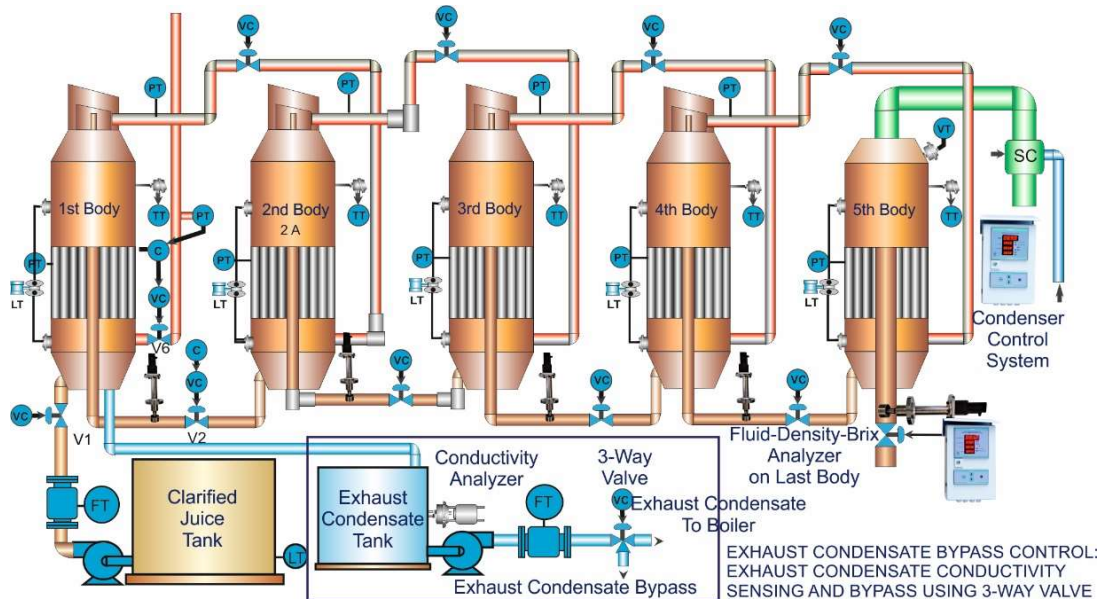


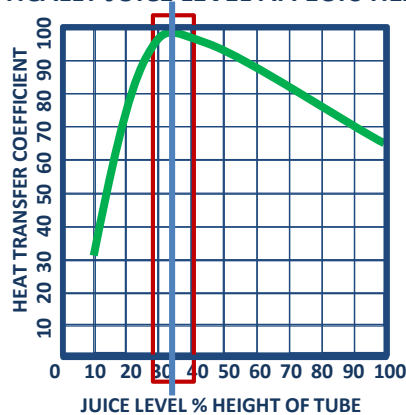
EVAPORATOR AUTOMATION WITH BRIX ANALYZER AND DENSITY BRIX SENSOR ROBERTS / SEMI KESTNER EVAPORATOR AND CONDENSER CONTROLS



ROBERTS / SEMI KESTNER TYPE EVAPORATOR AUTOMATION:



VARIATION OF HEAT-TRANSFER COEFFICIENT AS A FUNCTION OF JUICE LEVEL IN THE CALANDRIA CLEARLY SHOWS HOW DRASTICALLY JUICE LEVEL AFFECTS HEATING EFFICIENCY.



BENEFITS OF EVAPORATOR AUTOMATION:

- MAINTAINED HEAT TRANSFER COEFFICIENT OPTIMIZES THE EVAPORATION EFFICIENCY
- MAINTAINED OUTLET BRIX OF ALL BODIES MAINTAINS CONSISTENT EFFICIENCY
- MAINTAINED BODY LEVEL AND TEMPERATURE OF EACH BODY HENCE EXCELLENT MASS BALANCE IS ACHIEVED BESIDES AVOIDING ENTRAINMENT
- MAINTAINED VACUUM FURTHER ENSURES SEAMLESS PROCESS AND OPTIMIZED EVAPORATION
- UNNECESSARY HUMAN ERRORS LEADING TO PROCESS DISTURBANCE AND STOPPAGES ARE COMPLETELY AVOIDED
- HUGE POWER AND WATER SAVING
- INTELLIGENT DATA ANALYSIS WITH MAINTENANCE AND CLEANING ALARMING SYSTEM REDUCES INVERSION AND IMPROVES SUGAR RECOVERY
- CONSTANT EVAPORATION RATE IS MAINTAINED, THIS INCREASES OVERALL EFFICIENCY
- **HUGE MONETARY BENEFITS DUE TO MAINTAINED SUGAR QUALITY AND CONDENSATE QUALITY**

