Real Time Engineering
Embedded with Technology

RE-HEATING FURNACE EMBEDED WITH TECHNOLOGY

Real Time Engineering Pvt. Ltd.

Total Process Solution for Automation, Electrical & Instrumentation

www.realtimegroup.co.in

MS CERT

Certificate Of Registration

QUALITY MANAGEMENT SYSTEM

This is to Certify that the Quality Management System
of

REAL TIME ENGINEERING PVT. LTD.

Address:
Office: 26B, Ashwini Dutta Road, Kolkata-700 029, West Bengal, India.
Works: P-316, Unique Park, P.O. + P.S– Behala, Kolkata-700 036, West Bengal, India.

has been assessed and found to comply with the requirements of:

ISO 9001:2008

(Quality Management System)

Clause 7 permissible Exclusions: Nil

Scope of Certification:

Manufacturing, Supply and Servicing of Electrical and Electronics Automation Systems As per Customer's Requirements.

Sector Code: (ANZSIC CODE:2850)
Certificate Number: IN/QMS/00178
Issue no.: 03

Date of approval : 03.12.2015 *Valid until : 14.09.2018*
Revision no: nil *Revision date : nil*
Initial Certification Date: 15.12.2009

November 2016
Surveillance Audit 1st Year

S. Dutta
Managing Director

November 2017
Surveillance Audit 2nd year

MS CERT
JAS-ANZ
ACC.No.M4151008IK
IAF

MS CERTIFICATION SERVICES PVT. LTD.

Address: 3/23 R.K.Chatterjee Road, Kolkata-700042, West Bengal, India.
www.mscertification.net

The validity of this certificate can be verified at www.jas-anz.org/register or ww.mscertification.net
The Certificate is Valid Only if the Annual Surveillance Mark is Signed by Auditor on Original.
F60.rev.05

Real Time Engineering Pvt. Ltd.

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This project involved programming the Combustion System and Material Handling System of a 100 Ton Per Hour Walking Beam Type Re-Heating Furnace, providing software for scheduling as well as manufacturing and supplying the PLC, VFD, MCC Panels and Pulpit Desks for the entire system.

Successfully Commissioned 100 TPH Walking Beam Re-Heating Furnace for Gunung Steel Group, Indonesia on August, 2015

GUNUNG STEEL GROUP
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BRIEF ABOUT THE PROJECT:

This Re-heating Furnace had been designed by the client to meet the production rate requirement of 100 Ton/Hr.

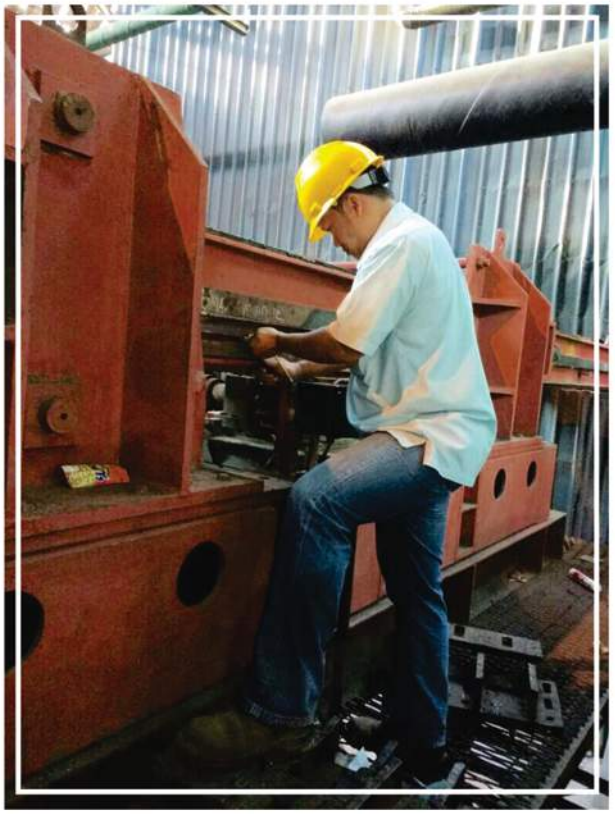
The entire Furnace was then divided by our Combustion System expert into eight combustion zones namely Top Preheating Zone, Bottom Preheating Zone, Top Heating Zone, Bottom Heating Zone, Top Soaking Zone East, Top Soaking Zone West, Bottom Soaking Zone East and Bottom Soaking Zone West. The Soaking zone had been divided into 4 Zones to enable closer control of these zones ensuring perfect discharge temperature of the billets throughout it's cross-section.

