights

Generating Set ¹ Type	Length (A)	Width (B)	Height (C)	Dry Weight ² +/-5%	Reduced Transportation Weight ³ +/-5%
20V32TS	12,799mm	3,740mm	4,732mm	151 tonnes	-

V-CONFIGURATION



Notes

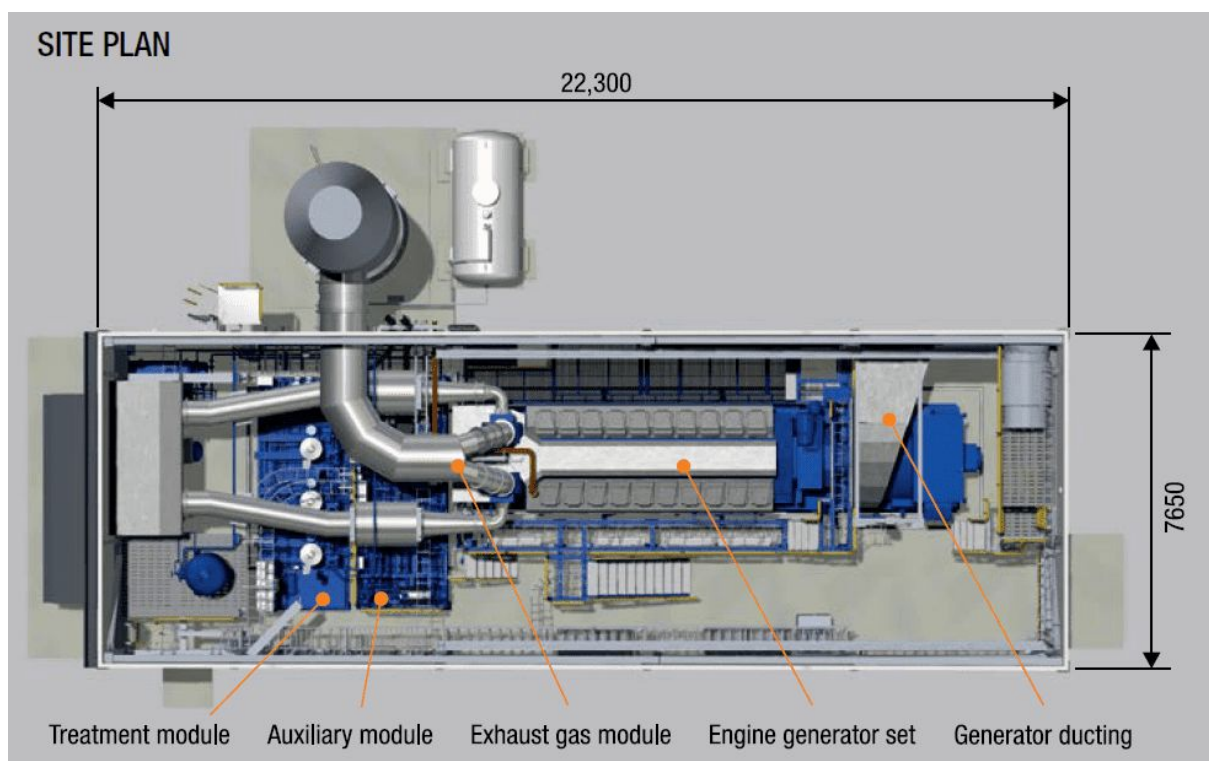
1 The listed dimensions of generating set are maximum transportation dimensions, excluding the spring-mounted shock absorbers and turbocharger inlet cones for V engines.

2 Generating set dry weight includes spring-mounted shock absorbers and inlet cones, excludes lube oil and cooling fluids.

3 In case of limitations in maximum allowed transport weight, the generating set can be further disassembled for separate shipment of engine, generator and common baseframe.

The listed reduced transportation weight is the weight of the heaviest of these parts.

Please contact us in case transport weight needs to be further reduced.



