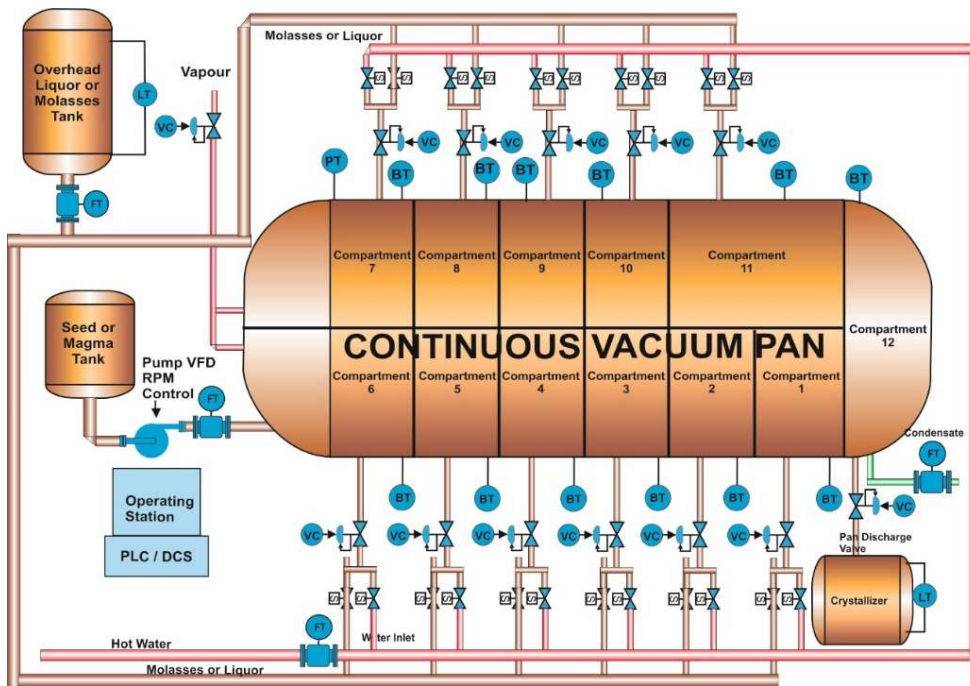


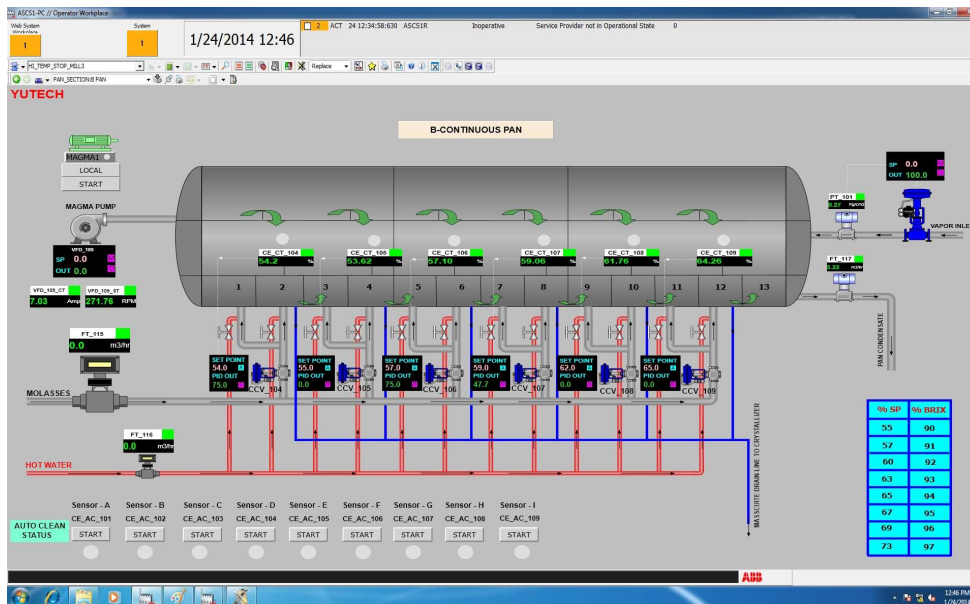
# CONTINUOUS VACUUM PAN AUTOMATION

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



## CONTINUOUS PAN AUTOMATION FEATURES:

- SEED OR MAGMA FLOW CONTROL WITH RESPECT TO MOLASSES OR LIQUOR FLOW ENSURES MAINTAINED MOLASSES-TO-SEED RATIO
- YUTECH FLUID-DENSITY-BRIX OR YUTECH BRIX SENSING AND MOLASSES / WATER INTAKE CONTROL FOR EACH COMPARTMENT
- TEMPERATURE SENSING THROUGHOUT THE CV PAN ENSURES UNIFORM TEMPERATURE INSIDE THE CV PAN BODY
- CALENDRIA VAPOUR PRESSURE CONTROL
- STANDALONE SYSTEM FOR CV PAN HAVING COMMUNICATION WITH MAIN PLC / DCS SYSTEM



## CONTINUOUS VACUUM PAN AUTOMATION:

### Seed or Magma Flow Control with respect to Molasses or Liquor Flow:

- Molasses and Seed Flowmeters sense Flow.
- Ratio of Seed to Molasses Flow is Controlled in the required proportion by Controlling Seed / Magma Pump VFD.

### Individual Compartment Brix Control by Auto Feeding Molasses or Water into each Compartment:

- Fluid-Density-Brix OR Brix Sensing of each Compartment by YUTECH Fluid-Density-Brix Analyzer OR YUTECH Brix Analyzer
- Control of Molasses Intake Valve with Brix Set Point, and Fluid-Density-Brix as Process Value in a PID Mode
- Addition of Water only if required as per Process Dynamics.

# CONTINUOUS VACUUM PAN AUTOMATION

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



## FLUID CONSISTENCY-BRIX ANALYZER AND CONTROL SYSTEM WITH FLUID-DENSITY SENSOR

### 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 “**ρ = 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<sup>3</sup>** (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” Masecuite in CVP, Brix of Sugar Melt, and Brix in a Molasses Conditioner unit, they cannot measure Brix of “A” Masecuite 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 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 Masecuite, 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.

FOR MORE DETAILS, PLEASE SEE THE PRESENTATION ON OUR WEBSITE [www.yutechautomation.com](http://www.yutechautomation.com).

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