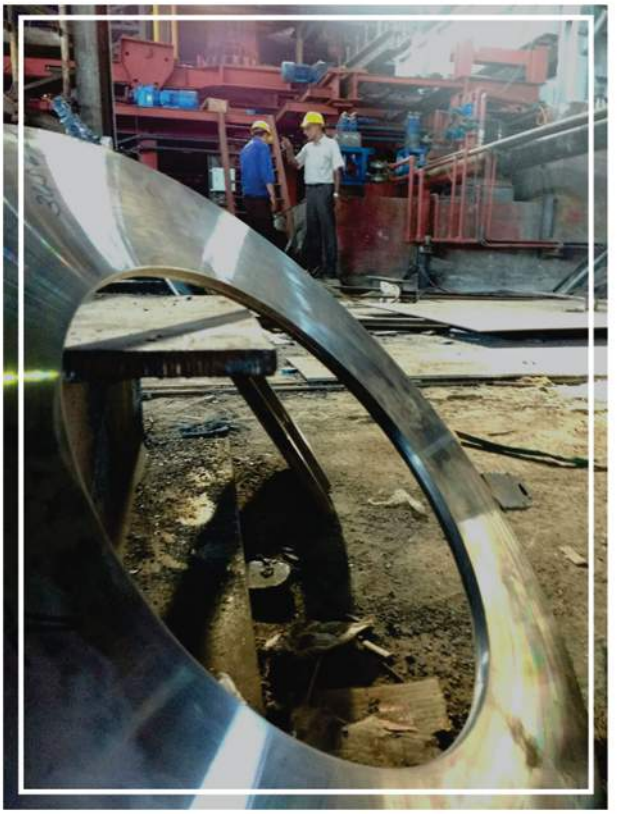
The Burners were provided with Lance air to ensure adequate flame length. As shown later in this document we aimed at providing maximum simplicity and information in our SCADA pages to enable us as well as the client to easily gauge the control performance of each zone and take steps to improve it's response and efficiency very easily.

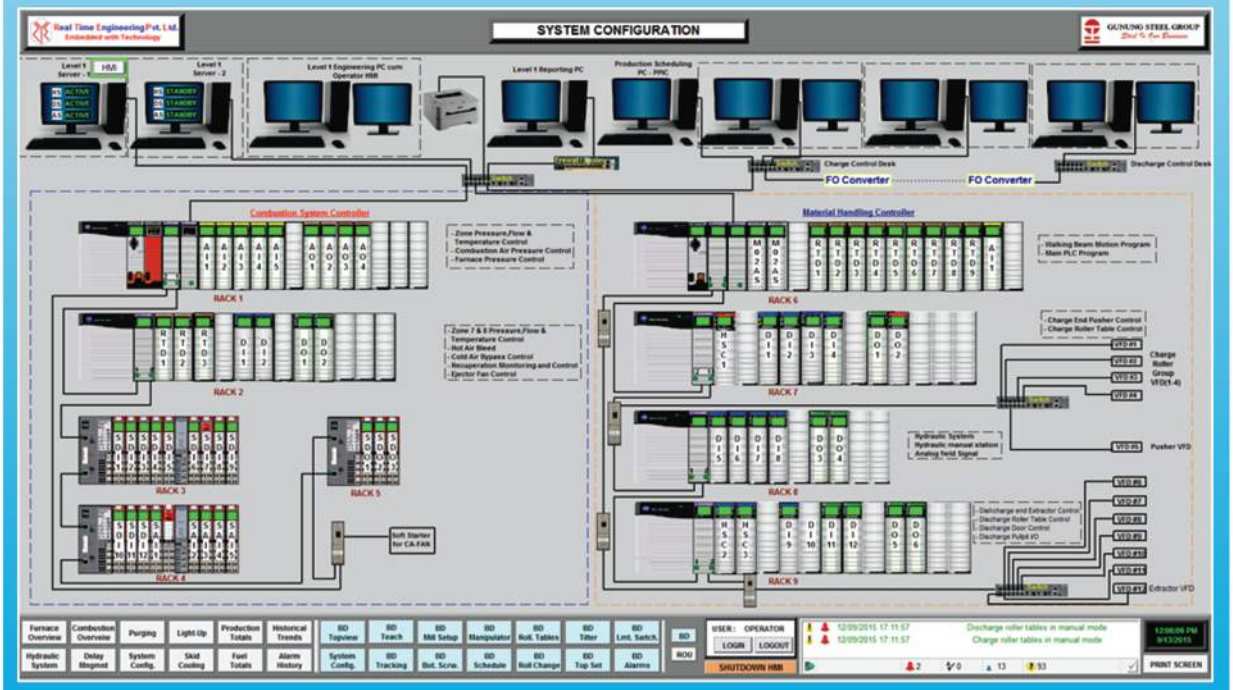
To ensure absolute safety of the Furnace we had developed the entire safety logic in Rockwell's Guardlogix safety program and taken all the safety related inputs and outputs in Guardlogix safety cards. In addition to this we had also hard wired overtemperature tripping of the gas safety shutoff valves via external overtemperature controllers. This meant that even if the PLC safety output card fails, the external overtemperature controllers would still trip the gas valves if overtemperature occurs, thus providing redundancy in safety.

