

BATCH PAN AUTOMATION

BASED ON YUTECH FLUID-DENSITY-BRIX ANALYZER CUM CONTROL SYSTEM AND MOTORIZED FLUID-DENSITY SENSOR



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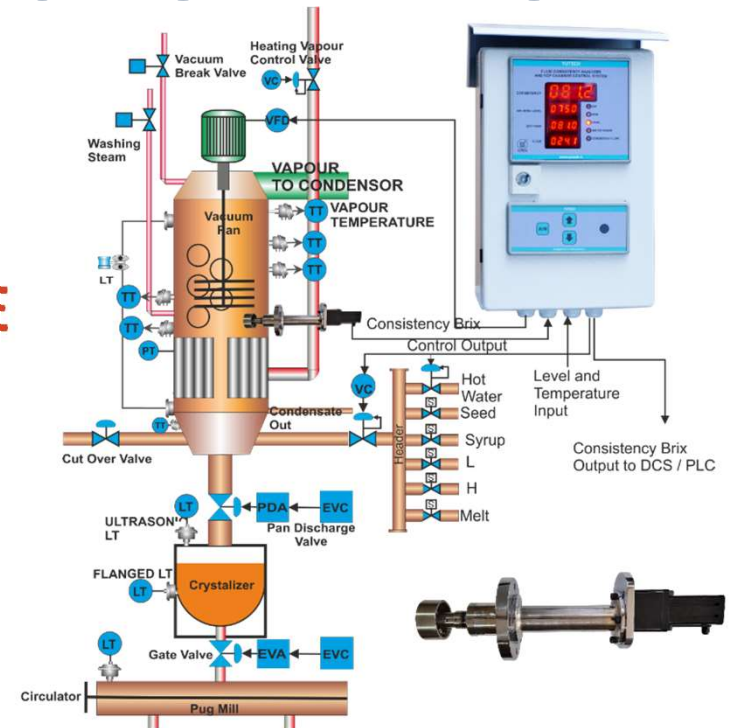
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YUTECH FLUID-DENSITY-BRIX ANALYZER CUM CONTROL SYSTEM AND MOTORIZED FLUID-DENSITY SENSOR BASED BATCH PAN AUTOMATION

PAN BOILING ART RECREATED AS SCIENCE

YUTECH

Servicing the Sugar Industry since 1978



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YUTECH FLUID-DENSITY TYPE BRIX ANALYZER AND CONTROL SYSTEM

BATCH PAN AUTOMATION

ADVANTAGES OF YUTECH SENSING AND CONTROLS



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TANGIBLE BENEFITS YUTECH BATCH PAN AUTOMATION:

- REDUCTION IN STRIKE TIME BY 10 TO 15%. (Say 150 Minutes Strike Time is reduced to 135 or 120 Minutes).
- INCREASE IN NUMBER OF PAN STRIKES (Per Strike Time Saved is now available for more Pan Strikes).
- NO FALSE GRAIN FORMATION.
- NO POCKET FORMATION.
- NO WATER WASTAGE.
- HUGE STEAM AND WATER SAVING.
- EXCELLENT SUGAR COLOUR AND QUALITY.
- **INCREASED PROFITABILITY WITH ROI OF 3-4 MONTHS PER PAN.**

INTANGIBLE BENEFITS:

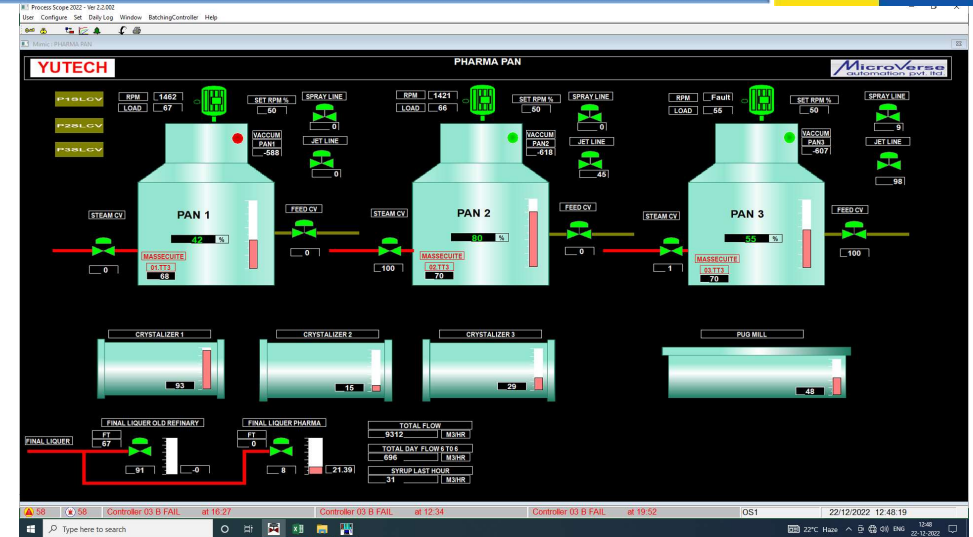
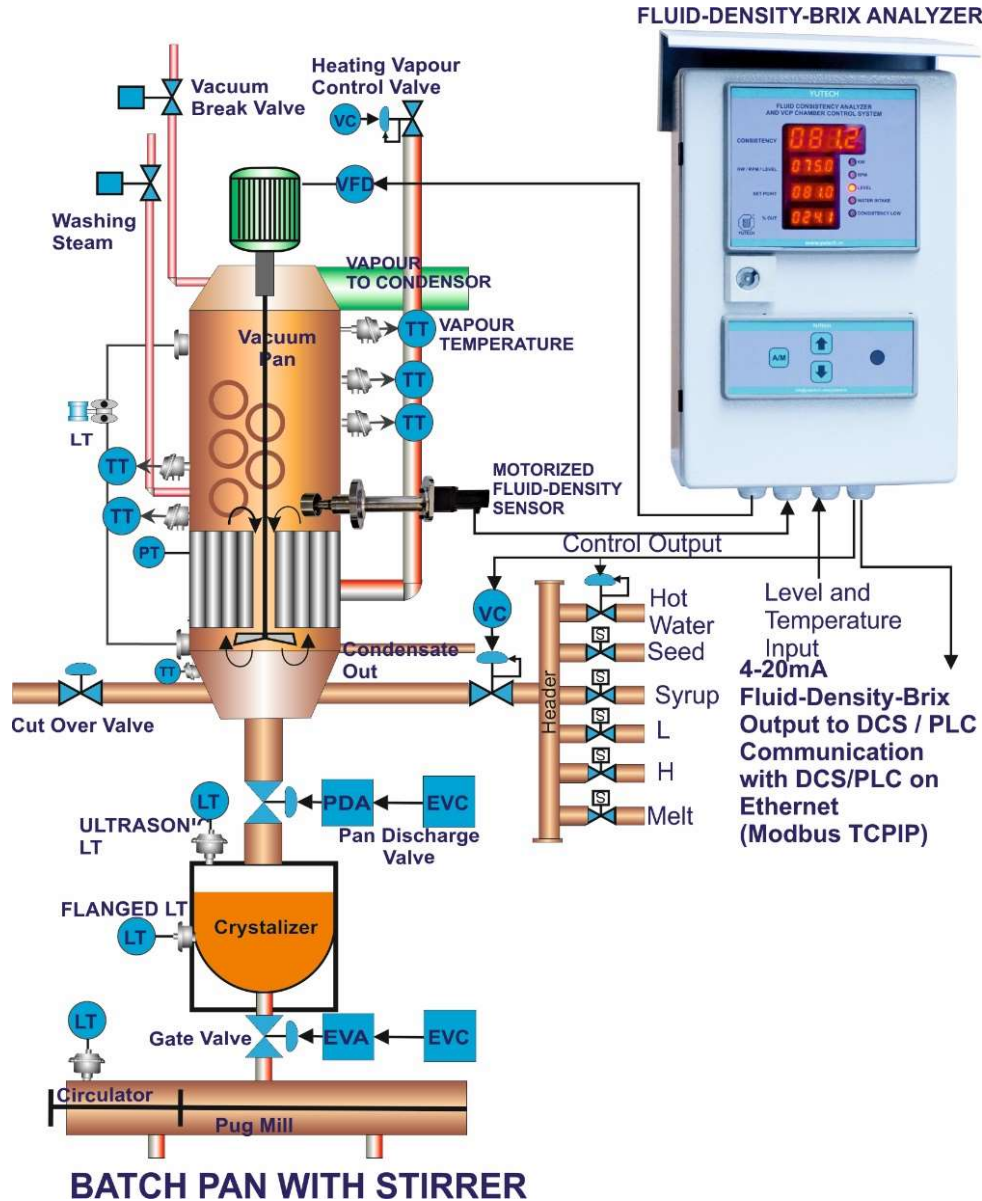
- REDUCED COSTS AND REWORK IN TERMS OF SPILT MATERIAL MELTING AND BOILING AGAIN IS ELIMINATED.
- TIME WASTAGE IS COMPLETELY AVOIDED.
- REDUCED EQUIPMENT LOAD AND MAXIMIZED CAPACITY UTILIZATION IN PANS AND CENTRIFUGAL MACHINES.
- BETTER PURGING AND LOWER LOADS ON CENTRIFUGAL MACHINES.

