



# **SARAL FILTRATION PVT. LTD.**

**SOLUTION PROVIDERS, ENGINEERS, & EXPORTERS OF PLANT & PROCESS EQUIPMENT'S**

**(ASSOCIATED WITH YU TECHNOLOGIES PVT. LTD. INDIA)**

## **Under One Roof Automation Solution Provider:**

### **We undertake following Automation Projects:**

- Sugar Mill Automation
- Sugar Mill Process Automation
- Sugar Mill Power Plant Automation
- Continuous Centrifugal Machine Automation using CSD or Iris Control Valve in Sugar Mill
- Sugar Mill Process Instruments
- Trunkey Sugar Mill and Process Automation
- Trunkey PLC/DCS Based Automation Projects
- Trunkey Instrumentation Projects
- Design & Engineering
- Hardware & Software Development
- Mechanical & Electronic Equipment Manufacture
- Instrumentation & Automation System Integration
- **Consultancy for Automation in other Allied Industries**

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



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OVERVIEW

## THE SARAL ADVANTAGE:

- In-House Automation Panel Building and System Integration.
- PLC / DCS / SCADA Software Development and Testing.
- A Dedicated Term 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 Equipment's.
- In-House Software Development at all level 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 Drawing.

## SARAL Verticals:

- **Automation:** Undertake Trunkey Automation Projects for Sugar, Power and Process Industries.
- **Instrumentation:** Manufactures Industrial Electronic Instruments & Control, Sensors, Electric Actuators.
- **Customized Products:** Manufactures Special Purpose Machine for Food Industry and has a Captive Fabrication and Machine Shop.

## 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 Analysers
- Self-Cleaning Auto Retractable Conductivity Sensors and Analyzers
- pH and Conductivity Analyzers
- IRIS Type Central Opening Control Valves for Continuous Centrifugal Machine Massecuite Intake
- Isolation Products
- Remote I/Os

## SARAL 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



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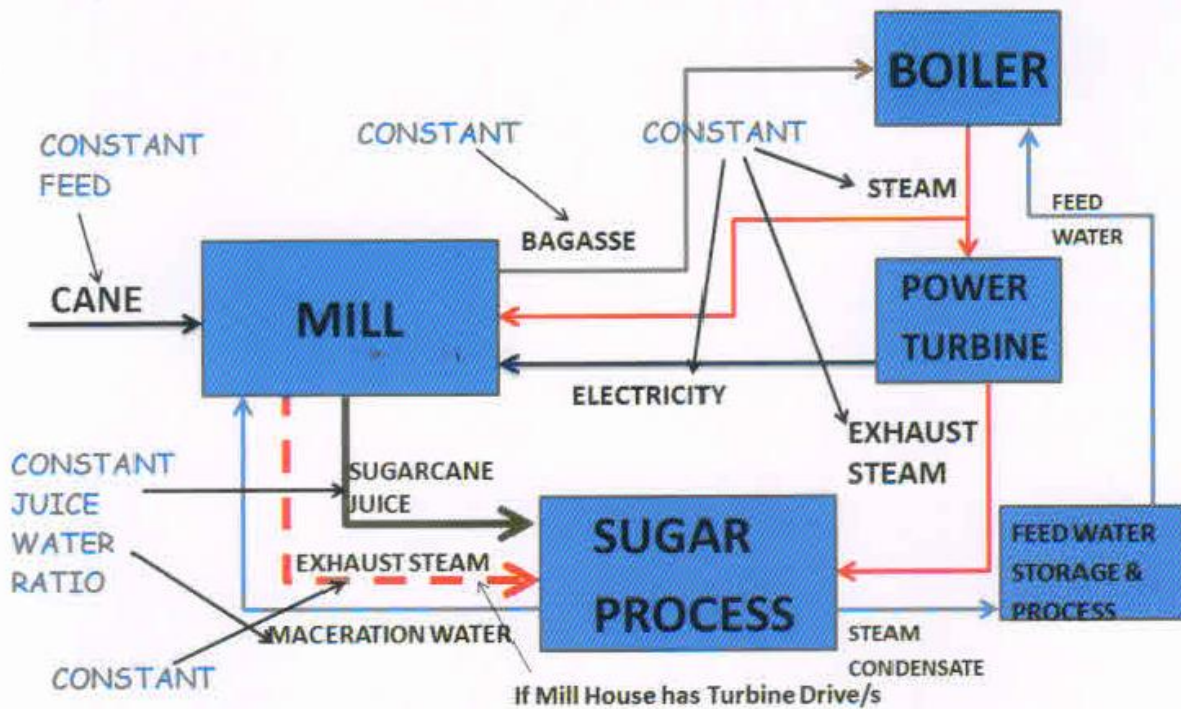
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02

