

Construction Update

From the Desk of the Project Director

Tuesday 2nd December 2014

MILL IN SERVICE – FIRST COAL FIRES AT MEDUPI



Smoke from Chimney

First Coal Fires

On Thursday 27th November the team at Medupi successfully brought the first mill into service resulting in the First Coal Fires on Unit 6, a major milestone towards 1st Synchronisation. The next significant milestone will be Steam to Set and then Synchronisation.

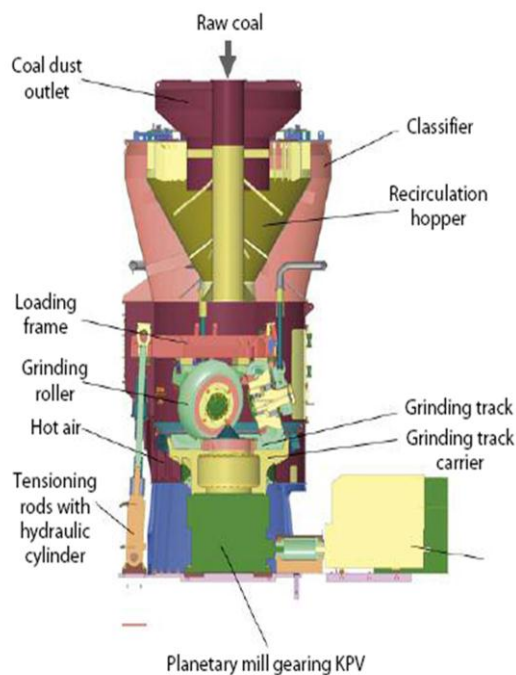
This milestone marks a particularly important point in that this is the first coal fire achieved in the New Build fleet.

Part of the commissioning program will be to continue to optimize the operation of this mill and then move onto commissioning the remaining four mills.

The project is well on its way to first synchronisation.



Mill Design



Mill design

Mill main data

Type	MPS 265
Total weight ~	220t
Grinding roller diameter	2070 mm
Total height	11 925 mm
Rotation of grinding track carrier	28.5 1/min
Hydraulic pressure	150 bar
Coal flow	114 t/h
Hardgrove (HGI)	51
Primary air	160 t/h
Hot air temperature	325°C
Classifier temperature	95°C

Steam Blow through and First Fires (submitted from MHPS)

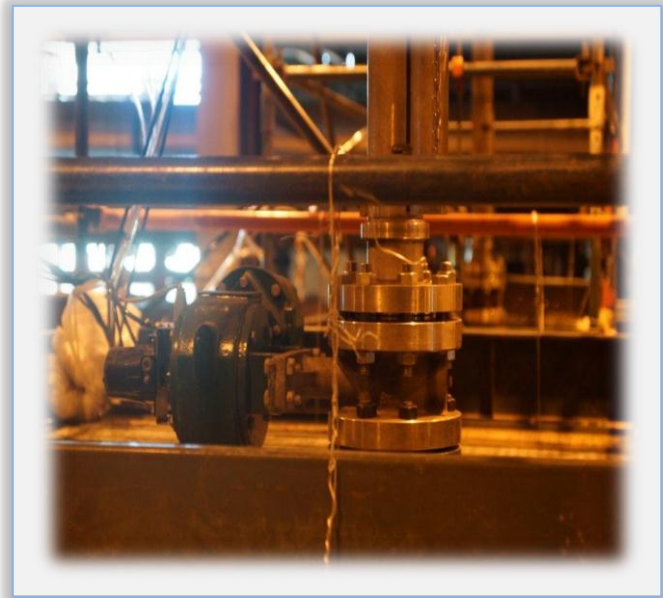
At the moment the “steam blow through” is in progress on Medupi Unit 6. This activity ensures that all particles (construction debris) are removed from the internal surfaces of the boiler piping, vessels and in-line components. These particles need to be removed to prevent damage to the steam turbine once steam is fed from the boiler to the turbine. The steam blow through is performed after the chemical cleaning, where impurities such as ferric oxides, dirt and silicate have been already eliminated and is therefore a further cleaning step to remove additional debris.

Steam blowing effectiveness is dependent on the blow through steam velocity. The velocity is determined using a required disturbance, or “K”, factor. For adequate cleaning by means of steam blowing a load of roughly 30 % BMCR (boiler maximum continuous rating) is required which is equivalent to a steam mass flow of 700 t/h.