The Material Handling equipment were provided with adequate safety as well as process interlocks to ensure their safe and smooth operation. As shown later in this document, the SCADA pages were provided with extensive information about interlocks and feedbacks. This helps the operators to quickly troubleshoot problems which in turn led to lower downtime and better planning of preventive maintenance. The Walking Beam was meticulously optimized over several days to allow it to walk as fast as required but at the same time minimize jerks to prevent skewing of the billets. This in turn ensures smooth auto-discharge and a healthy production rate.

A key part of the Material Handling system was also our ergonomically designed control pulpits. We had provided illuminated push buttons which helped the operator to gauge the status of any ongoing procedure such as charging, discharging, etc. We had also electrically designed our Pulpit Desks and VFD Panels to include a feature which we name "PLC Bypass Mode". This Mode helpes operators to take control of any equipment directly in the event of any sensing instrument failure and operate it as required without having to worry about interlocks which were not getting fulfilled due to certain instrument failure. The operators can thus use their experience to bring the various equipment to their safe positions before help arrived to fix the problematic instrument.







Software Used:

For Programming PLC : Studio 5000

For Level-1 SCADA : FactoryTalk View Studio

For Level-2 Scheduler : VB. Net, Microsoft SQL Server

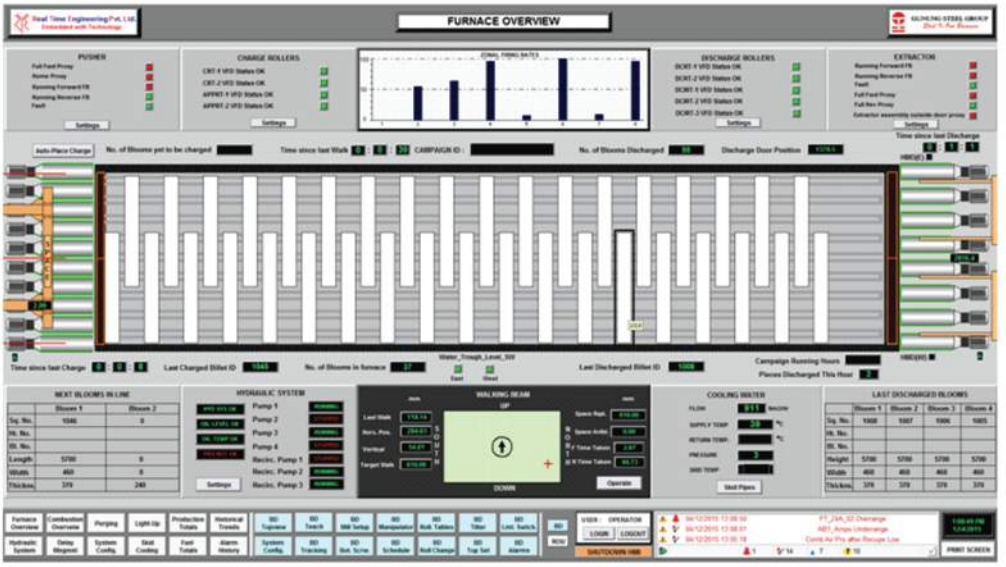
Hardware Used:

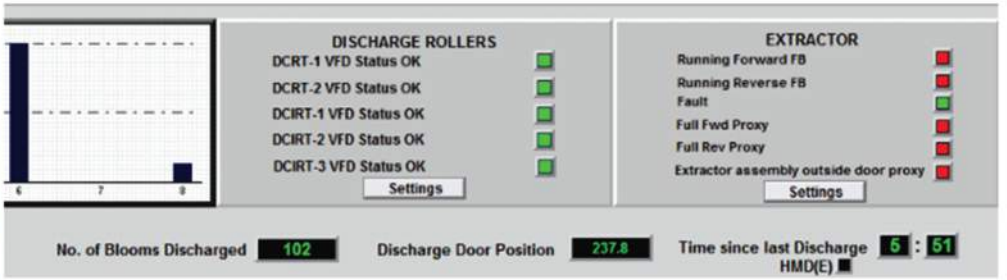
Material Handling PLC : ControlLogix L72