MILL AUTOMATION

## FEATURES:

- Infra-Red Type Donnelly Chute Sensors (We invented & are the only manufacturer of IR Sensors for Donnelly Chute Level:
- Ratiometric Top Roller Lift Sensors
- Precision Motor Load / Pressure Sensors
- Customized Software is user friendly and the field data input ensure constant loads on the Mills at all times



BLOCK DIAGRAM OF MILL AUTOMATION ADVANTAGES

## SARAL Mill Automation Maximizes Performance and Saves:

- Power
- Steam
- Fuel
- Costs

**Thereby Generates Sustained Revenues Year on Year**



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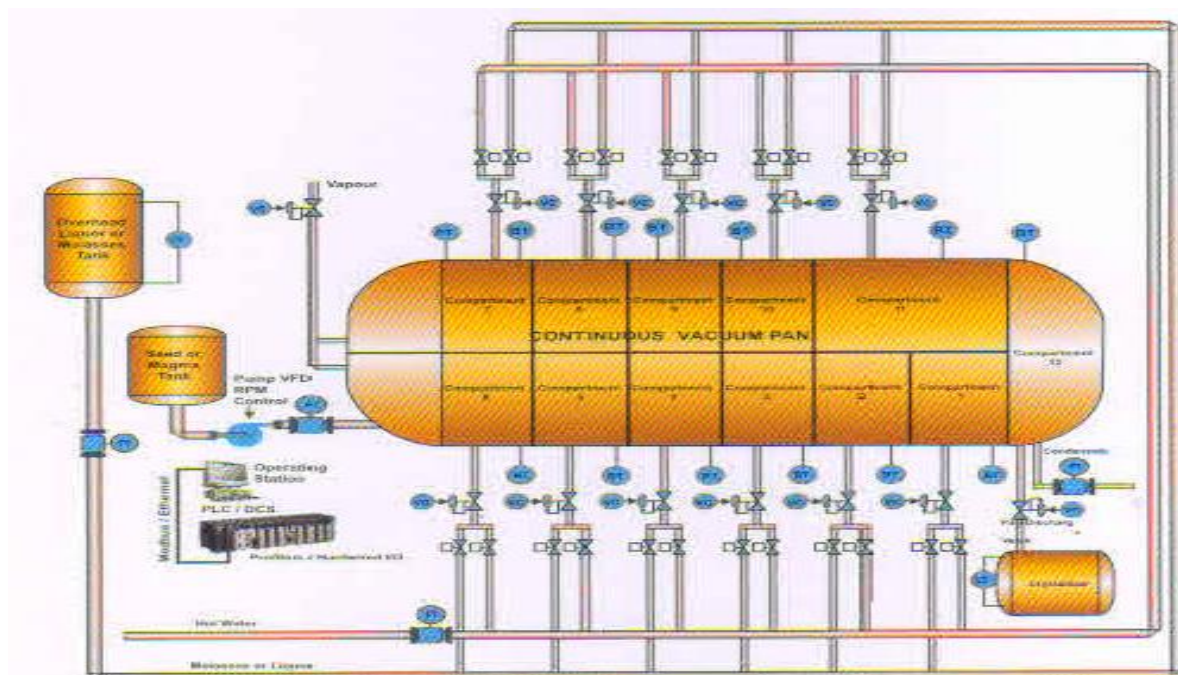
SUGAR PROCESS AUTOMATION

## 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 Advantage of Process Automation:

- Stabilized Shock Lime and Final pH Ensures Improvement in Juice Clarity, Stabilized Dorr pH.
- Constant Evaporator Outlet Brix Ensure 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 Automation 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.



