



# PROCESS AUTOMATION

THE SWEETENER TO SUCCESS

**SAVE FUEL  
REDUCE CARBON FOOTPRINT  
MAKE THE WORLD GREENER**

**AND YET, MAKE MONEY!**



YUTECH has an experience of over 30 years in the Sugar Industries. YUTECH has pioneered a number of Sugar Automation Solutions which are now in common use, like Infra Red type Donnelley Chute level Sensors and Automatic Cane Feeding Control System introduced in 1984.

At YUTECH, it is our commitment to Quality Instrumentation and Exceptional Customer Service that has remained the cornerstone of our success. YUTECH has a clear priority, to facilitate the best suited solutions to your specific needs.

We are committed towards maintaining our edge through our R&D, State-of-the-art Manufacturing and Innovative Technology setting our own standards that surpass all others. Our Research, Development and Engineering Center, is a Full-Fledged Design and Engineering Laboratory. Here is where ideas evolve into tested and perfected products to suit Industry specific needs. R & D and Manufacturing Facility are Located in the same Premise at MIDC Miraj, which is 250 Km south of Pune.

We have a Full Fledged Training Facility at MIDC Miraj Premises for Industrial Training in Automation, Instrumentation and Electronic Systems with a Full Fledged Laboratory having State-of-the-art Instruments, Equipments, PLC, DCS to simulate True Factory Conditions, and Highly Experienced Engineers & Trainers. At this facility we provide training to Factory Personnel on Instrumentation and Automation.

### Vision

To be and remain most reliable and best in class solution provider of Automation & Instrumentation needs across Industries & Sectors.

### Mission

We do and will keep on doing whatever it takes to improve Industrial Process Efficiency and Total Cost of Ownership by providing Long Lasting Instrumentation and Automation Solutions across Industries and Sectors.

### Values

Innovation  
Trust and Reliance  
Consistency

### THE YUTECH ADVANTAGE:

- In-House Automation Panel Building and System Integration.
- PLC / DCS / SCADA Software Development and Testing.
- A Dedicated Team of Engineers for Design, Drawing and Documentation.
- In-House Mechanical Engineering Workshop includes a Captive Machine Shop and Fabrication Shop.
- In-House Manufacturing of Industrial Electronic and Instrumentation Equipments.
- In-house Software Development at all Levels meaning Development in Micro Controller Assembly Language, C, C#.NET, VB.NET, SQL etc.
- A Dedicated Team of Engineers for Erection, Commissioning and Maintenance of Instrumentation and Automation Systems.
- A Dedicated Team of Service Engineers to provide 24 x7 Online Support for Remote Trouble Shooting, Software, Technical & Engineering back up for Overseas as well as Domestic Clients.
- Undertaking of Third Party Contracts for Software Development, Design, Documentation and Drawings.

### YUTECH Verticals:

- **Automation:** Undertakes Turnkey Automation Projects for Sugar, Power and Process Industries
- **Instrumentation:** Manufactures Industrial Electronic Instruments & Controls, Sensors, Electric Actuators, Isolation Products, IRIS Valves, Linear Pneumatic Cylinder based Actuators with Positioner
- **Customized Products:** Manufactures Special Purpose Machines for Food Industry and has a Captive Fabrication and Machine Shop
- **Learning Centre:** Conducts Hands on Industrial Training on Instrumentation, Automation and Embedded Electronics for Process Plant Engineers and Engineering & Technical Students

