PROJECT ANALYSIS – ROAD MAP CHARTNG

A. OBJECTIVES FOR NEW FACTORY:

1. Dryer – 300 kg per hour input – optimization of heat dynamics and establishing the maintenance and operating protocols of the equipment.

2. Innovate to ramp up the throughput by 40% higher thresholds than the designed parameters through a combination of thermo- kinetics of the coconut food substrates and the thermodynamic optimization of the heat exchange system at the dyer post-blanching.

A.1. DERIVATIVES AND ACTION PLANS

INFLUENCE GRID FOR THE DRYER

PARAMETER	INFLUENCE CLUSTER	CLUSTER STRENGTH	CLUSTER VARIABLES	VARIABLE INFLUENCE WEIGHT	PARAMETRIC INFLUENCE WEIGHT
HEAT SOURCE	Combustion quality	0.995	PLC - permanent linear change dynamics at the concomitant Young's Modulus for thermal strain curves	0.999	0.994005
	Heat distribution		PCE - pyrometric cone estimation for bulk density changes on heat adsorption	0.999	

	Heat retention through the network of heat transfers		CCS - cold compressive strength	0.999	
SPECIFIC HEAT AT TRANSFER	Heat and mass balances	0.998	Redistribution of heat between primary and residual media - hot air versus the flue gas	0.973	0.966396667
	Substrate kinetic equilibrium		Activation energy and phase equilibrium coordinates	0.999	
	Transfer medium and material fidelity		Thermal conductivity and structural strength on thermal stresses for the metallurgy of the equipment	0.933	
THERMO - KINETIC EQUILIBRIUM COORDINATES	Activation energy gradient	0.999	Gradient dynamics and the area of the curve during the product stabilization cycle	0.999	0.980352
	Reaction order		VFC (volatile flavor	0.957	

achieved	compounds) - Classes I and II	
Dielectric field - Residual	Electrolytic concentration residuals at the phase equilibrium coordinates	0.988

KEY NOTES ON THE INFLUENCE GRID OF THE DRYER

1. The principles of thermodynamics influencing the dryer and the distribution of heat in the combustion chamber as well as the qualitative aspects of the heat transfers across the networks are universally defined by the thermal strain curves forming the family of configurations leading to the fatigue and eventual destruction of the structure of the refractory.

2. The micro dynamics of the exothermic disintegration of the bio chemical compounds leading to the subsequent differential orders of reactions are the major determinants for the heat exchange in the dryer.

3. The frictional field of the air is another of the key determinants for the exchange of heat in the primary source and the residual medium of the flue gases. A regime of high specific heat at the transfer coordinates shall ensure higher quantum of heat in the primary and significantly reduced concomitant heat in the residual medium. Consequently, thermodynamic initiatives are centered around enhancing the specific heat of transfer commensurate with the thermal capacities of the food substrates.

4. The thermodynamic process of heat transfers into the food substrates is a stochastic process founded on minimization of entropy and related differentials that attribute to the quantum of heat friction.

ROAD MAP

PARAMETER	INFLUENCE CLUSTER	CLUSTER VARIABLES	ACTIONS REQUIRED	EXECUTION TIMELINE
HEAT SOURCE	Combustion quality	PLC - permanent linear change dynamics at the concomitant Young's Modulus for thermal strain curves	Refractory cement with alumina > 88%, Temperature resistance of > 1700 degrees Celsius implying < 2% PLC at 1500 degrees Celsius	Initiated on 12th Nov. and to be executed on 13th Nov, 2020
	Heat distribution	PCE - pyrometric cone estimation for bulk density changes on heat adsorption		

	Heat retention through the network of heat transfers	CCS - cold compressive strength	Heat insulation blankets and insulating material for the distribution network shall minimize heat losses, reduce the differentials for hot and cold spots thereby improving the CCS	
SPECIFIC HEAT AT TRANSFER	Heat and mass balances	Redistribution of heat between primary and residual media - hot air versus the flue gas	Flue gas tubes overhaul for elimination of corrosive traces	Initiated on 12th Nov. and to be executed on 13th Nov, 2020
	Substrate kinetic equilibrium	Activation energy and phase equilibrium coordinates	Cold room treatment of the preliminary lumps of the coconut substrates prior to blanching and drying	

	Transfer medium and material fidelity	Thermal conductivity and structural strength on thermal stresses for the metallurgy of the equipment	Cleansing and testing for leakages. Blanching shall be done with an initial air temperature of 160 degrees Celsius for heating up the water that shall be organized to be pumped into the system continuously. Dry air shall have temperature spikes leading to product failure and hence has to be tempered through water thereby facilitating the exchange of heat and optimizing the air to be at 85 degrees Celsius at the start of the dryer and 50 degrees Celsius

THERMO - KINETIC EQUILIBRIUM COORDINATES	Activation energy gradient	Gradient dynamics and the area of the curve during the product stabilization cycle	Cold room treatment of the preliminary lumps of the coconut substrates prior to blanching and drying	To be executed for the initial commissioning run on 15th November, 2020
	Reaction order achieved	VFC (volatile flavor compounds) - Classes I and II		
	Dielectric field - Residual	Electrolytic concentration residuals at the phase equilibrium coordinates		

KEY NOTES ON DRYER PERFORMANCES – **GUARANTEES**

1. Dryer input capacity shall effectively be > 450 Kgs per hour on commissioning.

2. The maintenance and operating protocols shall establish consistency in throughput and insulation from equipment breakdown.

3. Product quality shall be comparable with the best of APCC standards and beyond. The benchmarks shall be established through the product engineering initiatives.

4. Knowledge transfers shall permeate the team at site.

5. Financials and profitability shall improve significantly to levels of net of > 20% after taxation and debt repayments.

INTERIM CONCLUSIONS AS ON DATED 12TH NOVEMBER, 2020:

1. The given technology can be re-engineered to optimization in the new factory.

2. The derivatives on the experiences are structured in the revival plans of the old dyer. The old dryer can be rewired for optimized performances at a minimal threshold of 40% higher than the existing states of the process.

3. Fundamental changes in the approaches to the heat sources, the dryer dynamics for heat distribution and finally the specific heat at transfer coordinates are the major determinants of the overhaul in performances and sustaining consistencies.

NAVIGATION GUIDE FOR THE SPREADSHEET ON DRY RUN 9without material) OF THE DRYER

1. The spreadsheet captures the real time online data and creates a stochastic construct for predicting the states of the progression in the dry run configurations.

2. The data modeling evaluates the singularly important parameter of specific heat at the transfer coordinates of the food substrates; in this case the coconut powder.

3. The key variables of influence are a combination of heat and the configurations of the power derivatives that define the electro-mechanical characteristics of the hot air velocity, profile for turbulences and the distribution of heat.

4. The normalization is a process of mathematical smoothing for the data entropy and evaluating the real time dips from the standards.

5. The variable strength is enlisted in the factorial imputation and compensated for arriving at the performance of the heat process.

6. Dry run states are important for evaluating the furnace performance and the baseline distribution of heat at the dryer.

7. The benchmarks have to be created at the first run and progressive improvements in the combustion as well as the distribution of heat in the dryer have to be registered to arrive at optimized wet run solutions and quality.

8. Graphical analyses are evaluated in the backdrop of warning and process stoppage limits as elements of inferential statistics. The trend lines are exponential with power two in the mathematical framework for homing in on the real time R^2 values; the generic evaluation for defining the factual strength of the trending. Higher values for R2 intrinsically imply data centering whilst lower values indicate higher entropy of data.

9. Benchmarking performance in the dry run is the fundamental steps for strengthening the dryer performances.