**SCHEMATIC DIAGRAM: CONTINUOUS VACUUM PAN AUTOMATION**





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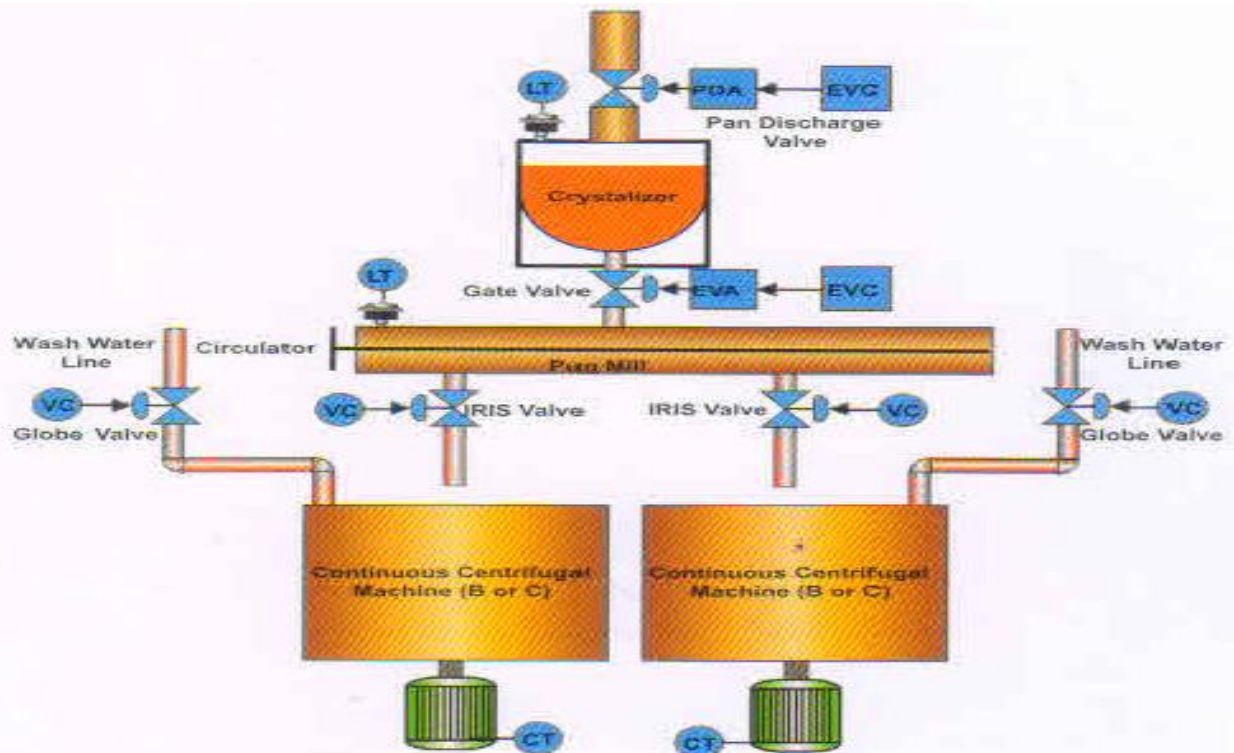
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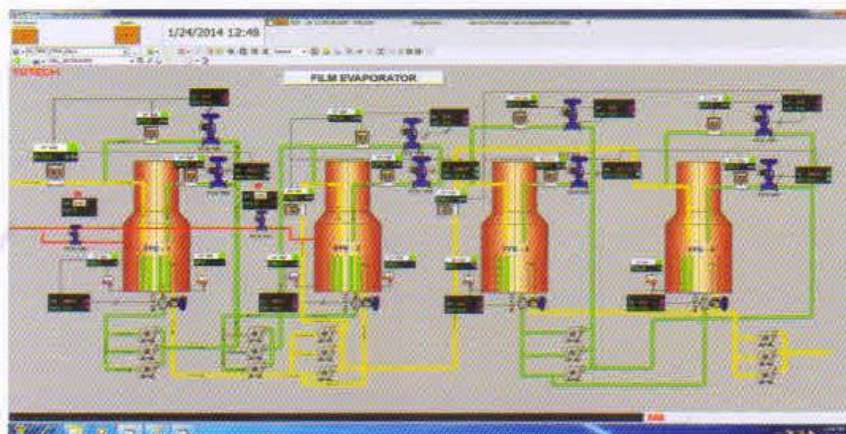
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SUGAR PROCESS AUTOMATION



**SCHEMATIC DIAGRAM:  
CONTINUOUS CENTRIFUGAL  
MACHINE AUTOMATION**



**SCREEN SHOT : EVAPORATOR AUTOMATION**



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04

POWER PLANT AUTOMATION

## Saral Boiler Automation's Special Features:

### Draft Fan Speed Algorithm:

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

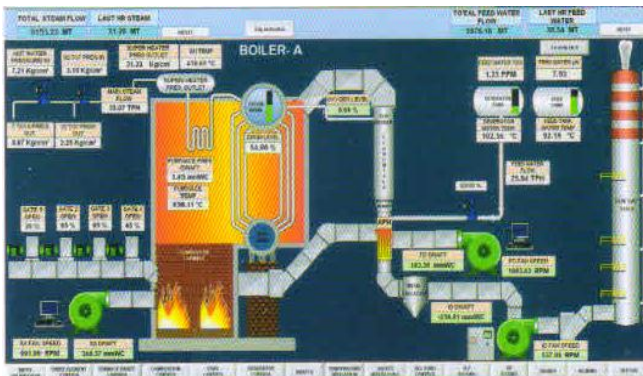
### Boiler Load Balancing Algorithm of Two or more Boilers:

