Introduction of Energy Efficient Distillation System to Tequila Plant (2018), Introduction of Once-through Boiler and Fuel Switching to Tequila Plant (2016)

Dr. Fernando AVILA

Manufacturing Development Manager, Casa Sauza Beam Suntory Inc.

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Sauza background



Tequila production processes





Sauza best practices for operating in times of covid-19 pandemic

Acrylic barrier to isolate personnel



Non touch body temperature control and disinfection area upon entering the facilities



Use of face mask, face shields, social distancing and acrylic barriers in areas where there is interaction between people.



Disinfection of personnel transport vehicles and office spaces using thermal fogging equipment



Stations for hand and surface disinfection



Sauza's Carbon Roadmap

Determination of Tequila Sauza carbon footprint

Graph 1 shows the disaggregated emissions by type of scope. Only 30% corresponds to direct emissions (scope 1), the remaining 70% are indirect (scope 2 and 3).

Graph 2 shows the scope 1 and 2 emissions disaggregated by generating area. Scope 1 correspond to 0.769 Kg of CO2 e / L of FG tequila, and 0.148 Kg of CO2 e / L of FG tequila for scope 2





Introduction of Once-through Boiler and Fuel Switching to Tequila Plant

2018

DR4

Existing boiler system in 2016



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Introduction of once-through boiler



Once-through boiler system

Features of Once-through boiler

- **1.** Suntory Standards (98% of total number of boilers in Suntory Japan)
- 2. High efficiency (Sauza's boiler: 79%, Once-through boiler: 92%)
- 3. Good response to Steam load fluctuation
- 4. Less manpower automated operation
- 5. Less maintenance cost

International consortium for boiler project



Requirements and targets for boiler project

ltem	Requirements Specification	Detail Requirements Specification	Targets	Result
Quality	Power	Power Guarantee	1,700 HP	ОК
		Pressure Guarantee (at the Header in Boiler room)	7.0–8.0 kg/cm2	ОК
	Quality of Steam	Dryness of steam	More than 99%	ОК
	Quality of Water	DO	Less than 0.5 ppm	ОК
	Abnormal number	Production delay by boiler trouble	0	ОК
Cost	CAPEX	CAPEX	Less than 1,462 k USD	ОК
	Savings	Boiler Efficiency	Over 92%	ОК
		Gas Service Price	\$82.64 MXN/MMBTU	NG
		Labor	Reduce 3 operators	ОК
Delivery	Schedule	Start up	By Nov., Y2017	ОК
	Production Volume	Reach the budget	Keep the planning of 4-i version.	ОК
Man Machine Method	Maintenance	Enough space for maintenance	passage : 800mm	ОК
	Man	Easy operation (Automation system)	Reduce 3 operators	ОК
Energy	CO ₂	CO ₂ Reduction	Over 3,500 t/Y	ОК

Impact of the project to reduce the carbon footprint

201: Once-Through Boiler & Natural Gas.

- The main target of this project was to achieve a reduction in energy consumption, indirectly having a positive impact on GHG emissions
- Achieved a 17% energy savings in steam production and 4,000 Tons/year of GHG emission reduction.







Project description

- In 2018, joint analysis by Suntory and Sauza team highlighted that energy was being wasted in distillation because vinasses went out at ~100°c but heat was not used. There were also losses of alcohol vapors due to leakage in the copper column # 6.
- It was decided to execute a project that would eliminate leakage and reduce steam consumption in column 6 installing a system of vacuum distillation.
- Project was submitted to JCM to receive a subsidy.



Project design

<u>First stage</u>: install vacuum system and use thermal energy from column #3

<u>Second stage</u>: convert column #6 to make two pass distillations (destrozamiento y rectificación) in the same column

Project execution







Controls







CONTROLLING OPERATION BY COLUMN PLC

100% QUALITY COMPLIANCE OF CHEMICAL AND SENSORY PROFILE

Impact of the project to reduce the carbon footprint

Both stages of the project complement each other and were intended to reduce energy consumption by the use of steam in distillation. The result was that energy savings reached up to 85% within the process, also reducing GHG emissions in the same proportion.

2018: Continuous distillation column.



2019: Heat Recovery & Vacuum System in Distillation .



GEC inspection for boiler project



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Fernando.Avila@beamsuntory.com