PLEASE ASK FOR MILL, PAN AND CENTRIFUGE ECONOMIC SHEETS FOR YOUR SUGAR PLANT.

YUTECH FLUID-DENSITY-BRIX ANALYZER CUM CONTROL SYSTEM AND MOTORIZED FLUID-DENSITY SENSOR BATCH PAN AUTOMATION- BATCH PAN CONTROLS SCHEMATIC AND SCREENSHOT



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SCREEN SHOT: BATCH PAN AUTOMATION

BATCH PAN AUTOMATION:

- FLUID-DENSITY-BRIX SENSING AND MATERIAL / WATER INTAKE CONTROL
- VARIABLE BRIX SET-POINT AS PER PAN LEVEL
- VFD SPEED CONTROL AS PER PAN LEVEL
- TEMPERATURE SENSING THROUGHOUT THE PAN TO ENSURE UNIFORM TEMPERATURE INSIDE PAN BODY
- BATCH COMPLETE INDICATION AND DROP SUGGESTION
- STANDALONE SYSTEM OR PLC / DCS BASED SYSTEM

YUTECH FLUID-DENSITY TYPE BRUX ANALYZER AND CONTROL SYSTEM

BATCH PAN AUTOMATION

ADVANTAGES OF YUTECH SENSING AND CONTROLS



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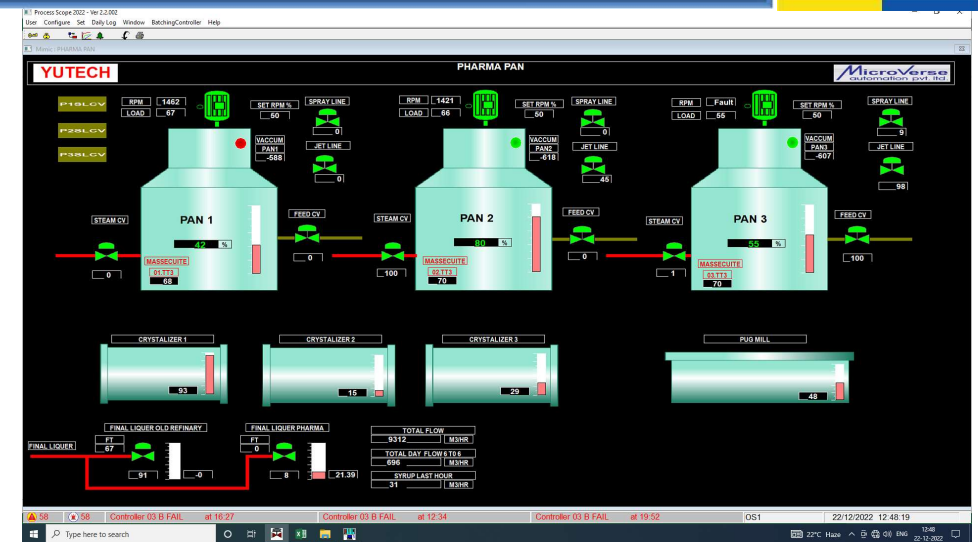
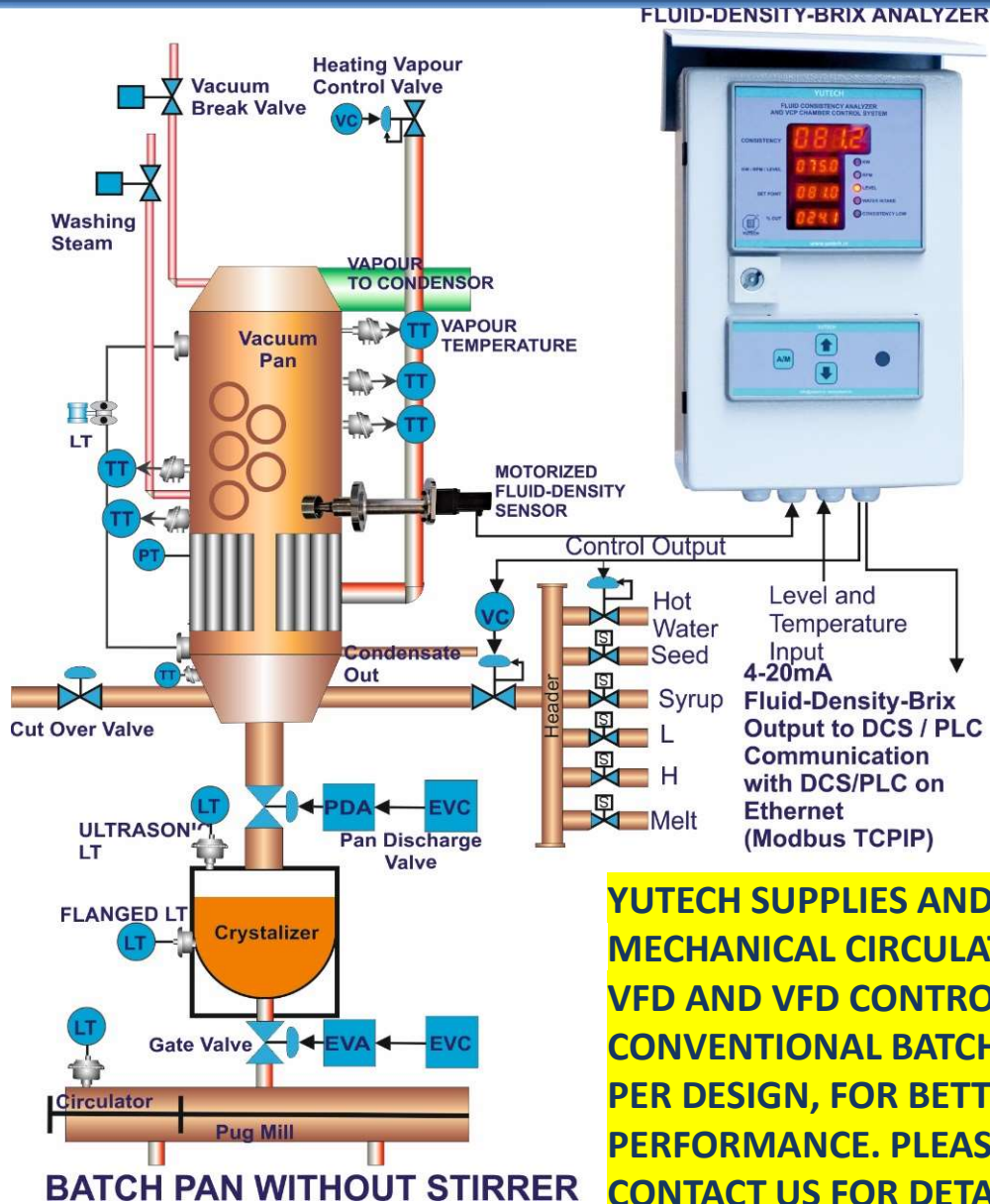
- Pan Boiling accounts for roughly 30-40% of the Sugar Manufacturing Process Energy needs. **YUTECH Batch Pan Control System** saves a huge amount of Energy in terms of Steam / Vapour. This can be Quantified by Steam and Vapour Condensate Measurement.
- Conventional Pan Boiling is too dependent on Pan-man, over the years Pan Boiling has become more of an Art than Science and this Art is being lost. **Correct Brix Sensing, Co-ordinated Temperature and Vacuum Controls as per Tables assists in Creating Excellent Pan Boiling Conditions.** Besides the Brix is always a very big point of contention between the Pan-man and the Chemist. **YUTECH Fluid-Density-Brix Analyzers** solve this problem and give true Brix Readings in all Masseccutes / Syrups at all given times **YUTECH Batch Pan Control Algorithm** creates **Excellent Pan Boiling Conditions.**
- Human Attention Span has its own limitations and the Pan Operator cannot always be fully attentive, this sometimes results in Over Thickening of the Masseccute leading to Water Addition for Dilution. Water Addition when done other than in Grain Stabilization Stage is a **PURE WASTAGE OF WATER AND OF HEATING STEAM.** **YUTECH Fluid-Density-Brix Analyzers** and **YUTECH Batch Pan Control Algorithm** address this issue **AND EFFECT HUGE WATER AND STEAM SAVINGS.**
- YUTECH Fluid-Density-Brix Sensing does not involve any Complicated Technologies like Microwave or RF or Conductivity or Torque sensing. YUTECH Motorized Fluid-Density Sensor measures the Power required by the Motor to agitate and stir the Masseccute / Syrup. This Sensed Power is not linear and is converted into Brix using **YUTECH Fluid-Density-Brix Equation** which is a set of Complex Mathematical Formulae which linearizes the Power and Converts it into Brix. It further **Compensates for Pan Level and Temperature.**
- **YUTECH Batch Pan Control Algorithm** is based on years of experience and interactions with numerous Pan Operators, Chemists, Process Managers, and Engineers in a vast number of Sugar Factories.
- Steam Economy norms have reduced the Pan Boiling Temperatures to about 90oC or lower, which has substantially reduced the Steam Consumption. However, the Flip Side of this, is Lower Natural Circulation which leads to many Problems like False Graining, and Pocket Formation. **YUTECH** insists on Mechanical Circulators to restore the Circulation and also on Circulator Speed Variation as per Process Conditions and Temperature to ensure that Material is actually forced to Circulate. **Thus, Ensuring NO FALSE GRAIN OR POCKET FORMATION.**