### Sugar Specific Instruments:

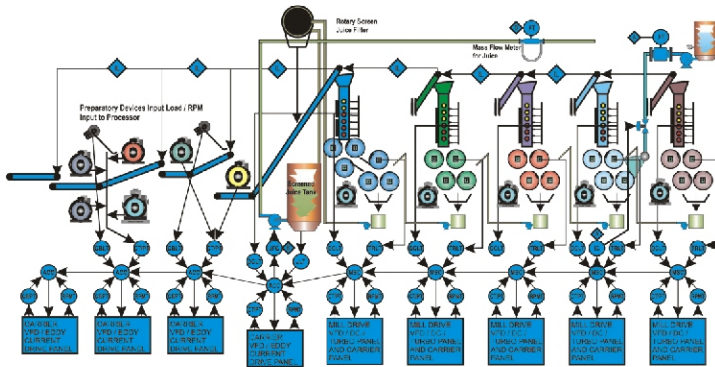
- Infra Red Type Donnelley Chute Level Sensors
- Hall's Effect Type Cane Blanket Level and Top Roller Lift Sensors
- Self Cleaning Auto Retractable RF Brix Sensors and Analyzers
- Self Cleaning Auto Retractable Conductivity Sensors and Analyzers
- pH and Conductivity Analyzers
- IRIS Type Central Opening Control Valves for Continuous Centrifugal Machine Masseccuite Intake
- Isolation Products
- Remote I/Os



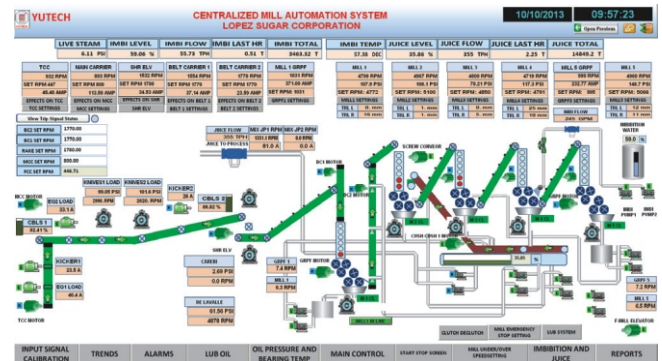
**YUTECH**

**02**

**MILL AUTOMATION**



**SCHEMATIC DIAGRAM: MILL CONTROL SYSTEM**



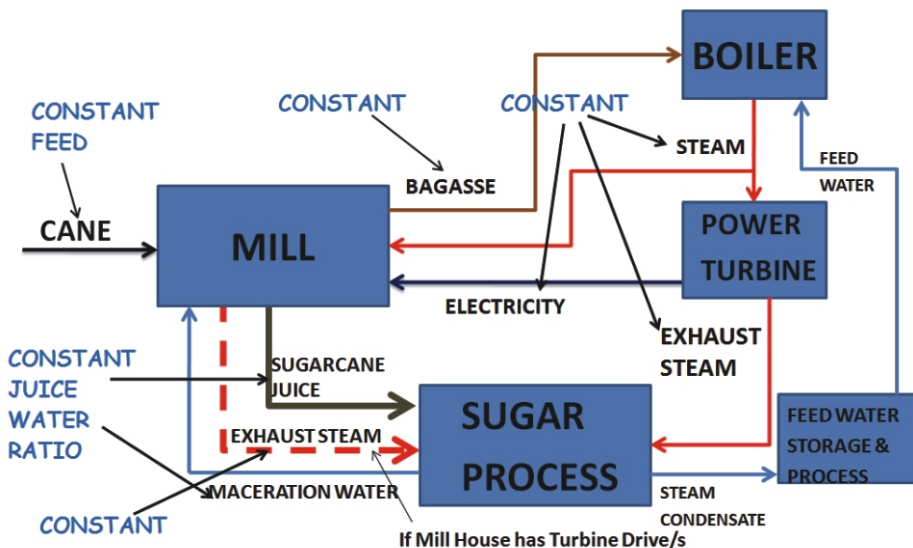
**SCREEN SHOT: MILL CONTROL SYSTEM**

**YUTECH Automation in Sugar Mill Operation Ensures the following advantages:**

- Increased Milling with the Same Equipment
- Continuous and Un-interrupted Feeding reduces Downtime and Increase Throughput
- Elimination of Choking at Preparatory Devices, Mills, Chutes or Carriers
- Maintained Juice to Imbibition Water Ratio increases Evaporation Efficiency
- Optimum Mill Speeds with respect to Loads and Levels ensure good Milling Results at all times
- Effective water saving and cutting off water flow when crushing is stopped
- Constant Juice Flow for Process ensures even loading in the Boiling House and Stabilizes and Reduces the Steam Consumption which means higher Boiling House efficiency and Bagasse Saving

