

Overview: The purpose of the project was to reduce humidity of the drying air, so that fast production rates of winter could be maintained through summer, spring and fall.

Challenge: Moist weather makes the air too wet to dry the coating at high speed. The coating gets blotchy, uneven and gum pieces stick together. Fresh air must be conditioned to meet two different drying requirements.

Case: Gum requires hot air to set the sugar coating and to form an especially smooth and shiny surface which is part of the products primary marketing identity.

Problem: The packaging area registered close to 70% RH

Solution: Desiccant dehumidifiers are used to dry products when there is a benefit from a very low dewpoint. The optimal condition for the product was 120°F, 9% RH (44gr/lb) with 250 cfm airflow for 20 drying bins. In order to calculate loads, air had to be pulled into the system from the weather by the exhaust fans. There were exhaust fans in the ceiling that pulled moist air out of the building, but no make-up air system to supply treated air to the room. Pulling air from the building supply would have placed a cooling load on already overloaded systems. Future maintenance was simplified by not returning air to the dehumidification system after it left the bins. A 95% efficiency (MERV14) filtration system was installed to filter (remove) sticky, unsanitary sugar dust. Latent heat in the fresh air was converted to sensible heat by the dehumidifier, in proportion to the amount of moisture the unit removes.

Mitigation Strategy: In many cases, using dehumidified air to dry products can double the processing speed of a production line, and increase product quality as well. A drying dehumidification system is like a machine tool – it can pay back its installation cost in months or even weeks.

Chiclets are a brand of candy-coated chewing gum made by Cadbury Adams. The colors are: yellow, green, orange, red, white, purple, pink, and blue. The product's name is derived from the Nahuatl word *tziktli*, in Spanish Chicle, the substance from which chewing gum was traditionally and is still made. Thomas Adams was the first to put Chicle into gum. Legend says that it was a candy salesman who actually came up with the idea for adding the candy coating that made Chiclets so popular then, and now.

Coated gum benefits from using dry air to speed drying. With gum, the gloss of the coating is enhanced by using dry air, and the product is less likely to stick together in the coating pan. Coated gum with a high-quality, glossy surface is almost always produced with the aid of dry air from desiccant dehumidifiers.