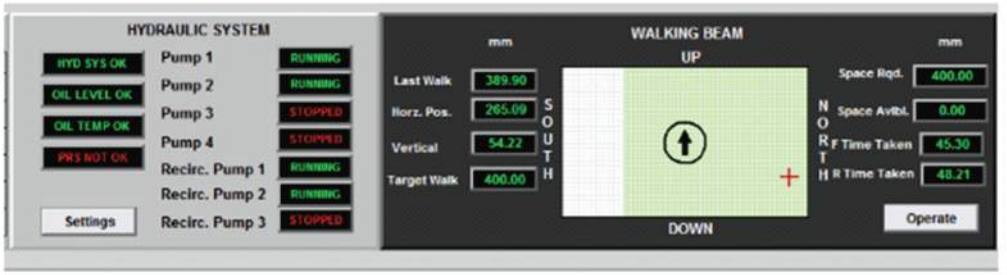
Combustion System PLC : ControlLogix L72S

Drives : Altivar 71

Communication Protocol : Ethernet

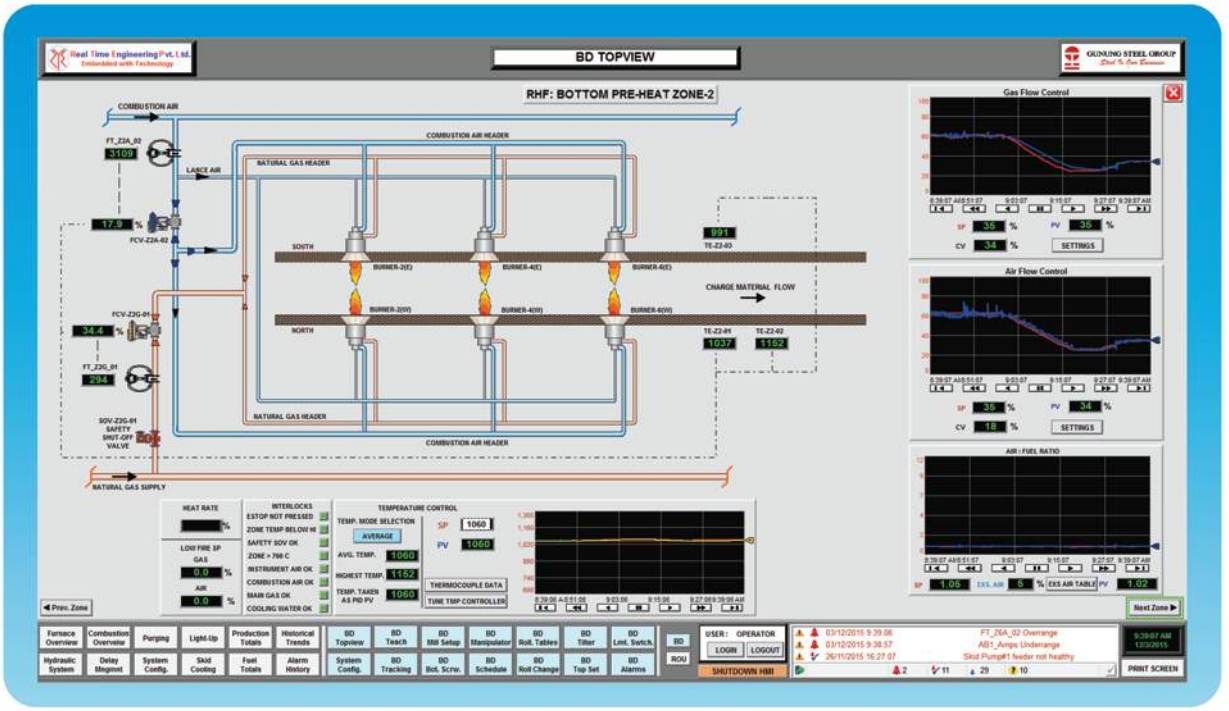


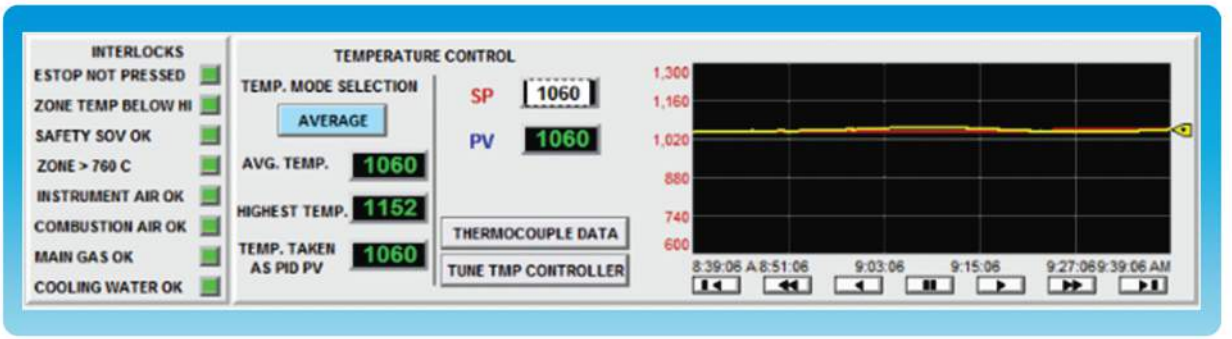




The Material Handling Overview Page had a large representation of the position of the billets inside the Furnace, status Information about all the material handling equipment and production data. The Billets could be clicked to show more information about them such as their ID, Weight, Length etc.