**FEATURES:**

- Infra Red Type Donnelly Chute Level Sensors (We invented & are the only manufacturer of IR Sensors for Donnelly Chute Level)
- Hall's Effect Type Cane Blanket Level and Top Roller Lift Sensors
- Precision Motor Load / Pressure Sensors
- Customized Software is user friendly and the field and data inputs ensure constant loads on the Mills at all times

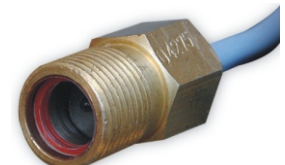


**BLOCK DIAGRAM OF MILL AUTOMATION ADVANTAGES**

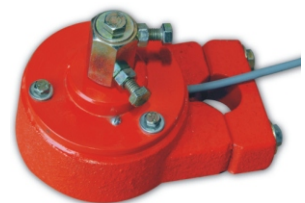
**YUTECH Mill Automation Maximizes Performance and Saves:**

**Power  
Steam  
Fuel  
Costs**

**Thereby Generates Sustained Revenues Year on Year**



**IR Type Donnelly Chute Sensor**



**Hall's Effect Cane Blanket Level Sensor**



**Hall's Effect Top Roller Lift Sensor**



### Sugar Process Automation:

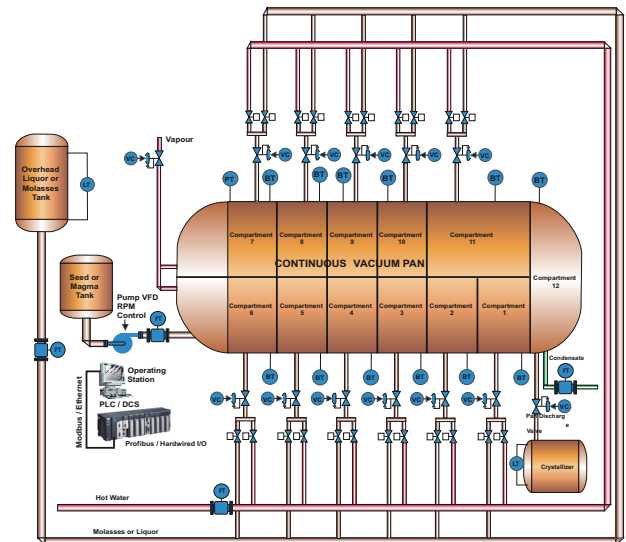
- Juice Heater Control System
- pH and Lime Dozing Automation
- Clarifier Automation
- Evaporator Automation
- Batch and Continuous Pans Automation
- Continuous Centrifugal Machine Automation
- Vertical Crystallizer Automation
- Sugar Melter Automation
- Molasses Conditioner Automation
- Superheated Wash Water System
- Pressure Reducing and De-Superheating Station Automation
- Condensor Automation
- Steam and Vapour Balancing System

### Operational Advantages of Process Automation:

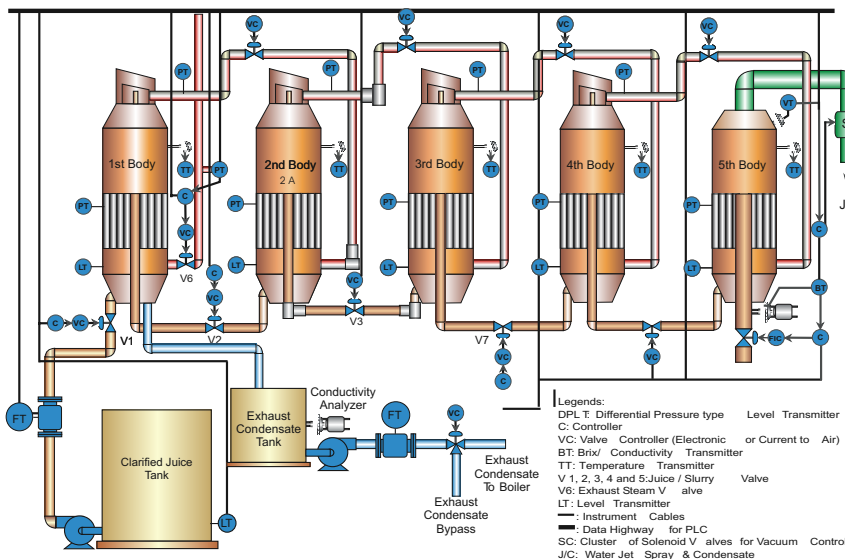
- Stabilized Shock Lime and Final pH Ensures Improvement in Juice Clarity, Stabilized Dorr pH.
- Constant Evaporator Outlet Brix Ensures smooth further Sugar Manufacturing Process.
- Evaporator Level is maintained hence Entrainment through Vapour is eliminated.
- Constant Evaporation results in Constant Vapour Generation hence better Heat Efficiency
- Pan Automations Ensure Maintained Grain Size thus better and constant Sugar Quality.
- All above advantages ensure Better Sugar Colour thus Higher Sugar Price.
- Increased Throughput in the same operation time and Optimum Capacity Utilization.
- Saves Power, Steam and Water thus Fuel Saving.
- Reduced Cost of Operation effect Substantial Economic Gains.



