

Confectionery manufacturer reduces 12% of HVAC energy cost per year without breaching production constraints

INDUSTRY	REGION
FOOD AND BEVERAGE	NA- MEXICO
GUMMY CANDY	1 MMT/Week

CHALLENGE

- The factory required ambient conditions to be maintained as a critical process parameter. This was serviced by using 3 manually controlled chillers running for ambient cooling and humidity control in shop floor.
- Manual set points led to overuse of chiller operations and subsequent inefficiency energy use.

APPROACH

Bosch Software and Digital adopted a differentiated approach

- Provided end to end digitalization right from connecting Chillers with sensors/meters, analyzing data with our AI data models
- Targeted the HAVC – Chiller units – which are backbone of ensuring zero compromise on plant ambient conditions which has a direct impact on the texture & consistency of chocolates/candies manufactured.
- Proactive condition maintenance & ideal set points optimization were identified for optimal performance of the chiller

SOLUTION AND OUTCOME

Post end-to-end digitization, Bosch DEEPSIGHTS was used to build AI/ML models by:

- Analyzing 15+ parameters form Chiller Panel Controller and 18 + electrical parameters
- Leveraging production & humidity data from Plant systems.
- Applying process constraints of RH, temperature and production data

Consumption study against actual load requirements reveal that 1 chiller could be turned off & yet the plant could be managed with just 2 off 3 chillers at the plant..

- Chiller loading analysis for peak (weekday) & off peak (weekends) and automated chiller sequencing saved ~12% of annual HVAC energy cost (~USD\$50,000 p.a)
- Proactive condition maintenance leading to improvement of Chiller performance, by analyzing control variables saved 6% of annual HVAC energy cost
- COP improvement of Chillers; Improved heat rejection efficiency of cooling towers