EVAPORATOR AUTOMATION WITH BRIX ANALYZER AND DENSITY BRIX SENSOR ROBERTS / SEMI KESTNER EVAPORATOR AND CONDENSER CONTROLS



EVAPORATOR AUTOMATION:

- LEVEL OF EVAPORATOR DEFINES ITS EFFICIENCY. THE ABOVE GRAPH SHOWS THE VARIATION OF THE HEAT TRANSFER COEFFICIENT WITH JUICE LEVEL. EVEN A SMALL 5% VARIATION IN LEVEL DRASTICALLY REDUCES THE HEAT TRANSFER COEFFICIENT AND IN TURN, SERIOUSLY REDUCES THE HEATING EFFICIENCY OF THE RISING FILM EVAPORATOR BODY.
- HIGHLY ACCURATE SENSING OF FLUID-DENSITY-BRIX GIVES AN ACCURATE FEEDBACK CONTROL.

EVAPORATOR AUTOMATION FEATURES:

- FLUID-DENSITY-BRIX SENSING AND CONTROL OF THE LAST BODY BY CONTROLLING OUTLET CONTROL VALVE
- LEVEL AND TEMPERATURE SENSING OF EACH BODY
- LEVEL CONTROL OF EACH BODY TO MAXIMIZE EVAPORATOR EFFICIENCY BY OPTIMIZING THE HEAT TRANSFER COEFFICIENT
- HEATING STEAM / VAPOUR TEMPERATURE AND PRESSURE SENSING
- LEVEL MAINTAINED IN EACH BODY BY CONTROLLING EACH BODY'S OUTLET CONTROL VALVE
- FLUID-DENSITY-BRIX MAINTAINED IN THE LAST BODY AND TREATED AS THE MASTER CONTROL FOR PREVIOUS BODIES
- PRECEDING BODY LEVEL SYNCHRONIZATION FOR ALL BODIES INCLUDING JUICE TANKS AND CANE CARRIERS
- INTELLIGENT DATA ANALYSIS WITH MAINTENANCE AND CLEANING ALARMING SYSTEM

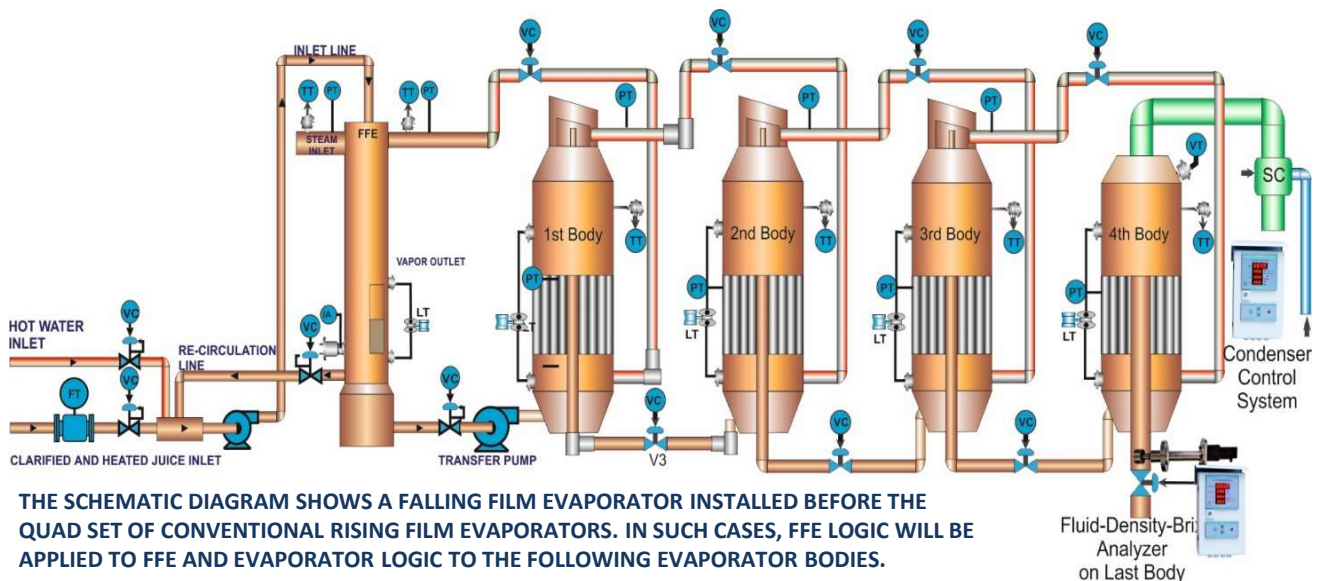
EXHAUST STEAM CONDENSATE BYPASS SYSTEM:

