



Tata Coffee has increased its profits through innovations in its manufacturing process that improved its coffee extraction yield to match international standards.

THE CONTEXT

Tata Coffee was facing a revenue loss of Rs1 crore per annum, ie 6% of its profits from its freeze-dried coffee (FDC) operations as its extraction plant's performance was not on par with the international benchmark. Even though the plant's operations were in line with the design and process parameters of the original equipment manufacturer (OEM), the extraction yield was just 51.5% as against the international standard of 53%.



THE INNOVATION

The company came up with a novel design for the insert filter and also reworked a key manufacturing process to solve the problem. While its competitors use a different type of insert filter for extraction in forward or reverse flow, Tata Coffee devised a modified insert and combined it with reverse soaking and forward feed flow to deliver a better extraction yield without affecting the process cycle time.



KEY CHALLENGES

TO MODIFY THE FILTER AND PROCESS PARAMETERS FOR A SIX-TONNE-PER-DAY (TPD) PLANT

The company undertook multiple iterations as it experimented with the size of the slots and the angle and number of holes to optimise the flow.



TO COMBINE THE REVERSE AND FORWARD FLOWS IN AN AUTOMATIC CONTROLLED PLANT

Since this was not possible without the intervention of the OEM, the company worked with the latter to come up with a solution. A recent visit by the OEM has validated that the plant is operating as per its design.

TO REVAMP THE AUTOMATION SYSTEM AND INSTALL ADDITIONAL COLUMNS

The company made a large capital outlay for this.

TO CHANGE THE REVERSE FLOW PATTERN WITHIN THE EXISTING OPERATING SYSTEM

This was difficult in view of the robustness of the original design but the company achieved this with the help of the OEM.



THE IMPACT



The company's profits from its FDC operations have gone up by 6% owing to a 1% increase in the final powder yield. The new design has also increased the throughput by 12% from 5.5 tpd to 6.1 tpd. Besides, the downtime for cleaning and replacing the modified insert filters is zero compared to six hours a month earlier. The indigenous insert filter is also more cost-effective at Rs 80,000 per insert as against Rs 6 lakh earlier.