YUTECH FLUID-DENSITY-BRIX ANALYZER CUM CONTROL SYSTEM AND MOTORIZED FLUID-DENSITY SENSOR

BATCH PAN AUTOMATION- BATCH PAN CONTROLS SCHEMATIC AND SCREENSHOT



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SCREEN SHOT: BATCH PAN AUTOMATION

BATCH PAN AUTOMATION:

- FLUID-DENSITY-BRIX SENSING AND MATERIAL / WATER INTAKE CONTROL
- VARIABLE BRIX SET-POINT AS PER PAN LEVEL
- VFD SPEED CONTROL AS PER PAN LEVEL
- TEMPERATURE SENSING THROUGHOUT THE PAN TO ENSURE UNIFORM TEMPERATURE INSIDE PAN BODY
- BATCH COMPLETE INDICATION AND DROP SUGGESTION
- STANDALONE SYSTEM OR PLC / DCS BASED SYSTEM

YUTECH SUPPLIES AND INSTALLS MECHANICAL CIRCULATOR WITH VFD AND VFD CONTROLS ON CONVENTIONAL BATCH PANS AS PER DESIGN, FOR BETTR PAN PERFORMANCE. PLEASE CONTACT US FOR DETAILS.

YUTECH FLUID-DENSITY TYPE BRIX ANALYZER AND CONTROL SYSTEM

BATCH PAN AUTOMATION



YUTECH approaches Batch Pan Automation from the Process Point of View, not a typical Automation Perspective.

We aim to achieve maximum throughput in the same Batch Time by properly controlling process parameters to improve process dynamics, resulting in consistent maximum capacity production, with the best possible grain size and sugar quality. The following Procedures are performed in a Controlled Manner:

- Completely or Partially Automated Batch Operations starting with the START Button press.
- Vacuum Valves Open Signal and/or Indication generated automatically. Valves will open Automatically if Control Valve is installed else Pan Attendant will open the Valve Manually after seeing the Vacuum Valve OPEN Indication / Alarm.
- Automatic Intake of Molasses / Syrup / Water as per Level and Fluid-Density-Brix Set Point.
- Stirrer or Mechanical Circulator (If installed) will start automatically on achieving a pre-set level. Stirrer Speed is varied as per pre-set Pan Level (WE RECOMMEND CIRCULATOR BE FITTED WITH VFD FOR HIGHER THROUGHPUT AND EXCELLENT RESULTS ESPECIALLY FOR A MASSECUITE PANS).
- Controls will automatically switch to CONCENTRATING Mode on achieving pre-set level and the Vacuum will be adjusted accordingly to the pre-set value.
- Steam / Heating Vapour Valves Open Signal and/or Indication generated automatically. Valves will open Automatically if Control Valve is installed else Pan Attendant will open the Valve Manually after seeing the Steam/Vapour Valve OPEN Indication.
- Fluid-Density-Brix Analyzer senses the Brix and YUTECH Fluid-Density-Brix Logic takes over at this point to Control Seed / Syrup / Magma / Molasses Intake and achieve Grain Stabilization.

YUTECH FLUID-DENSITY TYPE BRIX ANALYZER AND CONTROL SYSTEM

BATCH PAN AUTOMATION



YUTECH Batch Pan Automation Routine Continued.....

- This intake is with respect to Fluid-Density-Brix and Concentration Time.
- Fluid-Density is sensed by YUTECH Motorized Fluid-Density Sensor and YUTECH Fluid-Density-Brix Analyzer combination. Masseccuite Density-Brix Control with respect to Level is a part of Consistency Logic which is in effect throughout the Build-up process.
- When Max level is reached and Fluid-Density-Brix grows to the preset value, an Indication with an Audio-Visual Alarm is given, after seeing this Alarm and confirming the process conditions and parameters, the Operator will initiate the Pan Drop / Cut-Over operation.
- Automatic or Informed-Manual Vacuum and Steam Closure and Transfer of Material to Other Pan / Seed Tank / Crystallizer can be made, as per Pan Type and Requirement.
- Wash Routine if needed is initiated.
- Next Batch or Second Build-up started.
- YUTECH Batch Pan Automation is available with any PLC / DCS Platform of the customer's choice.
- YUTECH also offers a Local Standalone Batch Pan Controller.
- Accurate Fluid-Density-Brix reading ensures better Process Control and helps to maintain constant Masseccuite / Melt / Molasses / Syrup Quality and Steam / Vapour Requirement thus results in Higher Sugar Production Efficiency and Minimum Process Losses.

YUTECH CONDENSER CONTROL SYSTEM FOR PANS AND EVAPORATORS

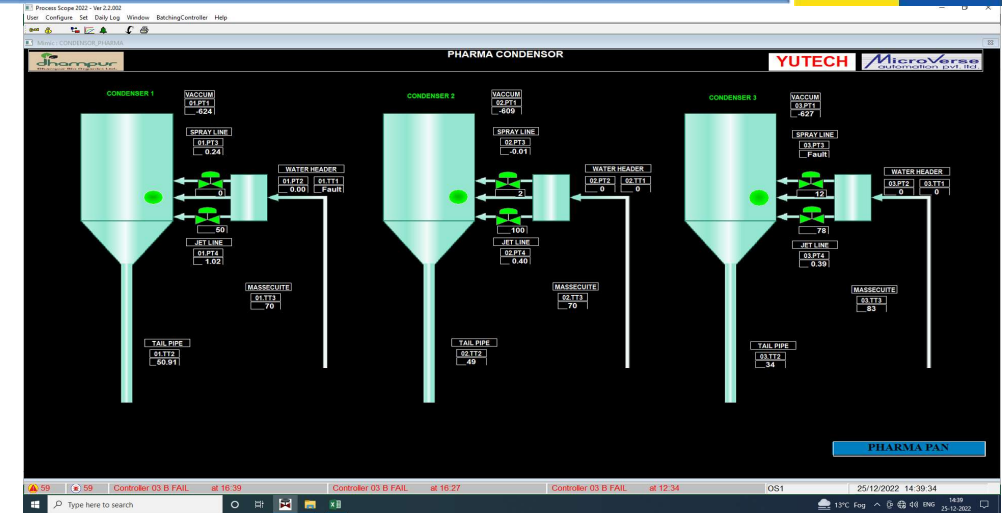
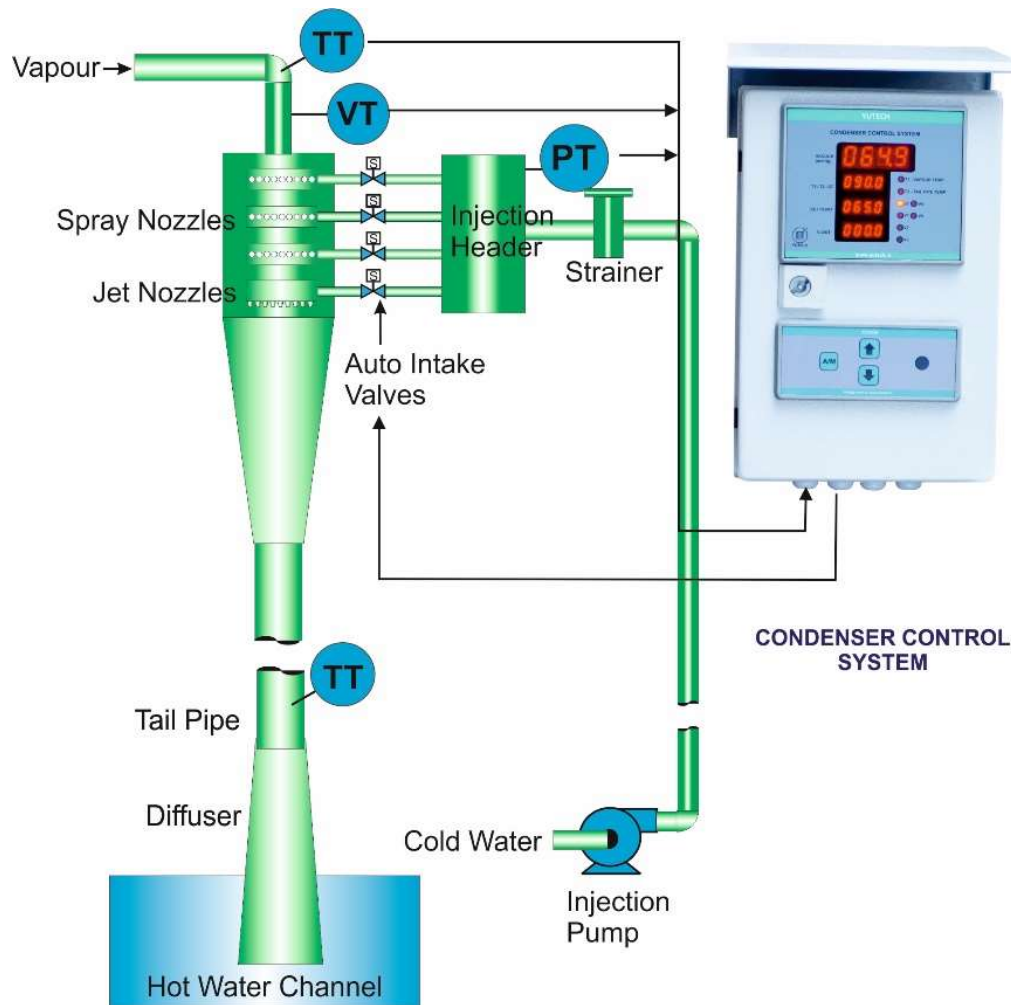
CONDENSER AUTOMATION USING YUTECH CONDENSER CONTROL SYSTEM