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

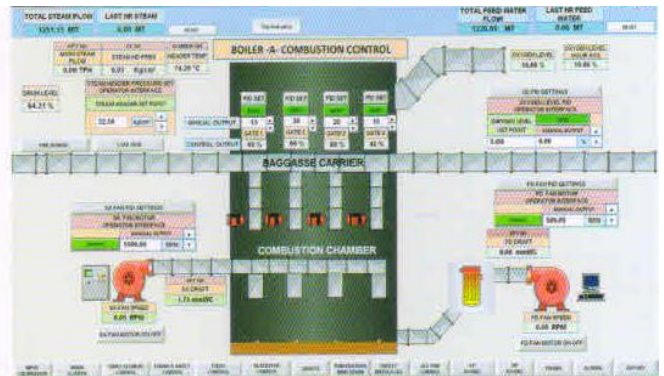
### Result:

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

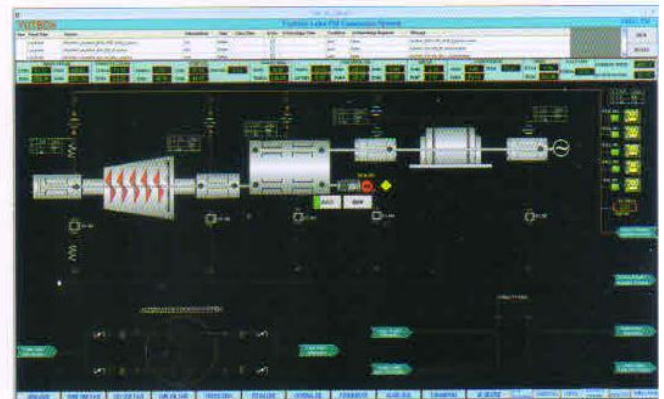
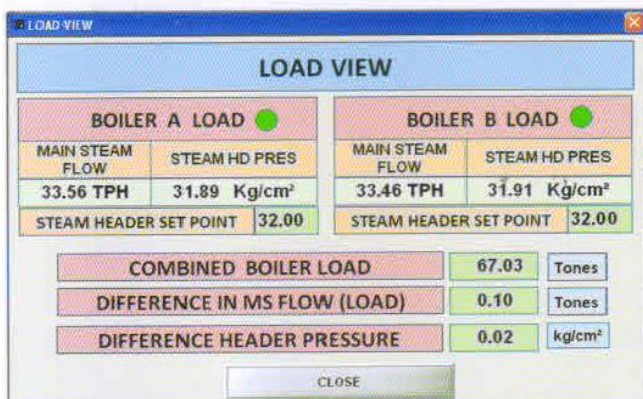
All Boilers run at exactly the same desired load and Steam Pressures of each Boiler are always within 0.05 Bar of each other.



SCREEN SHOT: BOILER AUTOMATION OVERALL



SCREEN SHOT: COMBUSTION CONTROL







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THE SARAL EDGE

### Calibration and Quality Assurance:

- **SARAL** follows a proactive approach by anticipating quality expectation 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 costumers' need for accuracy with appropriate certification.

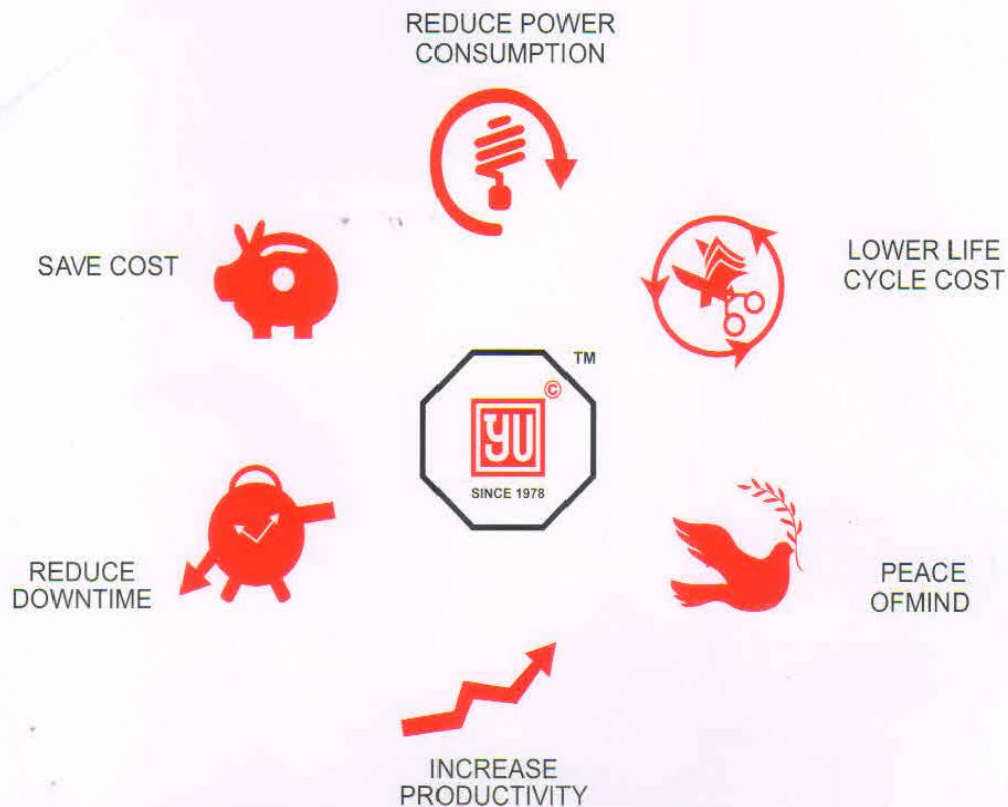
### Superior Technical support:

