FIJI ELECTRICITY AUTHORITY

TENDER SPECIFICATIONS

TENDER

TENDER NO: MR 99/2017

Design, Supply, Installation and Commissioning of Radiators for Vuda G3 and G4 Wärtsilä 18V32LN HFO Sets

Cooling Water System – Wärtsilä 18V32LN

Refer to main flow diagram for cooling water system in Figure 1: WDAAA151348.

General

The main function of the engine cooling system is to remove the heat generated by normal function of the engine. The heat transfer mainly takes place in the engine block, the turbo charger and the charged air heat exchanger.

The cooling System of the engine is divided into High temperature (HT) and Low Temperature (LT) circulation system. Each system is fitted with its own circulation pump driven by the diesels engine.

The HT-circuit and LT-circuit are cooled by radiators.

Design

The main components of the cooling water system are:

- HT-water pump and LT-water pump, mounted in the engine
- Preheated unit (in the pipe module)
- LO cooler in pipe module
- Preheating unit in pipe module
- Expansion vessel. VEA 0_1, 0_2
- Maintenance water tank, VBA 901
- Radiators, VCA 0_1, 0_2, 0_3
- Radiators, Figure 2: VCA0_1 - 0_4

HT-circuit

The HT-water pump, circulates the water in the HT-system through the engine block, the Turbo charger, charge air coolers, heat recovery plate heat exchanger and through the radiators.

When the HT-cooling water temperature water temperature increase after cooling the engine, a 3-way thermostat valve opens so that part of the water flow is directed through the radiators. Otherwise the cooling water circulates back to the engine. The set point of the thermostat valve is 91 ^{O}C.

The pump in the preheating unit provides circulation in the HT-circuit during prolonged shut-down periods. This system maintains the temperature above 70 ^{O}C.