All these features help the operators easily keep track of the whole Material handling system ensuring better production management which in turn led to higher productivity.



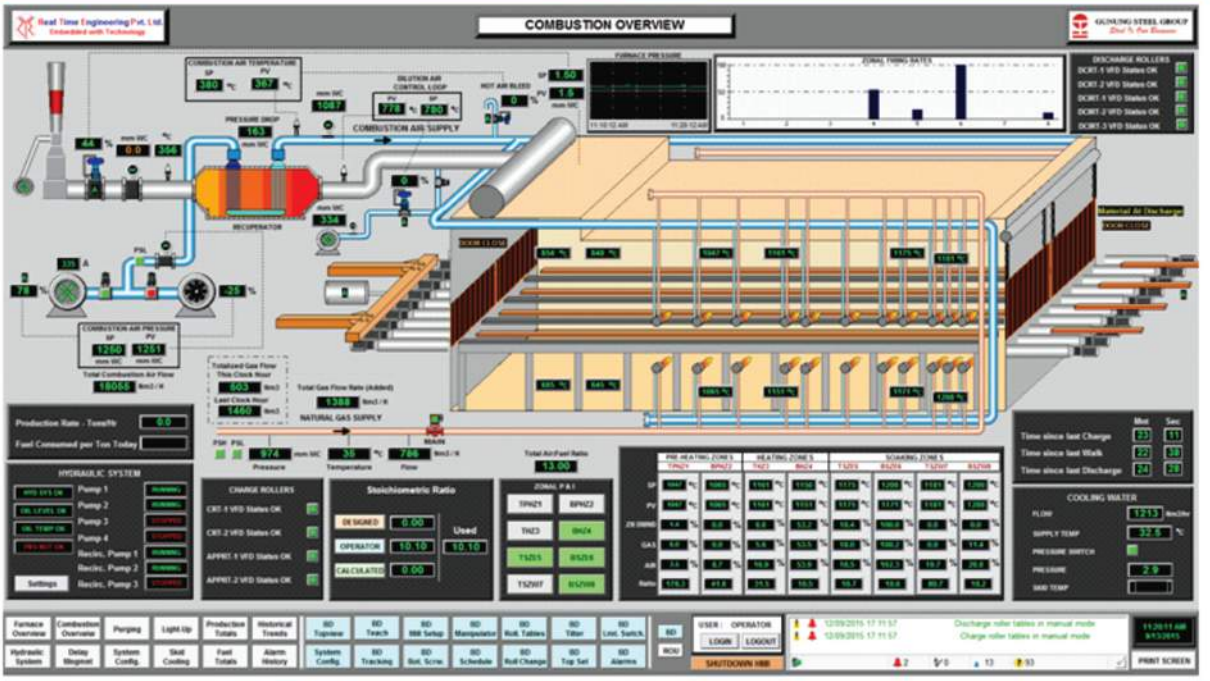


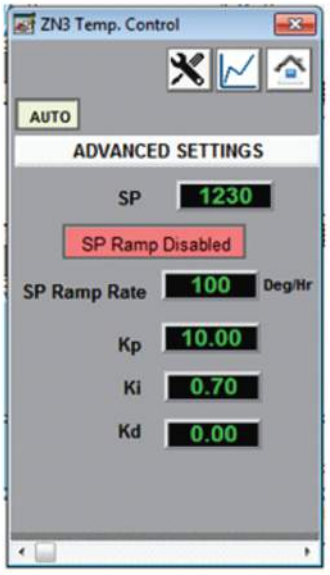
The Zonal pages had been provided with a P & I Diagram representation showing the position of all the valves and instruments, their feedbacks, status of safety interlocks and graphs to show the performance of the temperature and flow control loops.