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

### Green Technology:

- SARAL always designs its products to be not just customer friendly but also environment friendly and thereby fulfils its commitment to our planet Efficiency to save precious fuel and make our planet greener.

## WHY AUTOMATE YOUR FACTORY WITH YUTECH





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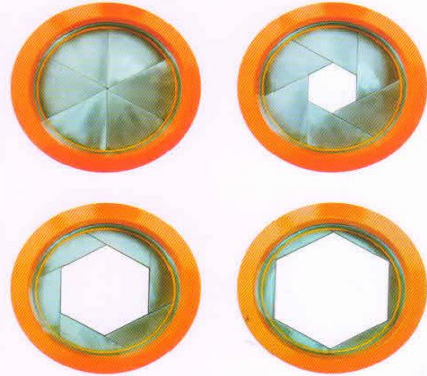
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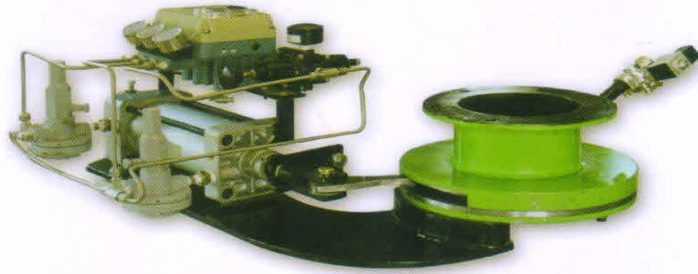
Continuous Centrifugal Machine Automation  
using CSD or Iris Control Valve



YUTECH CSD Pneumatic Control Valve  
Automatically Feeds Continuous Centrifugal Machine



YUTECH CSD Valve opens in a Hexagonal  
shape through the Centre



## Continuous Centrifugal Machine Automation Advantage:

- Power, Steam and Water Saving due to constant controlled intake
- Machine Load Current Automatically Regulated CSD Valve for Masecuite Intake in PID Action
- Machine always runs on Preset Load Avoiding Under Capacity Performance or Overload
- Avoid Masecuite Overflow in all stages and Eliminate Sugar Wastage and Machine Downtime
- Optimum Capacity Utilization means More Production Consistently with the same Equipment and within the same Time-Frame
- **Reduce Cost of Ownership**
- **Save Money and keep Consistently Creating Wealth**

## Continuous Centrifugal Machine Automation Advantage:

- Highly Accurate Sensing of Continuous Centrifugal Machine's Drive Motor Load
- Excellent High Resolution PID Control Action
- Maintained Drive Load Current as per Preset Value
- Constantly Controlled Intake of Masecuite with respect to Drive Load Current
- No Spilling or Overloading
- Valve Closes completely in the event of Drive Trip
- Heavy Duty Rugged CSD or Iris Valve Construction to Work in Shock and Vibration
- Heavy Gauge SS CSD or Iris Valve Internals designed to operate at Heavy Loads without Deformities