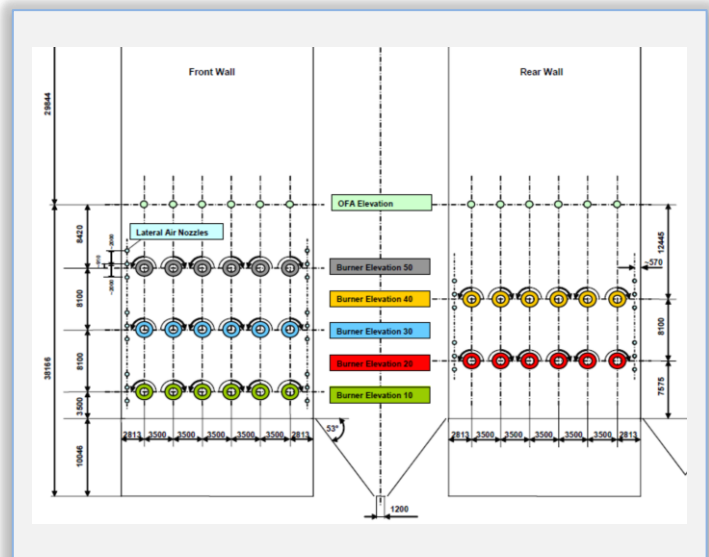
The steam blow through was performed and optimised during the past several days by use of pure oil firing. With pure oil firing, the load is limited to 20 % boiler load. Therefore the operation of a coal mill is required to reach the needed velocities for completely effective cleaning.

The DS type burners (swirl stage burners) are located at five different elevations; three on the front wall and two on the rear wall. Each row has six burners. Every burner has an integrated gas igniter after which oil is immediately introduced.

The load will gradually be increased from 2.5% to 10% and then to 20 %, where the first coal mill can go into operation.



Target plates – where inserted



General Overview of the furnace design

After the coal mill is in operation and the load is increased to 30 % boiler load, the required velocities for steam blow through will be checked. If they are met the load has to be held constant for a minimum of twenty minutes. After that the boiler can be shut-down and allowed to cool to generate what is termed the “thermal shock” effect which helps to displace impurities further and is in accordance with the published guidelines.

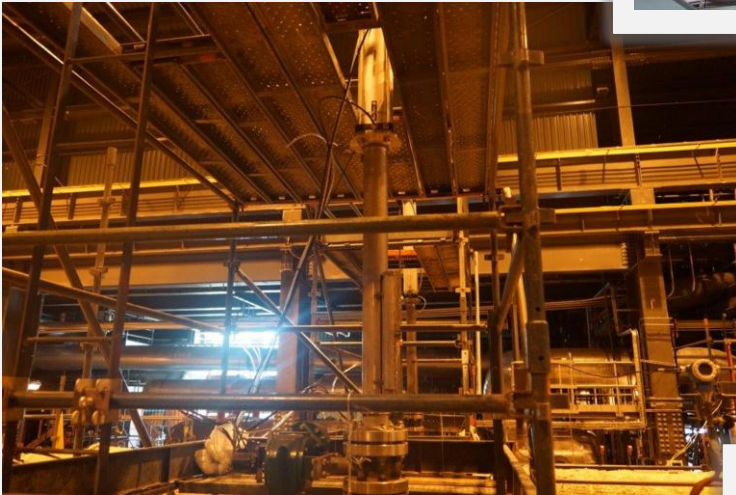
The success of removing debris of the boiler is assessed through the use of target plates, which are installed in the piping downstream of the heating surfaces of Superheater and Reheater. The number of indentations on the target plates has to be checked and must fulfil defined requirements in four successive blows. After that the steam blow through is completed and the unit is shut down to allow the permanent piping to be reinstated in preparation for introducing steam to the turbine for the first time, known as “steam to set”..

The coal mill operation is one important step to increase the load further during the operation and commissioning of the boiler and steam turbine.

Fabric Filter Plant



Target Plate – (where it gets inserted)



Turbine Hall (1)



Turbine Hall (2)





PJFFP Roof Structure – Very good progress is being achieved by DB Thermal



Dust Extraction Unit – ELB installing dust extraction unit screw conveyor on 48m level. Construction on 48m level is ahead of schedule.