These not only help to analyze the behaviour of each of the zones and fine tune The control loops to make the zones more fuel efficient, but also troubleshoot quickly when any erratic behavior occurrs.

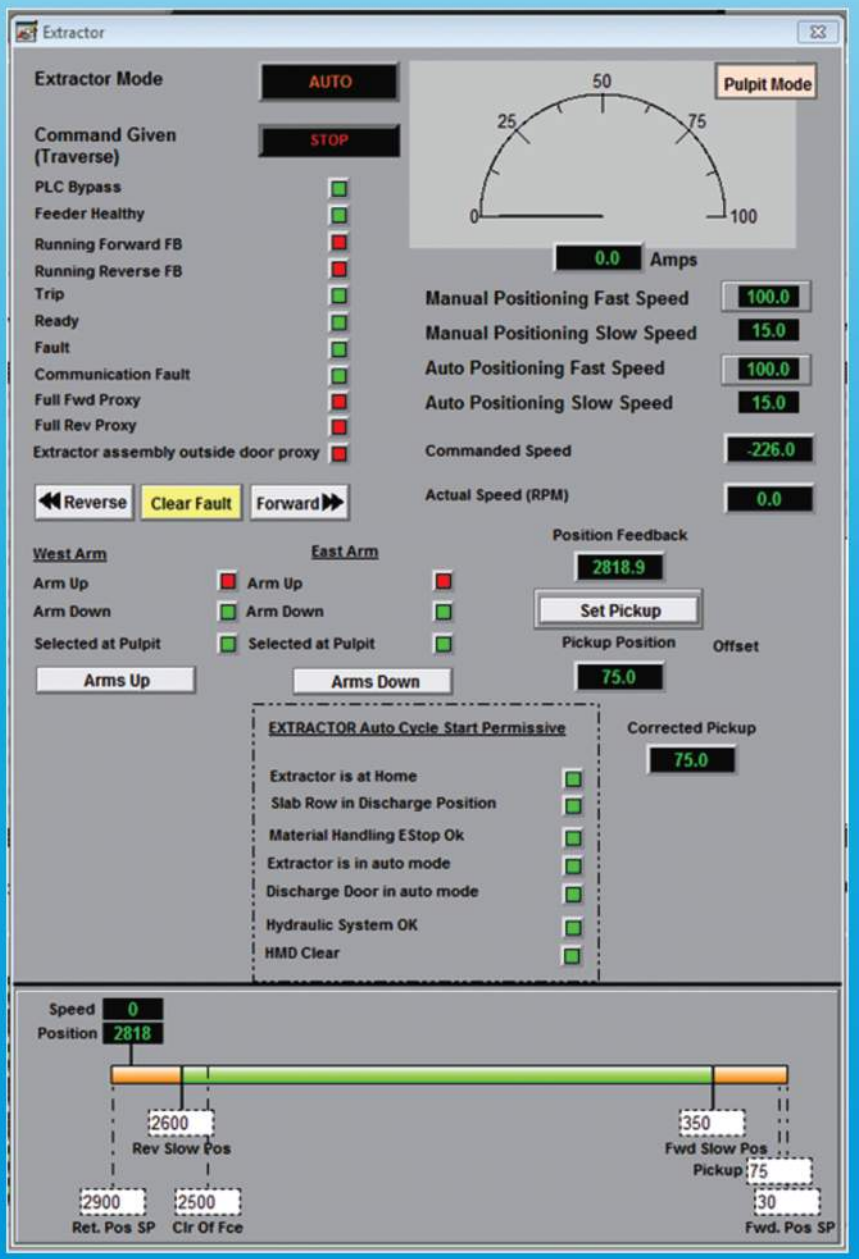
HMI Features provided to aid in better operation of the Furnace:

The Combustion Overview page provided with a clear layout of the entire furnace area. All the process parameters, status information of all key equipment as well as production information (such as Ton/Hr and Nm^3/Ton) are given in this page enabling the operators to view the functioning of the combustion system in its entirety without having to navigate to other pages.