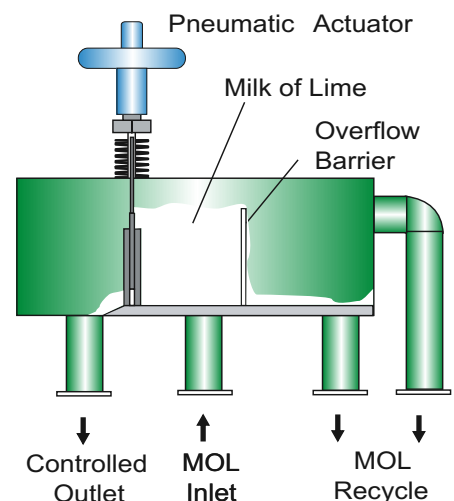
PICTURE OF YUTECH SELF CLEANING AUTO RETRACTABLE BRIX SENSOR INSTALLED ON CV PAN



SCHEMATIC DIAGRAM: CONTINUOUS VACUUM PAN AUTOMATION

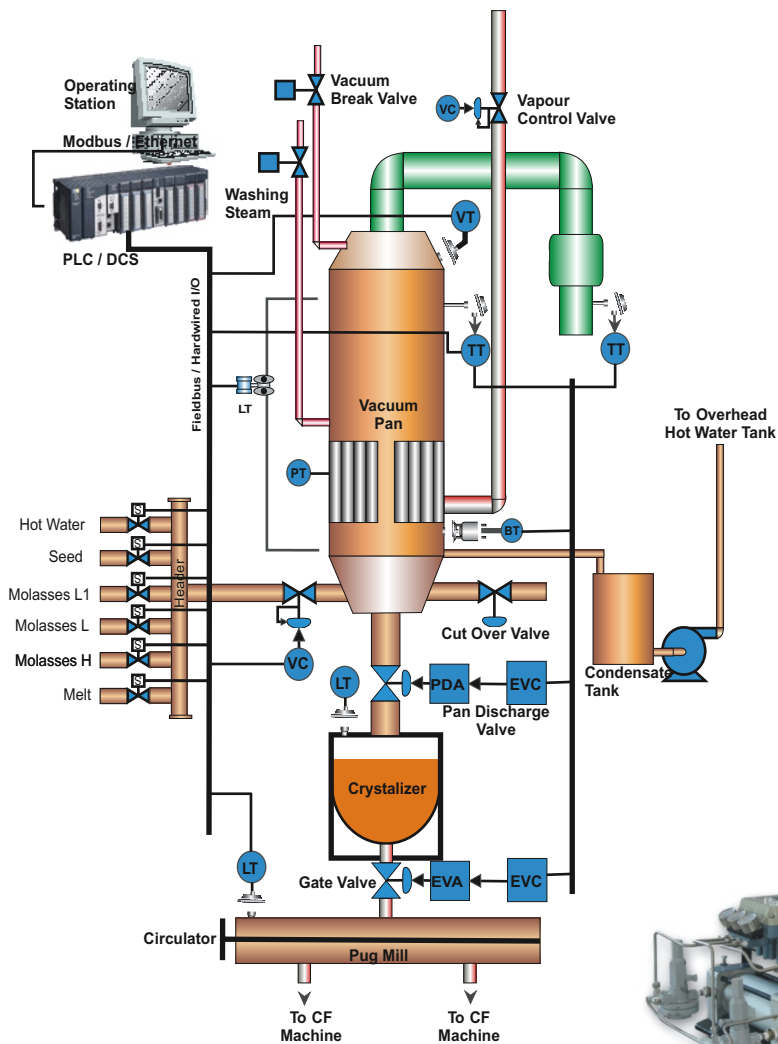


SCHEMATIC DIAGRAM: EVAPORATOR CONTROL SYSTEM

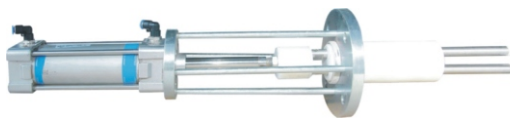


SCHEMATIC DIAGRAM: LIME PROPORTIONATOR UNIT

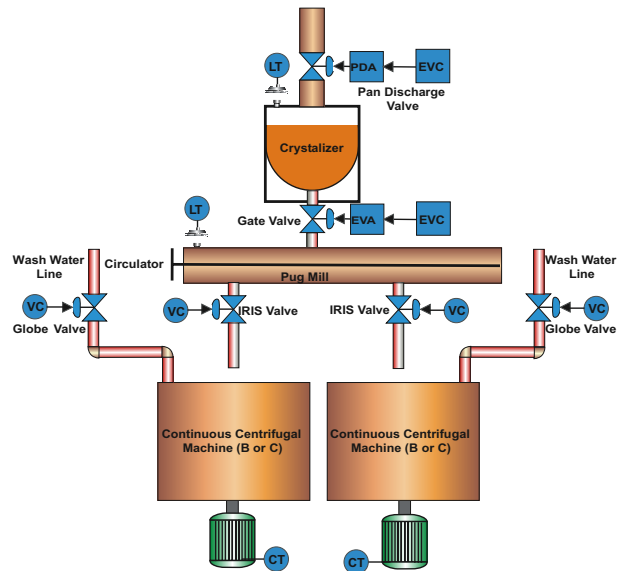




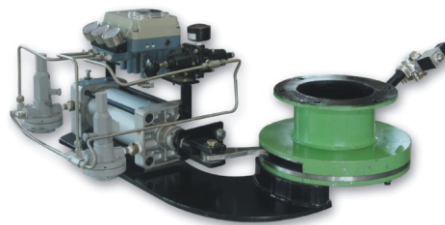
**SCHEMATIC DIAGRAM:  
BATCH PAN AUTOMATION**



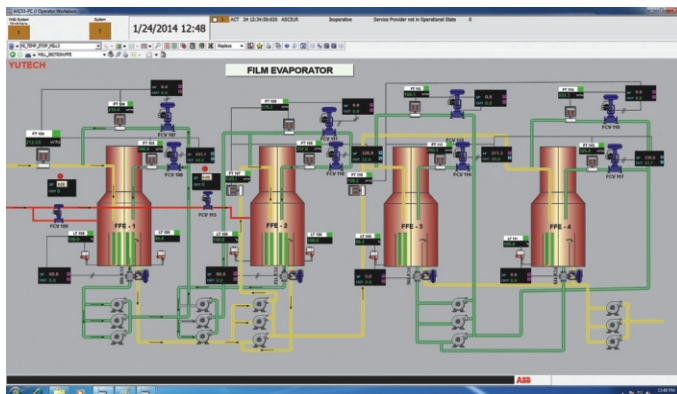
**BRIX SENSOR**



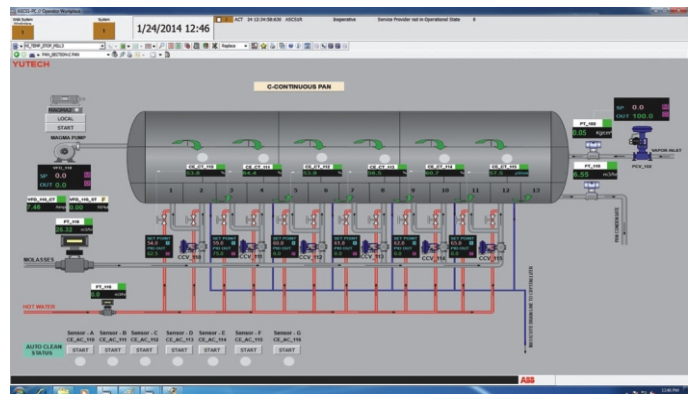