- EXHAUST STEAM CONDENSATE CONDUCTIVITY SENSING TO DETECT ENTRAINMENT
- 3-WAY VALVE FOR EXHAUST STEAM BYPASS
- IF ENTRAINMENT IS DETECTED, A 3-WAY VALVE IS OPERATED TO BYPASS THE STEAM CONDENSATE TO OTHER LINE AND NOT ALLOW CONTAMINATED CONDENSATE TO ENTER THE BOILER FEED WATER

CONDENSER AUTOMATION ADVANTAGES FROM AN EVAPORATOR PERSPECTIVE:

- AVOID ENTRAINMENT ESPECIALLY IN SEMI-CONDENSER AUTOMATION ADVANTAGES FROM AN EVAPORATOR PERSPECTIVE:
- KESTNER DUE TO UNEVEN VACUUM SHOCKS AND AVOID TIME AND RESOURCES WASTED IN REWORK
- CONSTANT VACUUM
 - MAINTAINED VACUUM ENSURES GOOD PAN BOILING AND EVAPORATION EFFICIENCY
 - MAINTAINED VACUUM ALSO ENSURES STABILIZED VAPOUR LOAD THUS HEATING EFFICIENCY IS INCREASED

FIRST BODY FALLING FILM EVAPORATOR WITH QUAD SET OF CONVENTIONAL BODIES:

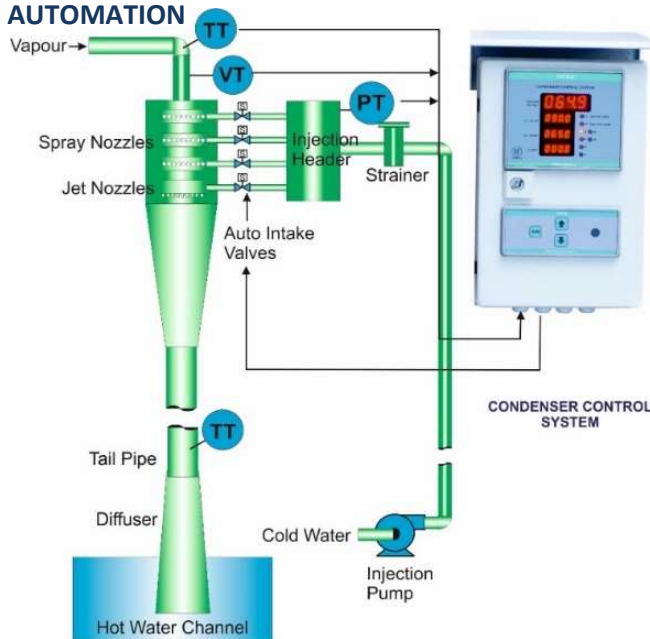


THE SCHEMATIC DIAGRAM SHOWS A FALLING FILM EVAPORATOR INSTALLED BEFORE THE QUAD SET OF CONVENTIONAL RISING FILM EVAPORATORS. IN SUCH CASES, FFE LOGIC WILL BE APPLIED TO FFE AND EVAPORATOR LOGIC TO THE FOLLOWING EVAPORATOR BODIES.