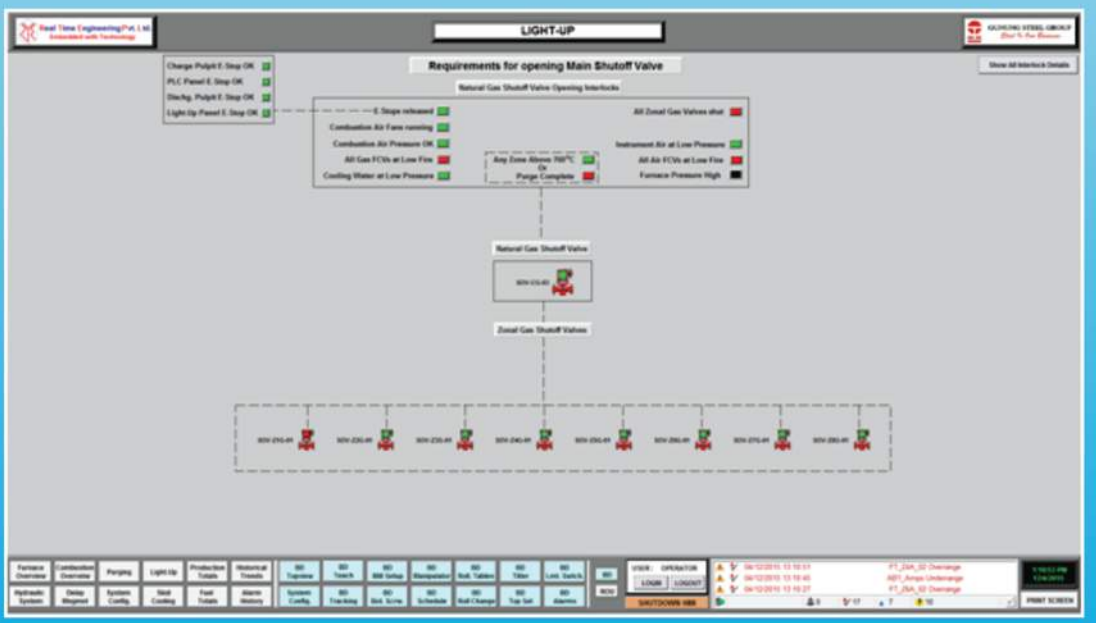


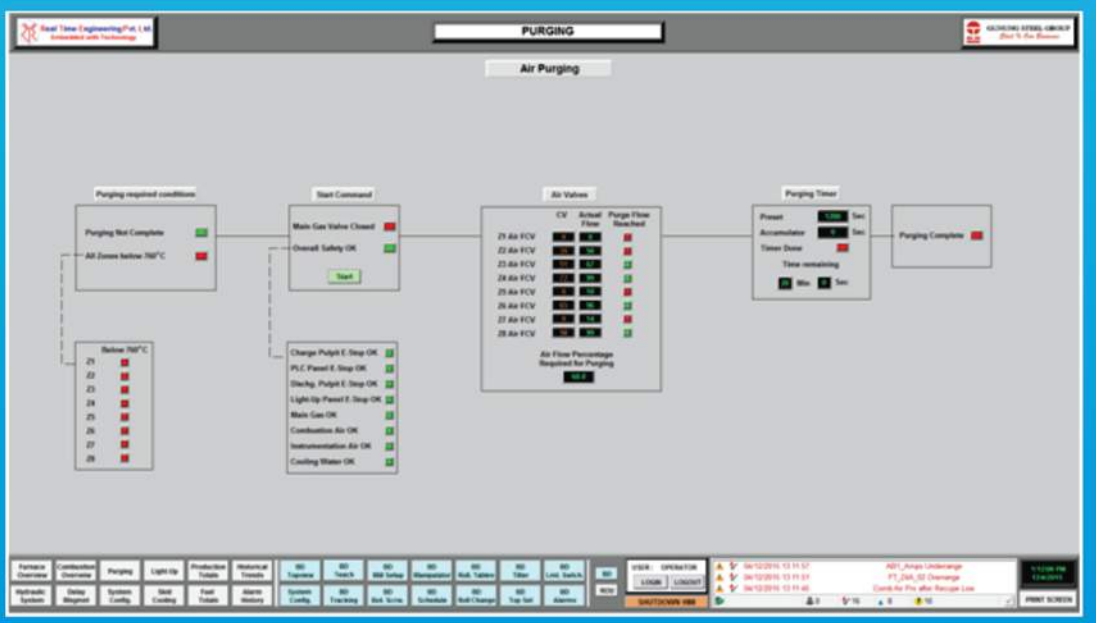
The PID Popups were designed with the aim of providing easy access to all tuning parameters and process graphs to enable engineers to tune and analyze the control loops of the Zones.