2. Scope of Supply

Section	Description	Quantity
A	POWER GENERATION EQUIPMENT	
A1	GENERATING SET	
A1.1	ENGINE	
	Wärtsilä 20V32TS engine	2
	Common base frame	2
	Generating set assembly	2
	Set steel springs	2
A1.2	GENERATOR	
	Generator - 15000 V	2
	Flexible coupling	2
	Flywheel cover	2
	External enclosure incl. surge capacitors and lightning arresters	2
A2	MECHANICAL AUXILIARY SYSTEMS	
A2.1	AUXILIARY MODULES	
	Engine auxiliary module - W32 3.0 1-C S HFO	2
	EAM appendix	2
	Exhaust gas module - W32 EGM 1-C	2
A2.2	FUEL SYSTEM	
A2.2.3	HEAVY FUEL OIL SYSTEM	
	W32 Engine fuel booster 3.0 - HFO S	2
A2.3	LUBRICATING OIL SYSTEM	
	LO storage tank - horizontal, 10 m ³	1
	LO separator unit - PAF636	2
	Oil mist separator - double, high efficiency	2
	LO heat exchanger (mounted on the engine)	2
	LO thermostatic valve (mounted on the engine)	2
A2.4	COMPRESSED AIR SYSTEM	
	Starting air bottle - 4.8 m ³	1
A2.5	COOLING SYSTEM	
	Set radiator - low noise	2
	LT expansion vessel (mounted on the EGM) - 600 l	2
	HT preheating unit (mounted on the EAM) - steam, 240 kW	2
	LT thermostatic valve (mounted on the EAM)	2
	HT thermostatic valve (mounted on the EAM)	2
A2.6	INTAKE AIR SYSTEM	
	Charge air filter	2
	Rain hood for charge air filter	2
	Charge air silencer (mounted on the EGM) - 35 dB(A)	4
A2.7	EXHAUST SYSTEM	
	Exhaust gas branch pipe (mounted on the EGM)	2
	Exhaust gas silencer - 35 dB(A)	2
A3	HEAT RECOVERY SYSTEM	
A3.1	STEAM GENERATION SYSTEM	
A3.1.1	STEAM GENERATION SYSTEM FOR FUEL HEATING	
	Own consumption exhaust gas boiler - HU-2A	2
	Boiler washing water tank - with pump, 10 m ³	1
A6	ELECTRICAL SYSTEMS	
A6.1	CONTROL SYSTEM	
A6.1.2	CONTROL PANELS	
	Central generating set control panel	2
	Local generating set control panel	2
	Auxiliary module panel (mounted on the EAM)	2
A6.2	MEDIUM VOLTAGE SYSTEM	
	Generator neutral point cubicle - 5 A	2
A6.3	LOW VOLTAGE SYSTEM	
	Frequency converter - cooling radiator, 132 kW, 261 A	2

3. Generating Sets Pricing

Total Price for **Two (2) Wartsila 20V32TS Engines, Generators and Related Equipment** as per the above scope of supply shall be – **Seven Million Three Hundred and Fifty-Four Thousand Five Hundred US Dollars (USD \$7,354,500.00)**.

**[Equipment is still under Manufacturer Warranty. All pricing is in US Dollar (\$) Currency. Pricing excludes VAT, local taxes, shipping and duties.]*

