

## Case Study

### Gelkaps Sports Pvt. Ltd.



#### Gelkaps Sports installs DuCool for improving their product quality.

Gelkaps Sports, the first company in India to manufacture Paintballs of various colors, size and grades needed a simple and cost-effective solution to manage its humidity. Ducool Systems provided that solution with its liquid desiccant dehumidification systems. As a result, the company has been able to control humidity, reduce energy consumption, and save money on operating expenses.

#### Background

Located in India on the north-west coast of Gujarat, about 600 kms from Mumbai, this plant is one of a few in the world for the manufacturing & exporting of color-filled, gelatin balls. The gelatin balls called "Paint Balls" are in heavy demand for popular sport & recreation activities worldwide, particularly in Europe & US.

The plant is fully automatic and designed for producing large quantities of paint balls according to the highest quality standards in a climate controlled environment.

#### Challenge

Summers in the town of Kandla are usually very hot and sultry, and the humidity is high during this time due to its location near the sea. Kandla also experiences severe humidity during monsoons due to heavy downpour.

The production of paintballs involves two major steps. The first is soft gelatine encapsulation, and the second is soft gelatine drying. Encapsulation is the manufacturing process that brings the gelatin shell and the fill material together to form Softgel capsules. To make the capsules two wide strips of softened gelatin are loaded into the encapsulating machine. The strips are then made to move through two counter - rotating drums. These drums are lined in with pockets or dimples that form the paintball casing. As the softgelatin is pushed into the dimple, the machine automatically injects a precisely measured amount of paint into the cavity. It also automatically seals the two strips together, encapsulating the paint.

If the air blowing against the drum has too low a humidity the gelatin will set too rapidly and become brittle which can cause the manufacturing process to grind to a halt. If the air temperature and humidity are too high, then the gelatin will not solidify into a strip.

The objective of soft gelatine drying is to reduce the moisture content so as to generate hard and durable soft gel capsules ready for packaging. Drying process requires an environment with low relative humidity in the air but not hot air.

For the above two process, Gelkaps required to maintain relative humidity of 18% at maximum temperature of 22°C in the Encapsulation Area and the Drying Area.

#### DuCool Advantage

Gelkaps installed DuCool dehumidifier units to transform the harsh ambient conditions of 29 °C (84.2 °F), 83% RH to stable, requested conditions of 22 °C (71.6 °F), 18 % R.H. As a result Gelkaps could completely eliminate rapid settling of gelatin thus avoiding brittleness during encapsulation. Due to precise humidity levels, with simultaneous cooling air, in the drying area, Gelkaps could manufacture capsules that are hard (as per their requirement) and long lasting. They achieved the above advantages with above 50% energy savings. Following which they installed additional DuCool units during further expansion of the plant.