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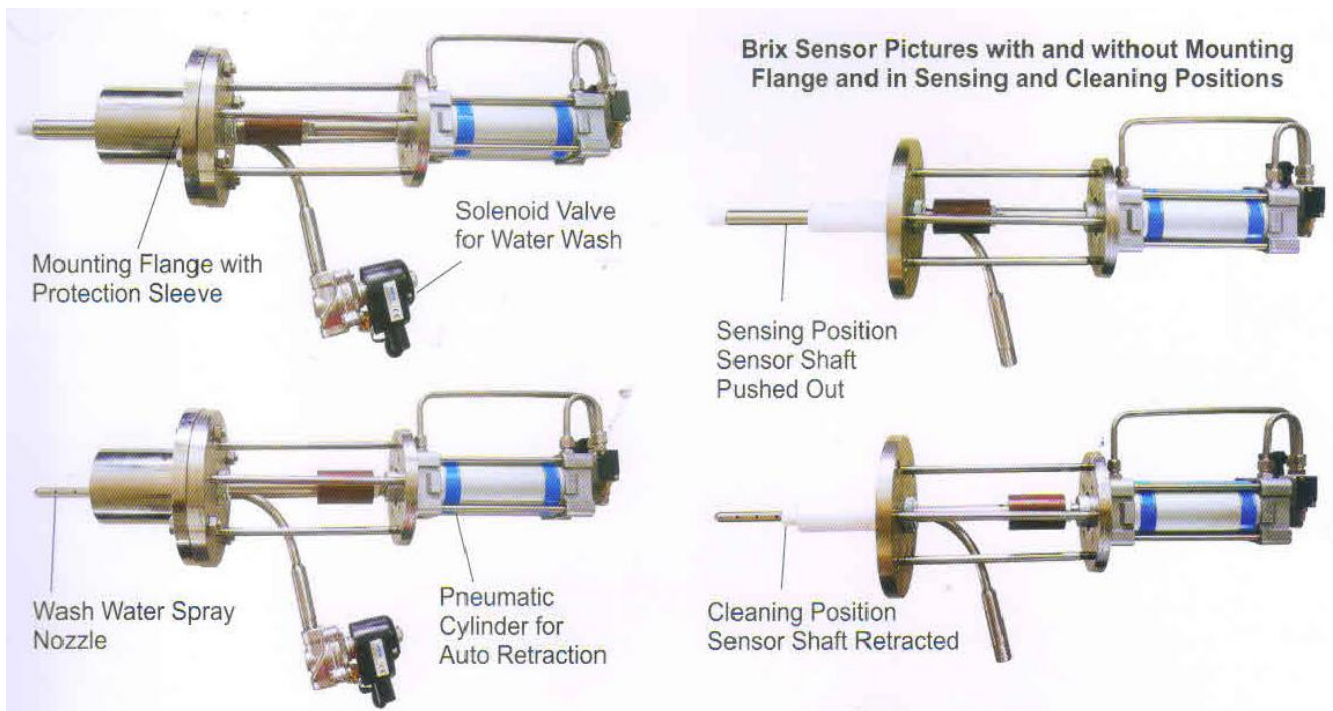
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SARAL SUGAR MILL  
PROCESS INSTRUMENTS

## BRIX ANALYZER



### Brix Analyzer Features:

- Brix Equation with Built-in Auto Purity Compensation Algorithm derives Brix Accurately in Solutions of varying Purity
- Automatic Temperature Compensation
- Easy Calibration and Re-calibration while working
- Built-in Self Cleaning and washing Routine with adjustable cleaning interval
- 4-20mA Analog Output for Controls
- 4-20mA Analog PID Controlled Output with Built-in Auto / Manual Station(Optional)
- Modbus RTU on RS 485 and TCPIP (Ethernet) Communication Protocol
- On-Line Calibration Software SARAL-Access App-BA provides access to Brix Analyzer for Calibration, Compensation and Online Remote Trouble shooting



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## Brix Analyzer Applications:

### Usage in Sugar Industry for Measurement of:

- Masecuite Brix during Crystallization in **Batch & Continuous Vacuum Pans**
- Masecuite Brix in **Evaporators, Sugar Melters and Molasses Conditioners**
- Masecuite Brix in **Open Pans and Boiling Vessels for Jaggery or Muscovado Production and in Khandsaris**
- Sugar Cane Juice Brix in **Evaporators and Clarifiers**

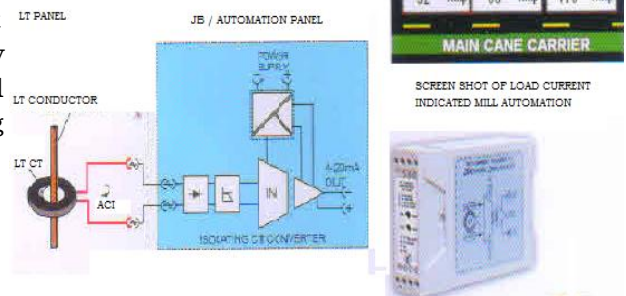
### Usage in Distilleries and Breweries for Measurement of:

- Brix of Liquor / Molasses / Juice / Solutions in **Evaporators, Fermentation and Maturation Vessels**

## ISOLATING LT & HT CURREMNT TRANSMITTER:

Product Code: A-ISO-DC-DT-C1-S, A-ISO-AC-HTCT-C1-M, A-ISO-DC-HTCT-C1-M, A-ISO-AC-LTCT-C1-M and A-ISO-DC-LTCT-C1-M

Isolating CT Converter senses LT / HT CT's Current And converts it to standard 4-20mA while Galvanically Isolating this signal. Used to accurately sense Mill Preparatory Device Loads while always protecting The DCS /PLC /Controller from the High Voltage side. Very Reliable and has a Huge installation base.