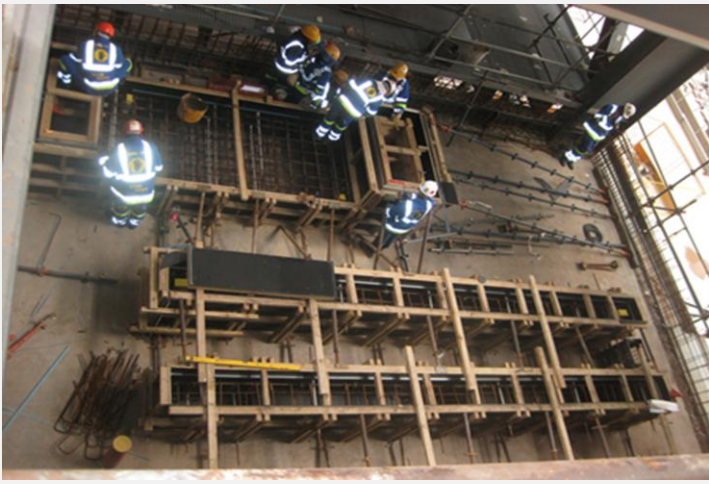
Work started on the installation of drains on various systems



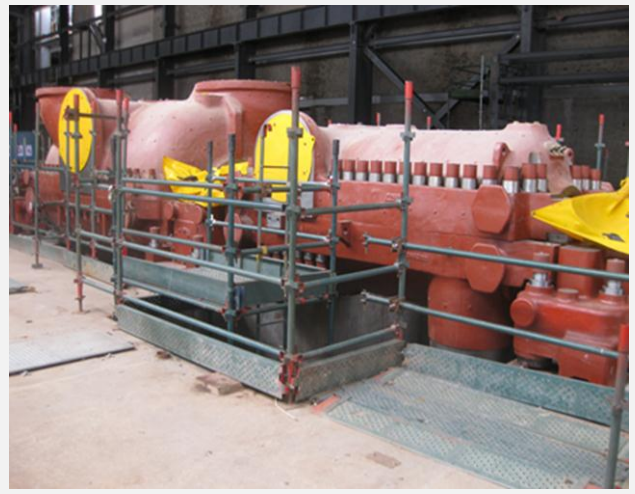
HVAC Plant room: duct installation resumed this week



Condensate Polishing Plant – Progress is very good for construction completion of the main ring and platforms are still on target for the 10th December 2014.



Lube oil room plinth and wall rebar in progress



Turbine centreline HP and IP has been put in place



CPP building top floor columns construction in progress



Aux bay roof cladding progressing well



Generator transformer ancillary installation is progressing well

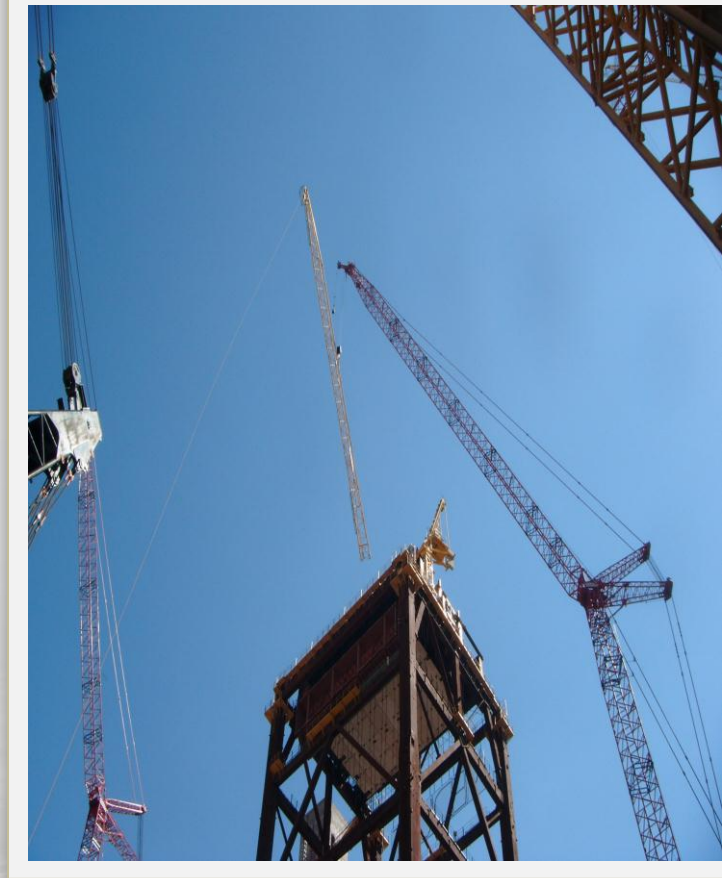


Course ash conveyor ready for concrete pour on 1 December



Unit 1 and 2 the Turbine Hall steel frame becomes on continues structure from North to South

Unit 2 the 1200ton crane moves onto unit 2 and prepared to lift an 80ton section of ducting.



Unit 1 Boiler the last Wolf crane is installed on the 105M grid.