SCREEN SHOT: CONDENSER CONTROL SYSTEM IMPLEMENTED USING DCS / PLC



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SCHEMATIC DIAGRAM AND SCREENSHOT: CONDENSER CONTROL AS A STANDALONE SYSTEM AND IN DCS



CONDENSER AUTOMATION:

- Vapour Vacuum and Temperature sensed
- Tail Pipe Condensate Temperature Sensed in Tail Pipe
- Temperature Difference Calculated
- Spray Jet Water Quantity is Automatically Controlled wrt Remote Set Point generated by Vacuum and Temperature difference.
- Number of Jets & Nozzles and Jet & Nozzle Diameters designed as per Condenser Capacity
- Control Valve is used to control Spray Jets in case of Single Entry Condenser.
- Water Pressure in the Common Injection Header maintained by Controlling Injection Pump VFD
- Jet Compartment Controlled by Separate Valve

YUTECH FLUID-DENSITY-BRIX ANALYZER CUM CONTROL SYSTEM AND MOTORIZED FLUID-DENSITY SENSOR

BASED ON YUTECH'S A15 INTELLIGENT ANALYZERS AND SYSTEMS PLATFORM



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**FLUID-DENSITY-BRIX ANALYZER AND
CONTROL SYSTEM**

YUTECH FLUID-DENSITY-BRIX ANALYZER CUM CONTROL SYSTEM

PRODUCT CODE:

ANALYZER MODEL: A15FDAACSCTRC1D4R4FM,

ANALYZER AND CONTROLLER MODEL: A15FDAACSCTRC2D4R4FMC

ANALYZER AND CONTROLLER WITH ETHERNET MODEL:

A15FDAACSCTRC2D4R4FMCEM (Modbus TCP/IP)

MOTORIZED FLUID-DENSITY SENSOR

PRODUCT CODE: ASDMFDS24DCC01



MOTORIZED FLUID CONSISTENCY SENSOR

INTRODUCTION

BASIC SCIENCE BEHIND FLUID-DENSITY-BRIX:

- **Fluid-Density:** the Density of a particular Fluid.
- **Density:** is defined as “**Mass per unit volume**”, which means it is the Mass contained in a fixed volume. It is denoted by “ **ρ** ” which is a Greek Letter called “Rho”.
- **Density** can be derived using the formula “ **$\rho = m/v$** ” where ρ is the Fluid-Density, m is the Mass and V is Volume. The unit to measure Fluid-Density is **kg/m^3** (Kilogram per cubic meter).
- **Brix:** the measurement in percentage by weight of sucrose in pure water solution.
- Online Direct measurement of Brix in a Process Fluid is difficult, so indirect methods are used.
- **The most popular ways of measuring Brix are:**
 - **Hygrometric and Refractometric (Lab Methods)**
 - **High-Frequency or Radio-Frequency Conductivity type Brix Sensing**
 - **Microwave Type Brix Sensing**
 - **Fluid-Density Type Brix Sensing**
- While Conductivity or Microwave methods are very successful in measuring Brix of “B and C” Masseccite in CVP, Brix of Sugar Melt, and Brix in a Molasses Conditioner unit, they cannot measure Brix of “A” Masseccite as we measure the Fluid’s electrical quality which is variable.
- Fluid-Density Measurement using a Motorized Stirring Sensor proves very successful as it directly measures the Fluid’s mechanical quality of Fluid irrespective of its electrical characteristics. Thus measured Fluid-Density Value is further processed in the **Fluid-Density-Brix Equation**, to derive **Fluid-Density-Brix**.

SALIENT FEATURES

- Fluid-Density Type Brix Analyzer System targets sensing the Fluid-Density of Liquids, Slurries, or Syrups like Sugar Masseccuite, Sugar Syrup, Sugar Melt, Liquors, and Molasses.
- The Motorized Fluid-Density Sensor is specially designed to be inserted in a vessel to stir the Fluid Media and Measure its Fluid-Density which can be expressed in simple terms as the Tightness or Thinness of a Fluid Media. It can also be informally referred to as the Consistency of the Fluid and is a Mechanical Property of a Fluid which in Liquids is directly proportional to its Viscosity.
- Motorized Sensor's torque and power which is required to stir the Fluid varies with varying Fluid-Density.
- The Motorized Fluid-Density Sensor's Power Consumption is directly proportional to the Fluid's Density.
- The variation in the Motorized Fluid-Density Sensor's Power Consumption is sensed by the Fluid-Density Type Brix Analyzer's highly accurate Sensing Circuitry, this deviation is further processed to Derive the Raw Fluid-Density Value.

SALIENT FEATURES

- The Raw Fluid-Density Value is Linearized in the YUTECH Fluid-Density-Brix Equation.
- The **YUTECH** Fluid-Density-Brix Equation is a complex Algorithm with Built-in Fuzzy Logic that Accurately Analyzes, Calculates, and Derives the Fluid-Density-Brix Value from the Raw Fluid-Density Value.
- This derived Fluid-Density-Brix Value is further analyzed and processed to compensate for Masecuite / Syrup Level variation within the Vessel.
- Fully Compensated and Accurate Fluid-Density-Brix Value is Displayed and Transmitted for Controls.
- Very Easy Calibration and Online Fluid-Density-Brix Compensation Recalibration
- 4-20 mA Output, Separate Modbus and Ethernet Communications.
- On-line Calibration Software “YUTECH-AccessApp” provides Remote Access to Consistency-Brix Analyzer for Calibration, Compensation, and Trouble Shooting.

SALIENT FEATURES

Innovative Features for Ease of Operation and to save on Installation Cost and Materials:

- **Built-in Fluid Consistency-Brix Equation**
- **Built-in Level Compensation**
- **Built-in PID Controller:**
 - Highly Accurate Fuzzy Logic PID Controller developed especially for Process Control and Flow Control Applications.
 - Pan Control Logic built especially for Batch type Vacuum Pan Operations
 - VC Pan Chamber Control Logic built especially for Vertical Continuous Pan Operations
 - CVP Pan Chamber Control Logic built especially for Continuous Vacuum Pan Operations
 - Melter and Molasses Conditioner Control Logic
 - Remote Set Variable Facility
- **Built-in 3-Point Auto/Manual Station to Select Control Output from:**
 - Selector Switch for Local PID Output or DCS/PLC PID Output
 - Manual Output for Trouble Shooting

This feature simplifies installation by eliminating need for installing a Junction Box and Extra wiring.