## TEMPRATURE TRANSMITTER, INDICATOR:

Product Code: A-2W-RT-C1-HM, A-2W-RT-C-S, A-AC-U-C1-LD-PM-48

Temperature Sensing, Indication, Control, Transmission Products are Available in various options like Isolating, Non Isolating , Head Mounted, Indicators, Relay Output, 4-20mA Output, 2W Transmitters, details please download Temperature Product Datasheet from our Website





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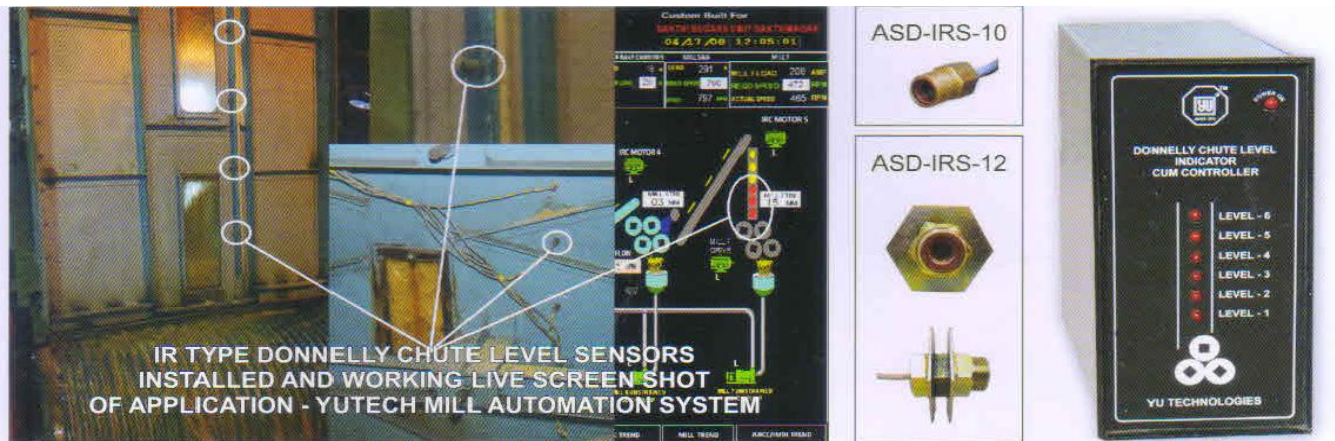
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SARAL SUGAR MILL  
PROCESS INSTRUMENTS

## IR TYPE DONNELLY CHUTE SENSOR, INDICATOR AND TRANSMITTER:

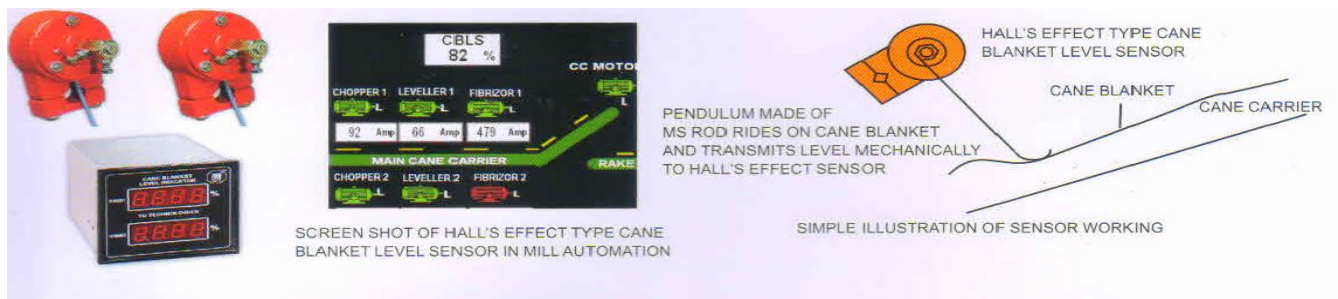
Product Code: ASD-IRS-10 OR 12 AND ASD-DCLIT-IR-1005-1-6/8/12/15