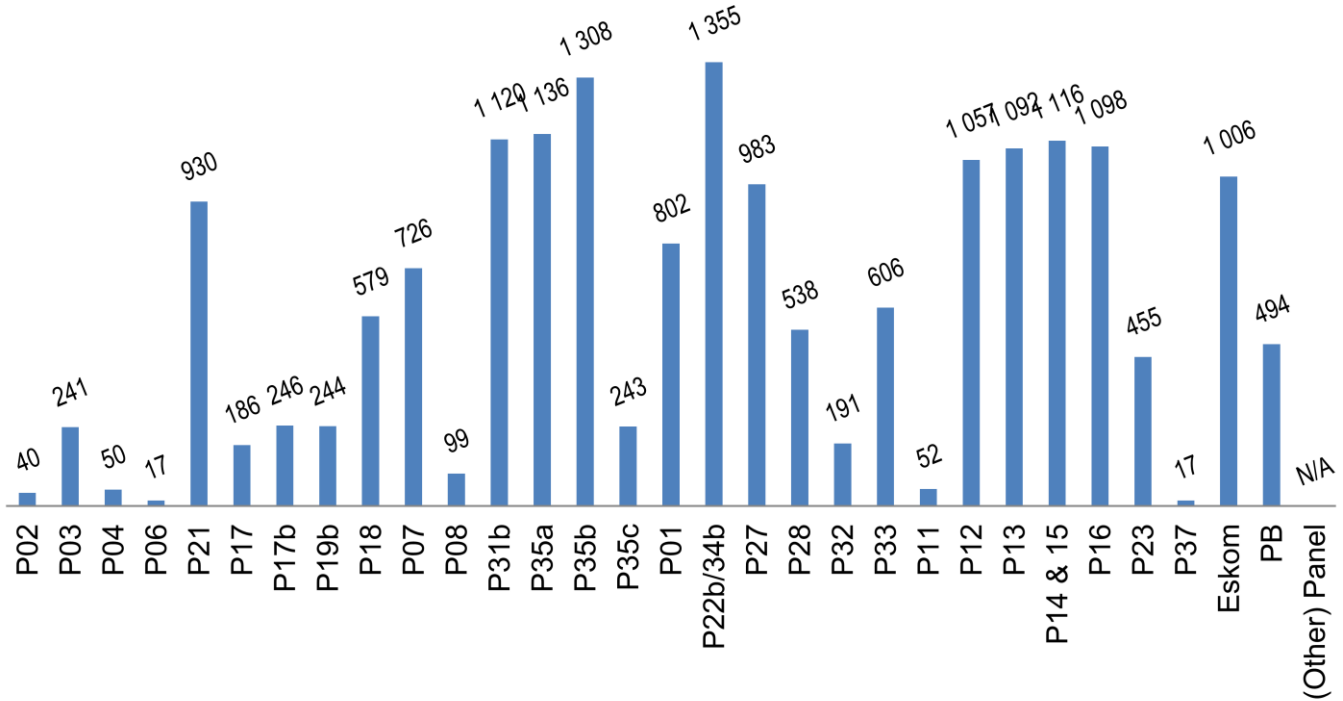
Unit 1 drainage works progress well following good access arrangements between MPS/JV and Alstom/Kentz



Units 2 & 1

SAFETY ON MEDUPI IS CRITICAL

Days since last LTI

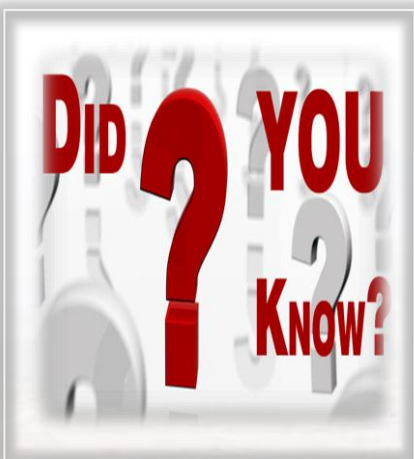


MEDUPI – DAYS SINCE LAST LTI PER CONTRACTOR

Team Medupi now have two more major milestones to achieve before producing power to the grid: These are Steam to Set and then 1st Synchronisation of Unit 6.

Before steam to set we have to complete:
Blow through to be completed, pipe work re-installment, hot vacuum test, ACC steam cleaning, safety valve testing.

Thereafter we have to complete:
Generator clean air run, inspect H2 coolers, Generator CO2 purge, H2 filling, Turbine 1st start, excitations - protection synchronisation (hot) and finally 1st Synchronisation.



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