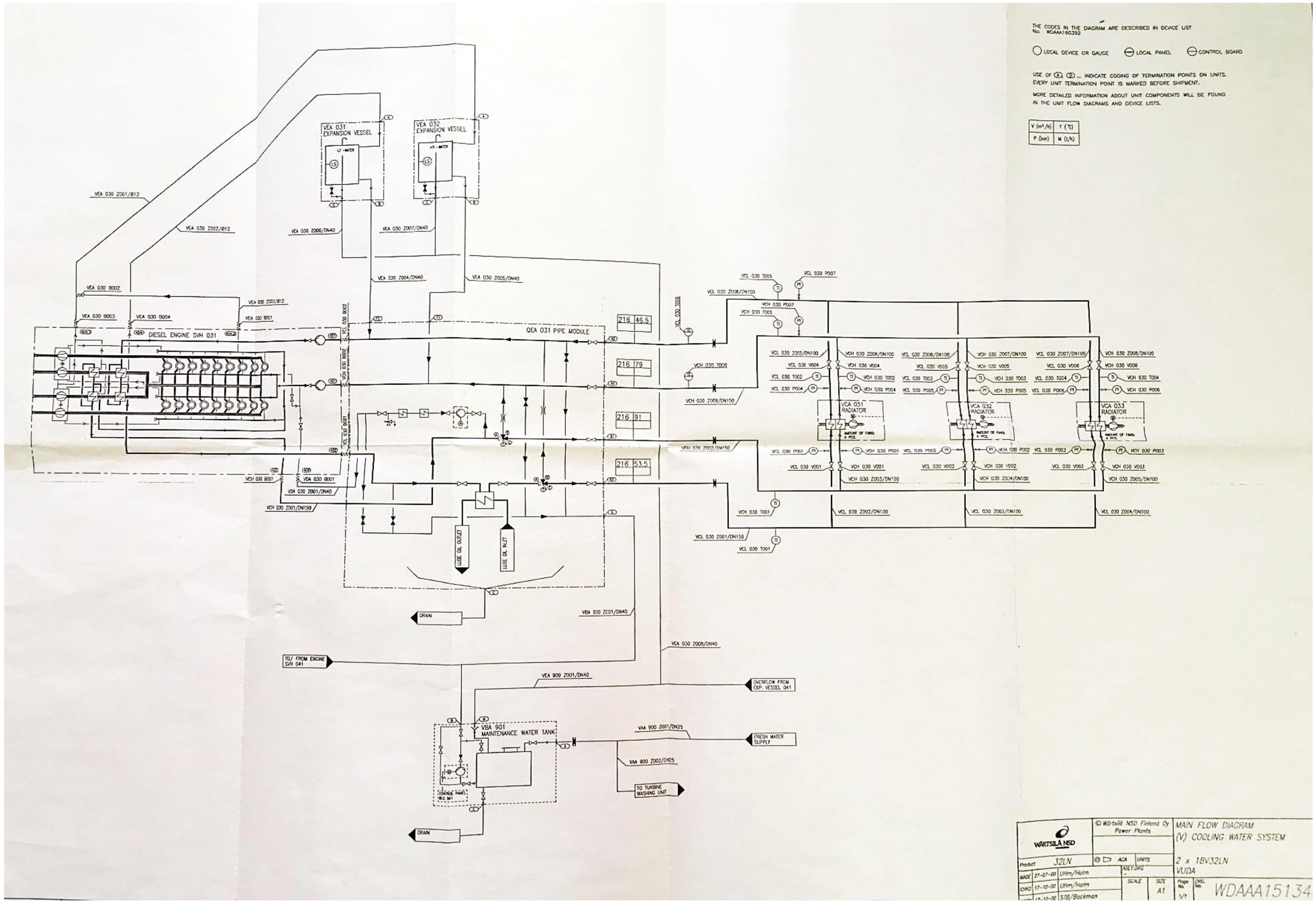
LT-circuit

The LT-water pump, circulates the water in the LT-system through the charge air cooler, the LO cooler and through the radiators. The set point of the thermostat valve is 43 ^{O}C

Environmental Condition

Ambient temperature	45 ^{O}C
Climate	Tropical

Figure 1 Vuda Wastrila18V32LN Cooling System Schematic



Scope of Works

New Radiator sets are to be designed, supplied installed and commissioned for Vuda G3 and G4 – Wärtsilä 18V32LN sets. These sets are prime running sets and rely on efficient cooling systems to deliver maximum efficiency.

1. Existing radiators is to be decommissioned, dismantled and removed from site
2. Pipework, valves and fittings to inspected
3. Pipework to be pickled
4. Damaged valves and fittings to be replaced
5. New Pressure and Temperature gauges to be installed on both LT and HT circuit.
6. New Radiators to be installed, tested and commissioned, with all necessary pipework, valve and fittings installed.

-Radiator Design should take the following into consideration:

A. Ambient temperature – 45 degrees Celsius
B. Tropical Climate
C. Relatively high humidity – 80% - 90% average
D. Surface protection for the whole system (Hot dip galvanized for all steelwork)
E. Auto air bleed system
F. Fan motors – 50Hz with class H insulation
G. The existing concrete pad which houses the current radiators for both G3 and G4 is approximately 8m wide and 16.5m long
H. Radiator stands to have appropriate height of 2.8 – 3.0 meters which would be anchored to the existing concrete base
I. Structural design of the radiators should withstand category 5 cyclonic conditions. Vuda is on the western side of Fiji – prone to cyclones
J. Access ladders and rails to radiator modules for inspection purposes to meet modern OHS requirements


8m
16.5m


WÄRTSILÄ NSD
°C
psi
bar
NUOVA FIMA
Pressure and Temperature gauges that need replacement.

FIJI ELECTRICITY AUHTORITY

Design, Supply, Installation and Commissioning of Radiators for Vuda G3 and G4 Wärtsilä 18V32LN Engines

ITEM	ITEM DESCRIPTION	UNIT PRICE	TOTAL PRICE
1	Removal of all existing radiators and associated pipes (LT and HT) for Vuda G3 and G4 generators. All removed pipes must be cleaned and pickled.		
2	Installation and fixing of new radiators for G3 and G4 to the concrete base. Modification and installation of all additional pipes, valves and fittings as required.		
3	Allow for painting of all pipes and fittings.		
4	Allow for all electrical re-connections for the motor panel and the radiator fans.		
	TOTAL (VEP)		
	VAT 9%		
	TOTAL (VIP)		

Notes:

1. Site visit at FEA's Vuda Power Station on 4th of May, 2017 at 10am.
2. Ensure site HSE rules are followed at all times.
3. Contractor to verify all drawing measurements onsite

Submission of Tender

It is mandatory for Bidders to upload a copy of their bid in the **TENDER LINK** Electronic Tender Box no later than **4:00pm, on Wednesday 24th May, 2017.**

To register your interest and tender a response, view 'Current Tenders' at:
https://www.tenderlink.com/fea

For further information contact The Secretary Tender Committee, by e-mail
TDelairewa@fea.com.fj

In additional, hard copies of the tender, one original and one copy must be deposited in the tender box located at the FEA Head Office, 2 Marlow Street, Suva, Fiji no later than **4:00pm, on Wednesday 24th May, 2017-** Addressed as

Tender – MR 99/2017 – Design, Supply and Commissioning of Radiator Units for "Wartsila' 18V32LN Generators (G3 and G4) at Vuda Power Station

The Secretary Tender Committee
Fiji Electricity Authority
Head Office
Suva
Fiji

- **Hard copies of the Tender bid will also be accepted after the closing date and time provided a soft copy is uploaded in the e-Tender Box and it is dispatched before the closing date and time.**

Tenders received after **4:00pm** on the closing date of **Wednesday 24th May, 2017.**

- will not be considered.
- Lowest bid will not necessarily be accepted as successful bid.
- **It is the responsibility of the bidder to pay courier chargers and all other cost associated with the delivery of the hard copy of the Tender submission including any Duties/Taxes. Hard copies of the Tender submission via Post Box will not be considered.**