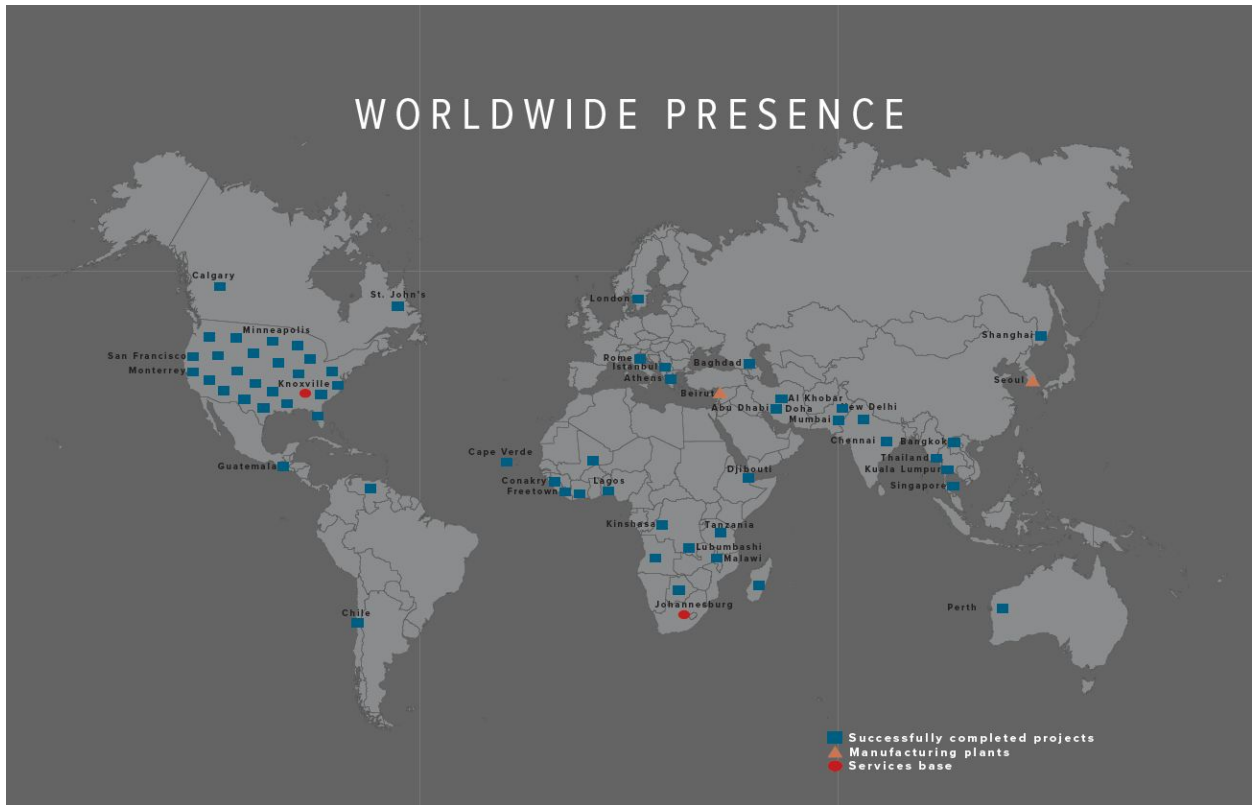
USP&E approximates the following costs to complete BOP in order to supply a turnkey 20MW HFO power station package:

20MW HFO Power Plant (Two (2) Wartsila 20V32TS Engines, Generators and Related Equipment)			
1. PROJECT SERVICES			\$501 400
1.1	ENGINEERING AND DESIGN	\$200 000	
1.2	INITIAL SERVICES & LOGISTICS	\$301 400	
2. MAIN EQUIPMENT			\$12 144 609
2.1	Basic Generating Set	\$7 354 500	
2.2	Auxiliary Systems - Mechanical	\$2 804 665	
2.3	Balance of Plant - Mechanical	\$335 900	
2.4	Balance of Plant - Electrical, Instrumentation & Control	\$1 094 544	
2.5	Spare Parts and Tools	\$555 000	
3. CIVIL WORKS, BUILDING AND UTILITIES			\$619 378
3.1	CIVIL - General Works	\$0	
3.2	CIVIL - BUILDINGS / PREFABRICATED ROOMS	\$220 000	
3.3	CIVIL - FOUNDATIONS (Powerhouse, Tank Farm, etc...)	\$0	
3.4	CIVIL - PILING (If required)	\$0	
3.5	STEEL STRUCTURES	\$79 200	
3.6	HVAC, PLUMBING SYSTEMS FOR BUILDINGS	\$132 000	
3.7	SECURITY SYSTEMS	\$133 178	
3.8	ELECTRICAL SERVICES FOR BUILDINGS AND OUTSIDE PLANT AREAS	\$55 000	
4. SITE AND PLANT SERVICES			\$1 089 350
4.1	SITE MANAGEMENT (General)	\$121 000	
4.2	ERECTION AND ELECTROMECHANICAL INSTALLATION	\$365 000	
4.3	SUPERVISION ON ELECTRO-MECHANICAL INSTALLATION	\$275 000	
4.4	TESTING, START-UP AND COMMISSIONING	\$123 750	
4.5	ON SITE TRAINING	\$0	
4.6	TRAVEL & COMMUNICATION	\$132 000	
4.7	INSURANCE DURING CONSTRUCTION PHASE	\$55 000	
4.8	FIRST FILLING (LUBRICANTS, WATER) / EXCLUDING FUEL	\$17 600	
TOTAL PRICE			\$14 354 737

***Turnkey 20MW HFO Power Station pricing is approximate and intended for discussion purposes only. Detailed engineering specific to each project site, conditions, terms, and necessary civil works is required for accurate pricing.*

USP&E will prepare LCOE and foreseeable operational expenditure over the life of the 20MW HFO Power Plant within $\pm 20\%$ accuracy. Contact us today with your specific project details: fuel costs, lube oil costs, site conditions, etc.

Contact Us



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