In the Popups of all Material Handling equipment we have provided the status feedbacks from their drives and feeders as well as the status of the interlocks involved in the operation. To make it easy for operators to adjust the positional setpoints we had provided an animated visual representaion as can be seen in the Extractor Popup shown below. This enabled better understanding of the equipment for the operators and consequently lower dependancy on Engineers for troubleshooting minor problems.

The flowchart layout of the Light-Up and Purging pages help operators to easily understand the sequence of operation involved in these procedures as well as the vital interlocks ensuring enhancement in the safety of these operations.





We had developed a schedular software for planning the charging pattern of billets in each campaign as well as for recording the various data associated with each billet. The billet data can be filled out in an excel sheet and imported into this software. Similarly the running schedule can easily be exported to an excel sheet. This helps to remove dependency on the scheduler computer for preparing and viewing the schedules.

SN	DESCRIPTION	SCOPE OF WORK	END-USER	YEAR OF SUPPLY/ COMMISSIONING
1.	100 TPH Walking Beam Type Re-Heating Furnace for Beam Plant-1	a) Design, Engineering, Manufacturing, Supply, Erection Supervision &Commissioning of Complete Electrical (MCC, PCC, PDB), Automation, VFD & Instrumentation System b) Design, Engineering, Supervision of Erection and Commissioning of Combustion System	PT. Gunung Garuda, Indonesia	August, 2015
2.	230 TPH Walking Beam Type Re-Heating Furnace for Universal Rail Mill	Supply of Hot-Redundant PLC Automation & VFD System	Bhilai Steel Plant, Steel Authority of India Ltd., India	July, 2015 (Yet to be Commissioned)
3.	220 TPH Walking Beam Type Re-Heating Furnace for Medium Structural Mill	Supply of Hot-Redundant PLC Automation & VFD System	Durgapur Steel Plant, Steel Authority of India Ltd., India	September, 2012 (Commissioned June, 2015)
4.	160 TPH Stainless Steel Walking Beam Type Re-Heating Furnace	Supply of PLC Automation & VFD System	Bhuvee Steel, Orissa, India	August, 2011
5.	100 TPH Walking Beam Type Re-Heating Furnace for Bar Mill	Design, Engineering & Supply of Electrical, Automation & VFD System and Commissioning of Level-1Automation System	Durgapur Steel Plant, Steel Authority of India Ltd., India	2006
6.	Bar Mill Walking Beam Re-Heating Furnace	Supply of PLC Automation & VFD System	JSPL, Raigara, Chhattisgarh , India	2007
7.	110 TPH Re-Bar Mill Walking Beam Type Re-Heating Furnace	Design, Engineering & Supply of Electrical, Automation and VFD System	Tata Steel Ltd, Jamshedpur, India India	2006

PT. GUNUNG GARUDA

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Dated: 28th of September,2015

To,
Real Time Engineering Pvt Ltd,
26B, Aswini Dutta Road,
Kolkata - 700 029, India

Sub : Commissioning Certificate of Combustion Engineering, Electrical, Instrumentation & Level 1 Automation system of 100TPH Walking Beam type Re-Heating Furnace for Beam Plant-1

Purchase order nos. :

1. **14-IRD000165 dtd 14.04.2014 for Instrumentation**
2. **14-IRD000166 dtd 14.04.2014 for Automation system**
3. **14-IRD000295 dtd 27/06/2014 for Combustion Engineering**
4. **15-IRD000072 dtd 30/01/2015 for Electrics**

This is to certify that **M/S Real Time Engineering Pvt Ltd**, has successfully completed the job of Design, Engineering, Supply, Supervision of Erection, Commissioning, Trial Run and Handing over of the complete Electrical, Instrumentation & Automation System of the 100 TPH Walking Beam type Re-Heating Furnace for Beam Plant-1 at PT. Gunung Garuda Steel Plant , Indonesia.

M/S Real Time Engineering has also successfully completed the Design, Engineering, and Supervision of Erection & Commissioning of the Combustion System of the above mentioned Furnace.

The Re-Heating Furnace has been working smoothly with full production for last one month.

B.K. Dutta	**Milind Madhukarao**	**Frank R. Situmorang**

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