SALIENT FEATURES

Innovative Features for Ease of Operation and to Save on Installation Cost and Materials:

- **Built-in Communications:**

- **Ethernet:**

- **Modbus TCP/IP Ethernet Communication Protocol / Ethernet TCP/IP**
- **Analyzer Calibration Facility from DCS / PLC- SCADA / HMI System**
- **External PID Controller Calibration Facility from DCS / PLC- SCADA / HMI System via Ethernet. Control Variables can be accessed and changed from DCS / PLC- SCADA / HMI.**
- **Brix Data is Communicated for Data Acquisition and Data Storage within DCS / PLC- SCADA / HMI.**

- **RS485: Modbus RTU on request in Base Model.**

- **USB Communication Facility: For Calibration from PC or Android using System's USB Port. (This facility is available only in Controller with Ethernet Models).**

- **YUTECH Access App: Calibration Software can be installed in a PC or Android.**

TECHNICAL SPECIFICATIONS – ANALYZER CUM CONTROL SYSTEM

- **Power Supply:** 85 - 265 VAC, 50 – 60Hz
- **Analyzer Enclosure:** IP67 Field Mounted Dust and Moisture Proof
- **Input:**
 - Fluid-Density Sensor Signal
 - RTD PT 100 Temperature Sensor Signal
 - DPT Level Transmitter Signal
 - VFD RPM Signal (Optional)
 - Conductivity 8-Level Sensor Signal
- **Calibration:**
 - From Keyboard
 - USB Port for Windows / Android-based YUTECH-AccessApp-BA
- **Display:**
 - Base Model: 4 Digit LED Dual Display
 - Controller and Controller with Ethernet Model: 4 Digit LED Quad Display
 - Sensor Cleaning and Washing Output: In-Built Potential Free Relay
- **Sensor Cleaning Timing Cycle:** Adjustable from Keyboard, default 15 Minutes
- **Signal Output:**
 - 4 - 20 mA Temperature Compensated Brix Output
 - 4 - 20 mA PID Output (Controller and, Controller with Ethernet Models)
 - 2 Potential-Free Relay Outputs for High – Low Alarm
- **Communications:**
 - Ethernet Communication Protocol: Modbus-TCPIP, in Controller with Ethernet Model
 - Modbus RTU, in Controller Model

TECHNICAL SPECIFICATIONS – MOTORIZED FLUID-DENSITY SENSOR

MOTORIZED FLUID-DENSITY SENSOR (PRODUCT CODE: ASDMFDS24DCC01):

- Motorized Circulator or Stirrer stirs the Fluid whose Fluid Density is to be measured.
- Power consumed
- MOC: Wetted parts: Stainless Steel (SS316) / PTFE. Non wetted parts: SS / MS / Aluminium / PTFE.
- MOC: All SS and Food Grade PTFE Construction optional.
- MOC: Wash Water Spray Tube: SS.
- Solenoid Valve for Automatic Sensor Wash
- Sensor Shaft is sheathed in Leak Proof Mechanism.
- Periodic Cleaning by a signal from the Fluid Consistency Brix Analyzer.
- 24VDC Power Supply.

TEMPERATURE SENSOR:

- RTD PT 100 Temperature Sensor with Thermowell constructed out of Solid SS Bar.

LEVEL SENSORS:

- DPT with Extended Diaphragm and Capillary Type Sensing
- 8-Level Conductivity Sensing (MOC: SS316 / PTFE)

APPLICATIONS

APPLICATION IN SUGAR PROCESS OR SUGAR REFINERY FOR MEASURING FLUID-DENSITY-BRIX OF MASSECUITE / SYRUP / MELT / LIQUOR / MAGMA / SEED IN:

- Vertical Continuous Vacuum Pan (VCVP or VKT) Chambers
- Batch Type Vacuum Pans and Continuous Vacuum Pans
- Sugar Melters and Molasses Conditioners
- Evaporators
- Open Pans in Khandsaris or Mini Sugar Plants / Jaggery or Muscovado Plants
- Boiling Vessels in Jaggery or Muscovado Production

FLUID-DENSITY MEASUREMENT APPLICATION IN OTHER PROCESS INDUSTRIES:

- **FOOD & BEVERAGES:** In Vessels or Pans for Monitoring the Consistency of Sauces / Slurries / Pastes etc.
- **CHEMICAL / PHARMA:** In Thickening / Thinning Vessels or Pans for Monitoring the Consistency of Chemical Slurries / Pastes
- **DISTILLERIES:** In Fermentation / Maturation Vessels and Spent-Wash Evaporators for Monitoring Brix
- **BREWERIES:** In Fermentation Vessels for Monitoring Brix Fermentation Vessels, Maturation Tanks

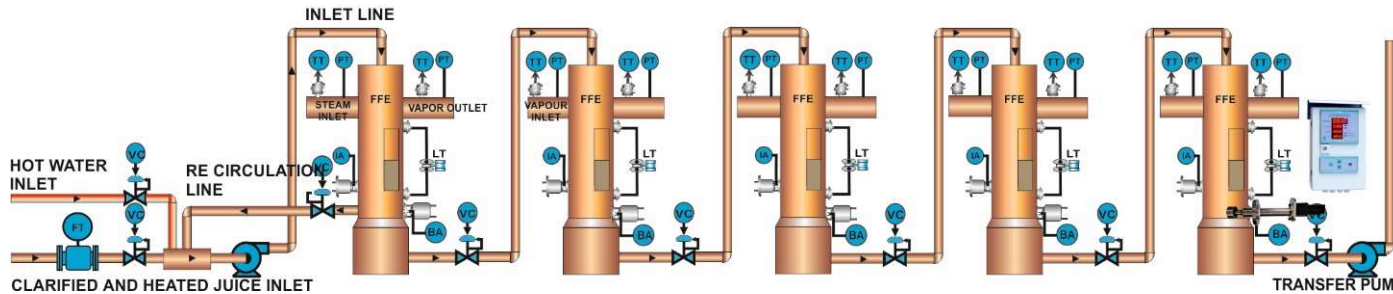
YUTECH FLUID-DENSITY-BRIX ANALYZER CUM CONTROL SYSTEM AND MOTORIZED FLUID-DENSITY SENSOR