**SCHEMATIC DIAGRAM:  
CONTINUOUS CENTRIFUGAL  
MACHINE AUTOMATION**



**IRIS TYPE CONTROL VALVE INSTALLED  
ON CONTINUOUS CENTRIFUGAL MACHINE  
FOR AUTOMATIC MASSECUITE INTAKE  
WRT DRIVE LOAD**



**SCREEN SHOT : EVAPORATOR AUTOMATION**



**SCREEN SHOT : CV PAN AUTOMATION**



YUTECH has successfully executed complete Power Plant Automations based on PLC and DCS Systems of different Platforms.

### YUTECH Boiler Automation's Special Features:

#### Draft Fan Speed Algorithm:

YUTECH has developed an Algorithm to set optimum speeds for the given Load Condition to ensure the best Combustion Condition.

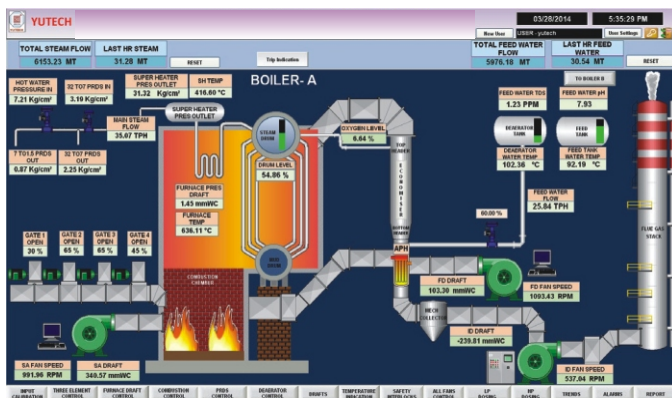
#### Boiler Load Balancing Algorithm of Two or more Boilers:

YUTECH has also developed a Special Totally Dedicated Algorithm for Load Balancing of Two or more Boilers.

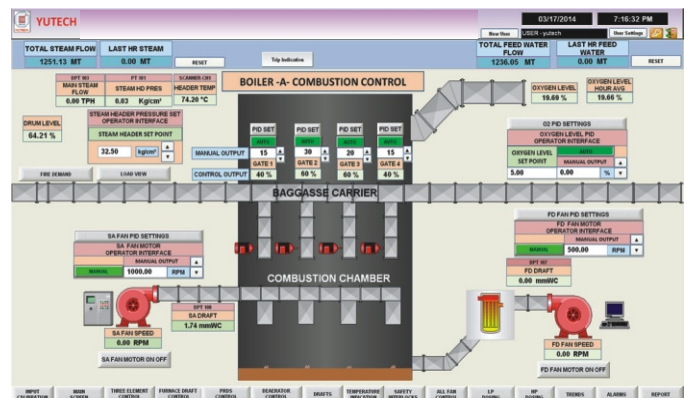
#### Result:

Optimum Combustion Saves Fuel and improves Carbon Footprint by way of reducing CO while reducing Excess Air to the Furnace thus also saving Power for Draft Fans.

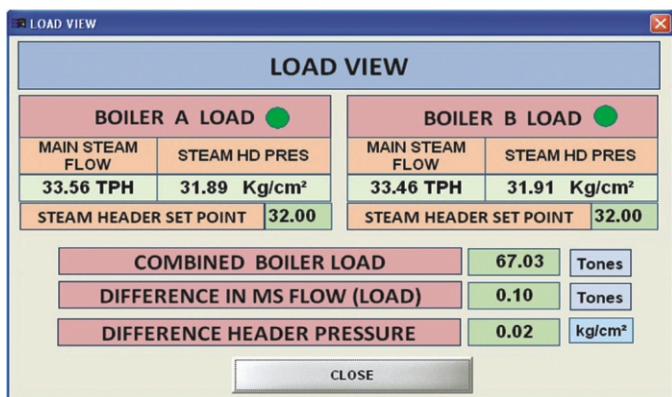
All Boilers run at exactly the same desired loads and Steam Pressures of each Boiler are always within 0.05 Bar of each other.