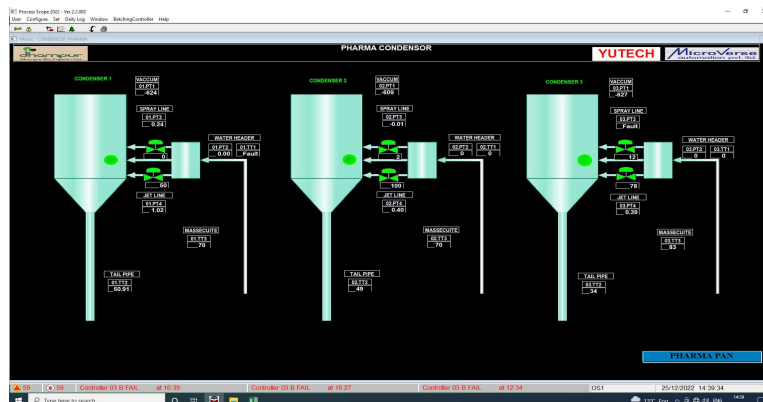
CONDENSER AUTOMATION PHILOSOPHY:

- VAPOUR VACUUM AND TEMPERATURE SENSED
- CONDENSATE TEMPERATURE SENSED IN TAIL PIPE
- TEMPERATURE DIFFERENCE CALCULATED
- VACUUM AND TEMPERATURE DIFFERENCE ARE BOTH ANALYZED TO DERIVE REMOTE DYNAMIC SET POINT
- SPRAY WATER IS CONTROLLED AS BELOW:
 - MULTI-ENTRY SYSTEM:
 - SPRAY JETS ARE CONTROLLED BY SEPARATE ON/OFF TYPE CONTROL VALVES AS PER THE REMOTE DYNAMIC SET-POINT
 - 2, 3, OR 4 SETS OF NOZZLES FOR SPRAY AS PER DESIGN
 - 1 OR 2 SETS OF JET NOZZLES AS PER DESIGN ARE CONTROLLED ONLY IF NECESSARY
 - SINGLE-ENTRY SYSTEM:
 - SPRAY JETS ARE CONTROLLED BY A CONTROL VALVE IN PID ACTION AS PER THE REMOTE DYNAMIC SET-POINT
 - 1 OR 2 SETS OF JET NOZZLES AS PER DESIGN ARE CONTROLLED ONLY IF NECESSARY

SCHEMATIC: CONDENSER AUTOMATION



SCREENSHOT: FFE AND CONDENSER AUTOMATION



DENSITY BRIX SENSOR GUARANTEES EXCELLENT PROCESS EFFICIENCY AND INCREASES PROFITS



BRIX ANALYZER
CUM CONTROL SYSTEM



FLUID DENSITY SENSORS

BRIX, AND DENSITY IN KG/M^3 ,
WITH
LEVEL, TEMPERATURE, AND VACUUM
COMPENSATION

APPLICATIONS AND ADVANTAGES OF DENSITY BRIX SENSING IN THE SUGAR INDUSTRY:

- BRIX OF SYRUP, MOLASSES AND MELT IN:
 - ALL FALLING AND RISING FILM EVAPORATOR BODIES
 - SYRUP AND JUICE MIXING VESSELS FOR TRANSFER TO DISTILLERY
 - MOLASSES CONDITIONERS, SUGAR MELTERS
 - IMPROVE EVAPORATION EFFICIENCY AND STEAM ECONOMY
- BRIX OF SYRUP, MASSECUTE, MOLASSES AND MELT BRIX IN:
 - ALL BATCH PANS OF A, B, AND C MASSECUTES WITH OR WITHOUT STIRRER
 - VERTICAL CONTINUOUS PANS OR VKT
 - HORIZONTAL CONTINUOUS PANS
 - REDUCE BATCH PAN STRIKE TIME
 - AVOID FALSE GRAIN, REDUCE STEAM AND WATER CONSUMPTION IN PANS
 - OPTIMIZE CRYSTAL GROWTH AND MAXIMIZE RECOVERY
 - IMPROVE OVERALL PAN EFFICIENCY AND GET CONSISTENT PERFORMANCE
- BAUME OF MILK OF LIME
 - MAINTAIN DENSITY OF M.O.L., IMPROVE LIMING EFFICIENCY, AND GET CONSTANT AND BETTER pH CONTROL
- SENSOR MODEL: A24FDSRS2: EVAPORATOR, FALLING FILM EVAPORATOR, JUICE AND SYRUP MIXING VESSEL

FOR MORE DETAILS ON THE FLUID-DENSITY-BRIX ANALYZER AND CONTROL SYSTEM WITH FLUID-DENSITY SENSOR DOWNLOAD THE BROCHURE FROM OUR WEBSITE.

PLEASE VISIT OUR WEBSITE www.yutechautomation.com.

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