EVAPORATOR AUTOMATION - EVAPORATOR CONTROLS SCHEMATIC AND SCREENSHOT



FFE AUTOMATION

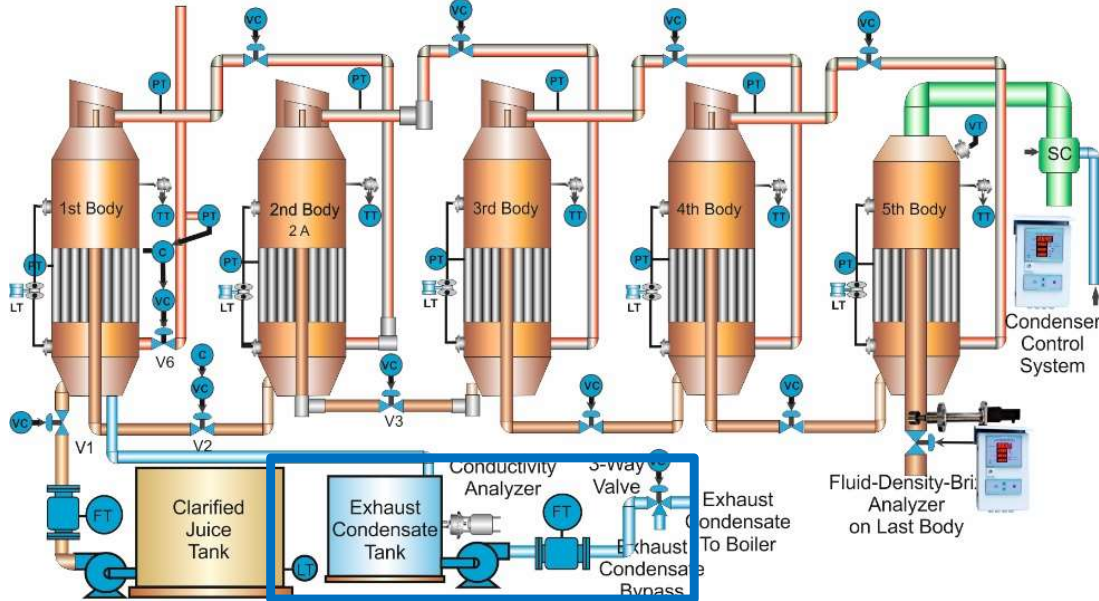


FLUID-DENSITY-BRIX ANALYZER FOR LAST BODY BRIX SENSING

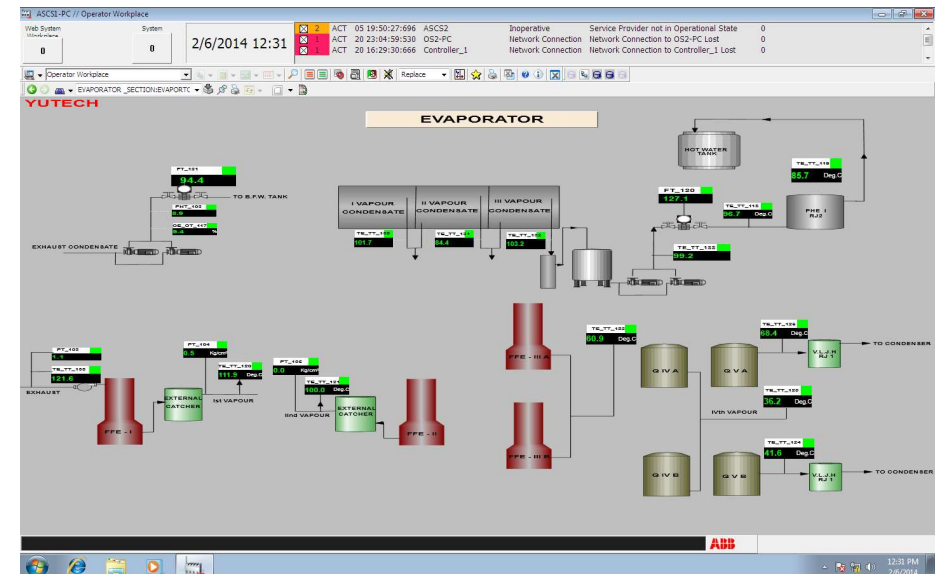
EVAPORATOR AUTOMATION:

- FLUID-DENSITY-BRIX, LEVEL AND TEMPERATURE SENSING OF EACH BODY
- HEATING STEAM / VAPOUR TEMPERATURE AND PRESSURE SENSING
- LEVEL AND BRIX MAINTAINED IN EACH BODY
- PRECEDING BODY LEVEL SYNCHRONIZATION FOR ALL BODIES INCLUDING JUICE TANKS AND CANE CARRIERS
- INTELLIGENT DATA ANALYSIS WITH MAINTENANCE AND CLEANING ALARMING SYSTEM

EVAPORATOR AUTOMATION



EXHAUST CONDENSATE BYPASS CONTROL:
EXHAUST CONDENSATE CONDUCTIVITY SENSING AND BYPASS USING 3-WAY VALVE



YUTECH FLUID-DENSITY-BRIX ANALYZER CUM CONTROL SYSTEM AND MOTORIZED FLUID-DENSITY SENSOR VERTICAL CONTINUOUS PAN AUTOMATION PAN CHAMBER CONTROL SCHEMATIC AND SCREENSHOT



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FLUID-DENSITY-BRIX ANALYZER

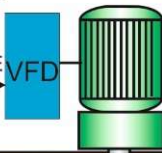


MOTORIZED FLUID-DENSITY SENSOR AND FLUID-DENSITY-BRIX ANALYZER CUM VCP CHAMBER CONTROL SYSTEM STAND ALONE UNIT

DCS / PLC

DATA FOR DCS / PLC CONTROLS FOR VCP LOOPS ON MODBUS TCP/IP

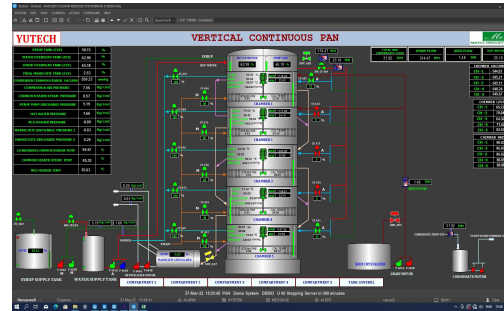
PID CONTROL OUTPUT TO MATERIAL INTAKE VALVE



SPEED CONTROL OUTPUT VFD

PAN CHAMBER

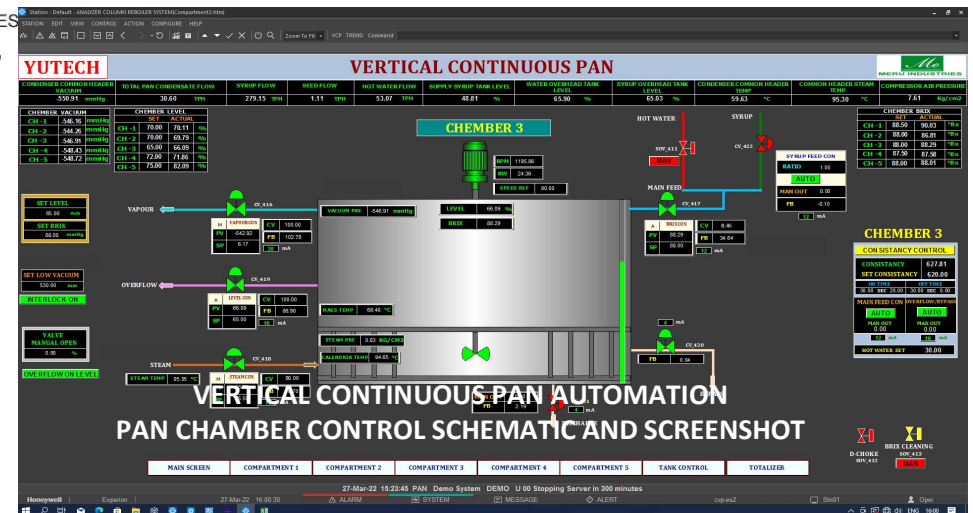
MOTORIZED FLUID-DENSITY SENSOR



VERTICAL CONTINUOUS PAN AUTOMATION OVERALL SCREENSHOT

VERTICAL CONTINUOUS PAN AUTOMATION:

- FLUID-DENSITY-BRIX SENSING AND MATERIAL / WATER INTAKE CONTROL
- VFD SPEED CONTROL AS PER PAN CHAMBER LEVEL
- TEMPERATURE SENSING THROUGHOUT THE PAN CHAMBER TO ENSURE UNIFORM TEMPERATURE INSIDE PAN CHAMBER BODY
- SEMI-AUTOMATIC DROP CONTROL IN ABNORMAL CONDITIONS
- STANDALONE SYSTEM FOR PAN CHAMBER AND COMMUNICATION WITH MAIN VCP PLC / DCS SYSTEM