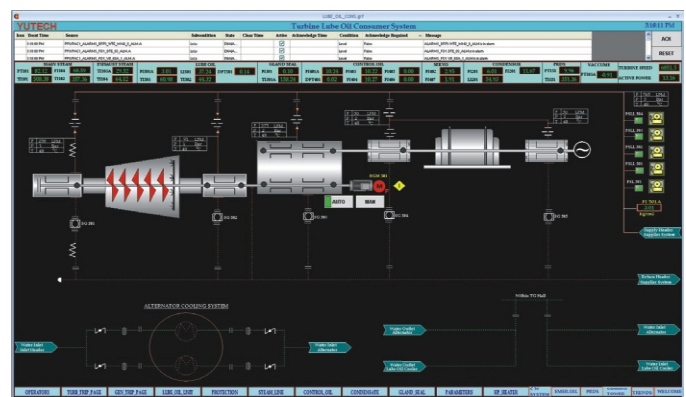
SCREEN SHOT: BOILER AUTOMATION OVERALL



SCREEN SHOT: COMBUSTION CONTROL



SCREEN SHOT: LOAD VIEW OF TWO BOILERS



SCREEN SHOT: TURBINE MONITORING

### Power Plant Automation Ensures Higher Efficiency:

- Improved Efficiency by 2-5% depending on the Plant.
- Improved Steam to Fuel Ratio due to increase in FW Temperature and increase in Boiler Efficiency (Please see FuelRatio Equation).
- Optimum Combustion Reduces Un-burnt Fuel Losses this is evident from:
  - Decrease in Oxygen and Increase in Carbon Dioxide Percentage in Flue Gas and at the same time Reduction in Excess Air Percentage.
  - Reduction in Flue Gas Carbon Monoxide Percentage.
  - Reduction in Excess Air means optimum usage of Fan Drives and thus Power Saving.
- Maintained Steam Drum Level with Pressure Compensation Ensures Optimum Steam Generation while compensating for Shrink and Swell in the Drum Level.



# YUTECH

## 05

## THE YUTECH EDGE

### Design and Custom Engineering:

YUTECH shapes technology by integrating the human dimension. YUTECH specializes in unmatched custom engineering, technical assistance, control and courteous attention.

### Calibration and Quality Assurance:

YUTECH follows a proactive customer approach by anticipating quality expectations and delivering beyond, creating new levels of quality. Our calibration standards and quality control systems and equipment are highly reliable resources that help more than fulfil our customers' needs for accuracy with appropriate certification.

### Superior Technical Support:

Expertise, professionalism and integrity drive the YUTECH technical, engineering, sales and customer service assistance.

### Extensive Warranty Coverage:

Many YUTECH products feature warranties beyond industry standards. It's our commitment and our way of expressing our gratitude to our customers. YUTECH supports its products 100% because YUTECH has the confidence in its products meeting the highest expectations.

### Green Technology:

YUTECH always designs its products to be not just customer friendly but also environment friendly and thereby fulfills its commitment to our planet. YUTECH is committed to delivering Excellence in Automation Solutions to improve Overall Plant Efficiency to save precious fuel and make our planet greener.

### Learning Centre:

YUTECH believes in spreading and sharing Knowledge and Awareness. YUTECH also believes that a Factory needs trained and learned personnel to maintain and operate Instrument Systems and Controls. Hence Our Learning Centre was established to Educate Automation and Instrumentation Engineers by Emulating True Factory Conditions. The Center Runs Courses on Application, Sensing and Automation Theories with Practical Experiments where Engineers get to feel and work on Real Instrumentation and Automation Equipment.

## WHY AUTOMATE YOUR FACTORY WITH YUTECH





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