- Sensing of Cane Bagasse Level in chute by Infra-Red Technology
- 100% True Level Detection as IR Senses through Dirt, Juice Films Bagasse Powder, Juice Mist, Water etc in the Donnelly Chute
- Built-in Raining Bagasse Compensation hence is not affected by Continuously falling Bagasse.
- Water and Ingress Protected Enclosure suited for Operation in Harsh Environment
- ASD-IRS-12 is developed for Level Sensing at temperatures Between 70 and 90° C.
- No False Level Detections
- IR Light is known for Deep Penetration and hence a Natural Choice for this Critical Sensing
- YUTECH's founder Mr. Arun Dalvi is original inventor Of this technique having invented it way back 1986 And has been it ever since.
- More than 400 Sugar Mills YUTECH IR Sensor and Transmitters in India, Asia Pacific, West Asia and the African Continent

## HALL'S EFFECT TYPE CANE BLANKET LEVEL SENSORS, INDICATOR AND TRANSMITTER:

Product Code: ASD-HE-CBLS-10 AND ASD-HE-CBLIT-1005-1-2



- Sensing of Cane Level in Carrier by Hall's Effect Technology Which uses Electromagnetic Principle hence sensing and And Transmission is contactless
- Pendulum riding on Care Blanket Transmits the level Mechanically To Sensor.
- 100% True Level Detection through Shocks and Vibrations
- Extremely Rugged and heavy Duty Enclosure Protects the Sensor Against all external abuse of being hit by several flying cane pieces
- No False Level Detections
- Water and Ingress Protected Enclosure
- YUTECH invented this original Technique of lift Sensing way back in 1992 and upgraded the Sensor To Hall's Technology in 2006
- More than 400 Sugar Mills use YUTECH CBL Sensor And Transmitters in India, Asia Pacific, West Asia and the African Continent





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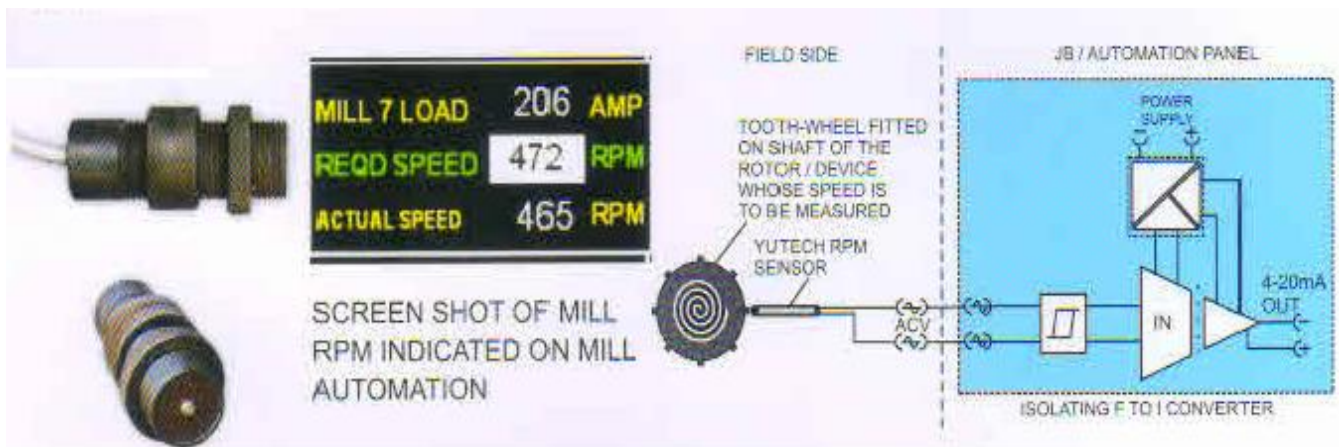
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SARAL SUGAR MILL  
PROCESS INSTRUMENTS

## RMP SENSOR INDICATOR TRANSMITTER:

Code: ASD-RPMS-1005-MS & A-ISO-DC-F-C1-LD-PM

Inductive RPM Sensors Generates an Electric Pulse when a Tooth from the Tooth-Wheel passes within its proximity. Thus generating a frequency which is directly proportional to the RPM of the Shaft whose speed is to be measured. This Frequency is given to the RPM Indicator / F to I Converter which converts it to 4-20mA while Galvanically Isolating the Signal.



## Other Products:

- pH Analyzer
- Conductivity Analyzer
- Draft Range Pressure Transmitters & Vacuum Transmitters
- Isolation Barriers and Isolating Converters
- Signal converters
- Auto/Manual Stations
- Flame Detectors
- Pneumatic 3-Way Valves
- Pneumatic Lime Proportionator Unit
- Trunkey PLC/DCS Based Automation Projects
- Trunkey Instrumentation Projects
- Trunkey Sugar Mill and Process Automation
- Jumbo Displays and Indicators
- I/O Cards (Modbus RTU/Modbus TCP/IP/Ethernet IP)
- Pneumatic Concentric Spilt Diaphragm Type (Iris) Control Valve
- Temperature Transmitters and Indicators
- Tank Level Transmitters