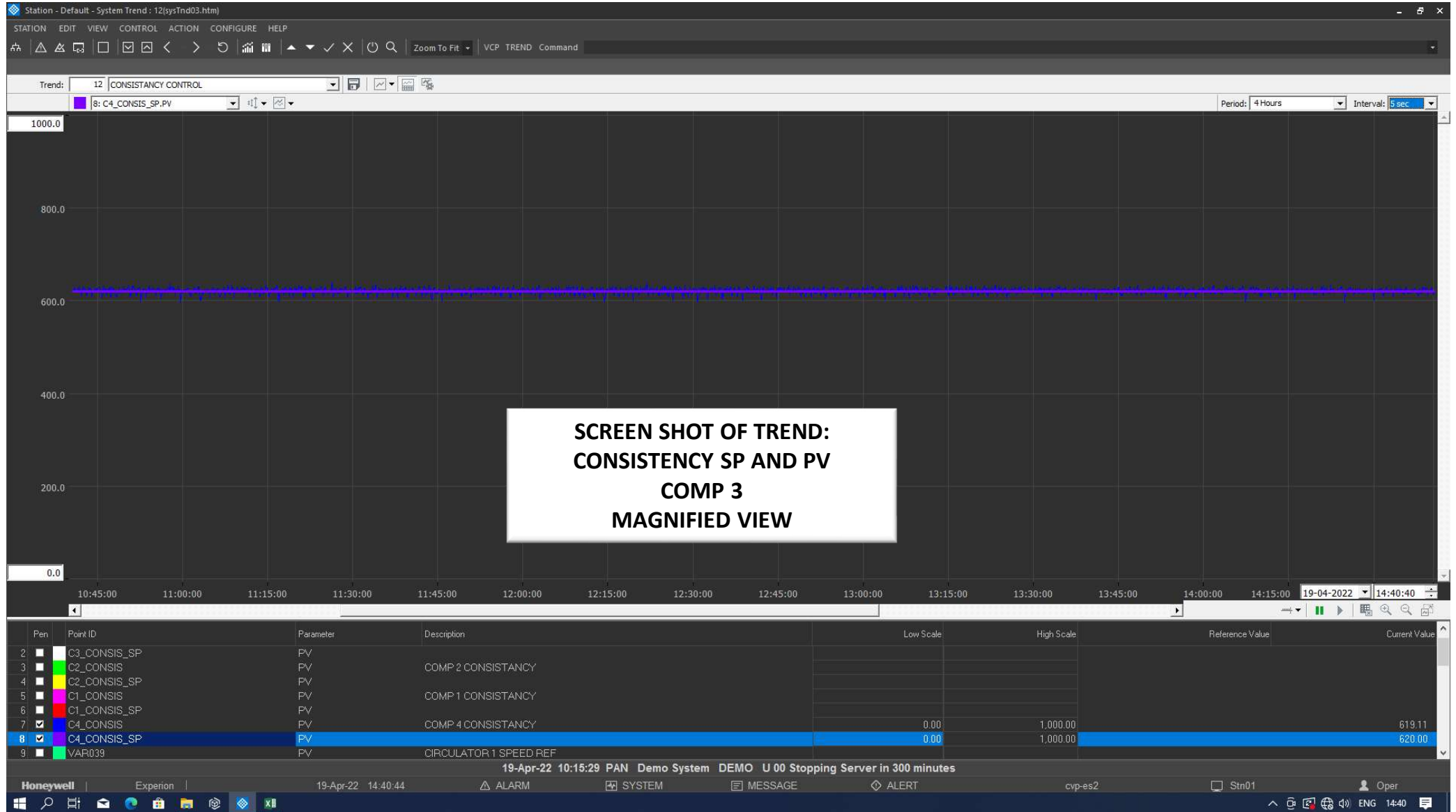


VERTICAL CONTINUOUS PAN AUTOMATION PAN CHAMBER CONTROL SCHEMATIC AND SCREENSHOT

YUTECH FLUID-DENSITY-BRIX ANALYZER CUM CONTROL SYSTEM AND MOTORIZED FLUID-DENSITY SENSOR VERTICAL CONTINUOUS PAN AUTOMATION COMPARTMENT PAN BRIX VS BRIX SETPOINT TREND SCREEN SHOT



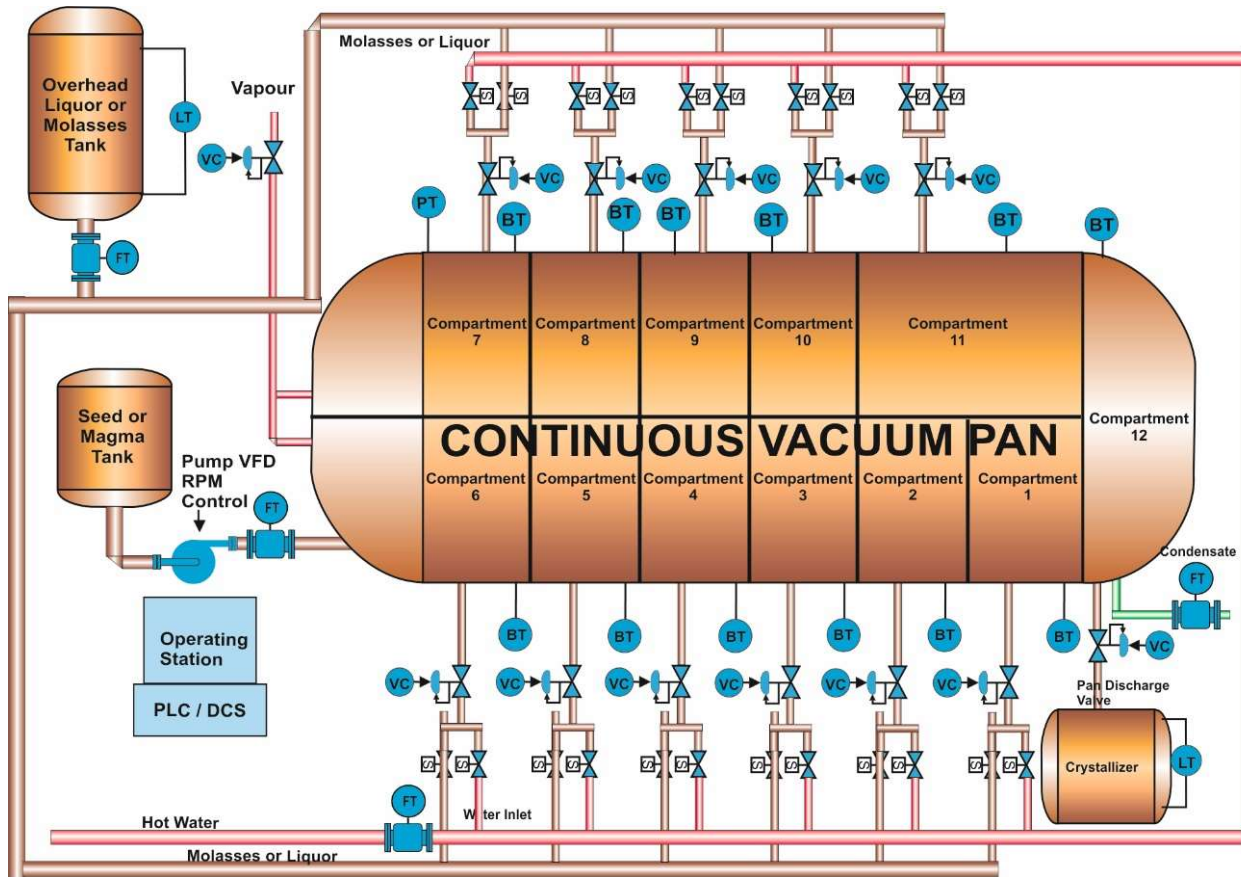
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YUTECH FLUID-DENSITY-BRIX-ANALYZER CUM CONTROL SYSTEM AND MOTORIZED FLUID-DENSITY SENSOR CONTINUOUS VACUUM PAN AUTOMATION CVP CONTROL SCHEMATIC AND SCREENSHOT

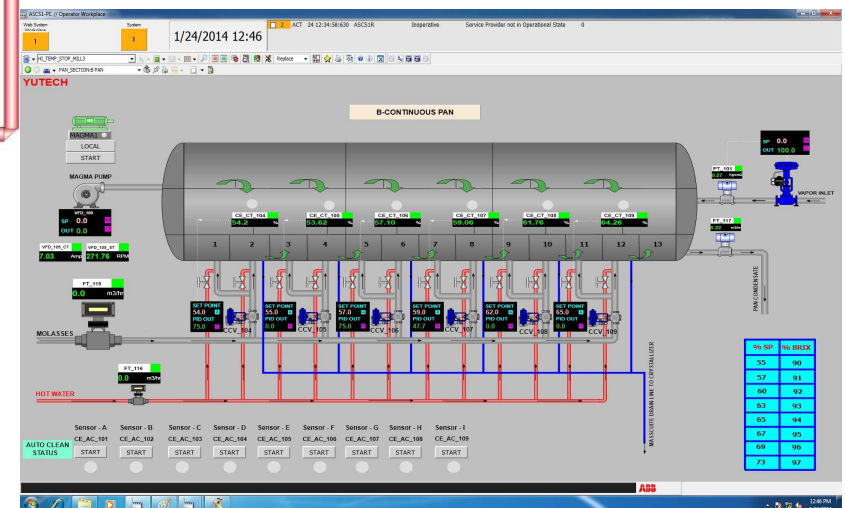


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VERTICAL CONTINUOUS PAN AUTOMATION:

- YUTECH FLUID-DENSITY-BRIX OR YUTECH BRIX SENSING AND MOLASSES / WATER INTAKE CONTROL FOR EACH COMPARTMENT
- VFD SPEED CONTROL AS PER PAN CHAMBER LEVEL FOR LAST CHAMBER IF INSTALLED
- TEMPERATURE SENSING THROUGHOUT THE PAN CHAMBER TO ENSURE UNIFORM TEMPERATURE INSIDE PAN CHAMBER BODY
- SEED FLOW CONTROL MAINTAINING MOLASSES TO SEED RATIO



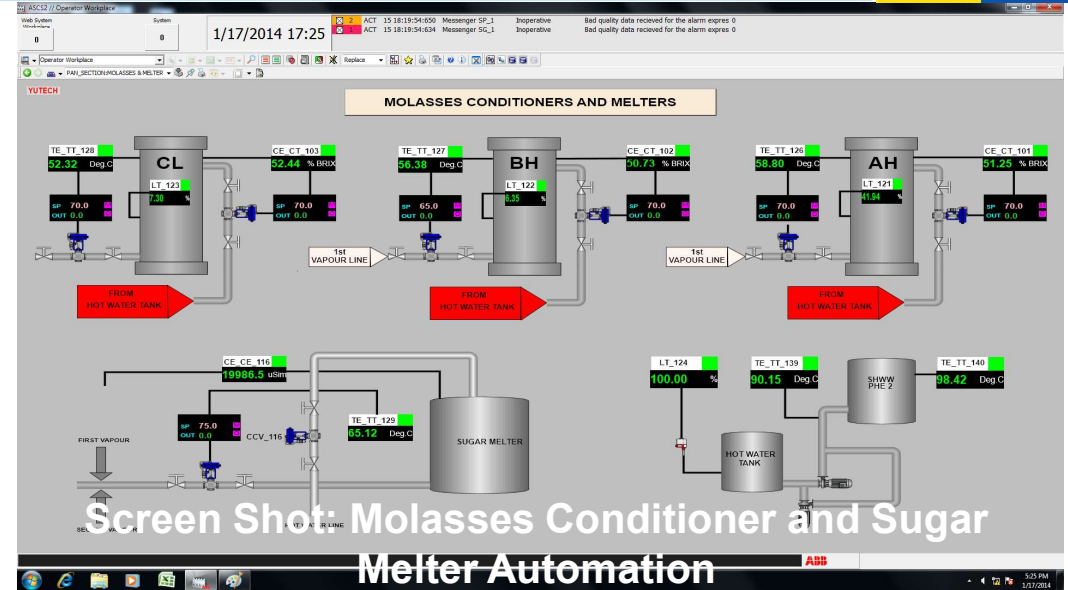
VERTICAL CONTINUOUS PAN AUTOMATION:

- CALENDRIA VAPOUR PRESSURE CONTROL
- STANDALONE SYSTEM FOR PAN CHAMBER AND COMMUNICATION WITH MAIN VCP PLC / DCS SYSTEM
- SEED OR MAGMA FLOW CONTROL WITH RESPECT TO MOLASSES OR LIQUOR FLOW

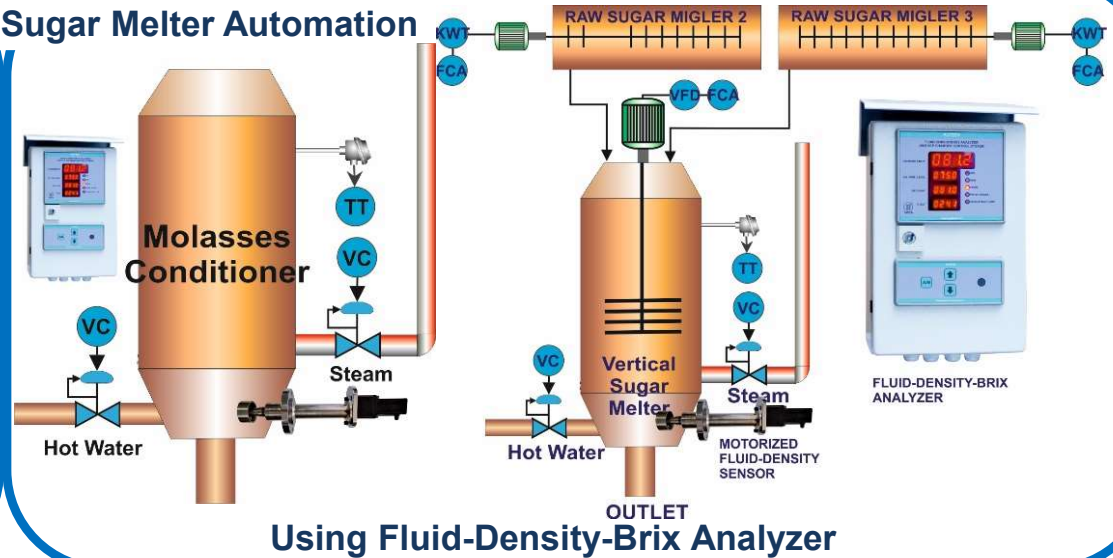
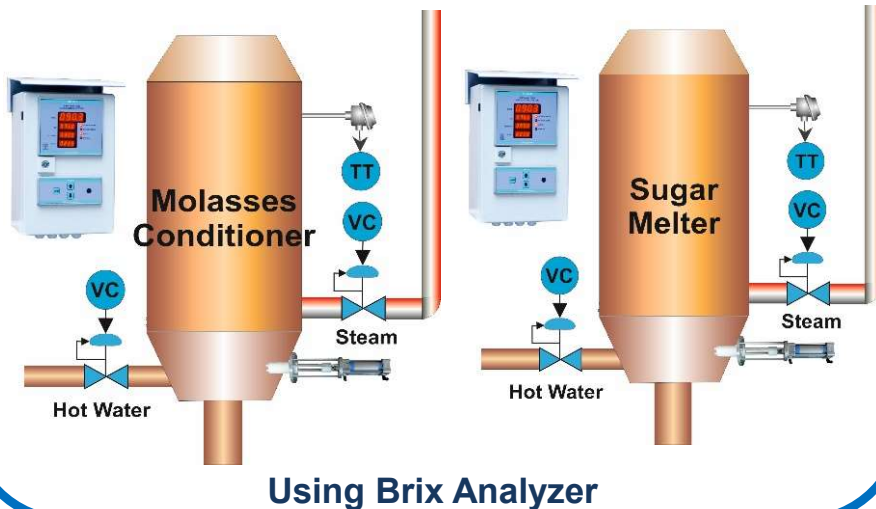
YUTECH FLUID-DENSITY-BRIX ANALYZER CUM CONTROL SYSTEM AND MOTORIZED FLUID-DENSITY SENSOR SUGAR MELTER AND MOLASSES CONDITIONER AUTOMATION SCREENSHOT, FIELD MOUNTING PICTURE, AND SCHEMATIC



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Schematic Diagrams: Molasses Conditioner and Sugar Melter Automation



DCS or PLC Based Turnkey Automations or Standalone Control Systems:

- Complete Sugar Mill Automation with all Loops like Cane Feeding, Mill Speed Controls, Imbibition and Juice Flow Controls etc
- Complete Sugar Process Automation with Loops like Evaporator, Pans, Continuous Pans, Melters Conditioners, Direct Contact Heaters, Condensers etc
- Complete Sugar Refinery / Pharma Grade Sugar Plant Automation with Loops like Pans, Continuous Pans, Melters, Melt Clarifier, Melt Filtration Systems, Direct Contact Heaters, Condensers etc
- Complete Boiler and Power Plant Automation
- Complete Sugar Plant Automation and Instrumentation
- Complete Distillery Automation and Instrumentation
- Complete Process Plant (Pharma / Food Processing / Cement / Steel) Automation and Instrumentation
- VCP / CVP / Batch Pan Automation
- Condenser Automation
- Continuous Centrifugal Machine Automation based on CSD or Iris Valve
- Evaporator and FFE Automation
- Direct Contact Heater Automation
- Vertical Crystallizer
- pH Control System



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YUTECH SUGAR MILL PROCESS INSTRUMENTS

MEASURING SUGARS BRIX BY BRIX

YUTECH FLOW CONTROLS

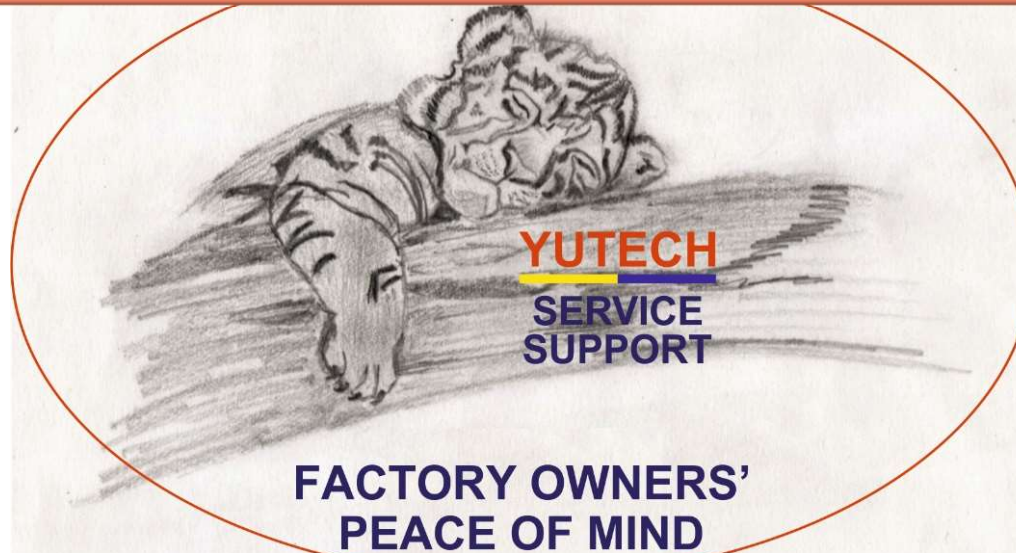
CONTROL SAVE EARN

YUTECH AUTOMATION

THE SWEETENER TO SUCCESS

YUTECH INSTRUMENTS

ANALYZE TRANSMIT CONTROL COMMUNICATE



**SAVE FUEL, REDUCE CARBON FOOTPRINT,
MAKE THE WORLD GREENER
AND YET, MAKE MONEY**

THANK YOU

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