

Case Study

HMX-Ambiator – Creates Positive Pressure at Balaji Multiflex, Rajkot

Background

Balaji Multiflex Pvt. Ltd., is a well-known manufacturer of flexible packaging materials based in Rajkot, Gujarat, India. Over the years, this company has gained a reputation for being a high quality flexible packaging converter.

Challenges

In general, in the print and packaging industry, the working environment plays a major role in the productivity of workers on the shop floor.

This was the case at Balaji Multiflex, where indoor temperatures could rise to as high as 50°C in the peak of summer. High shop floor temperatures and an absence of adequate ventilation systems negatively impacted worker performance. The heat and lack of adequate ventilation also led to issues such as:

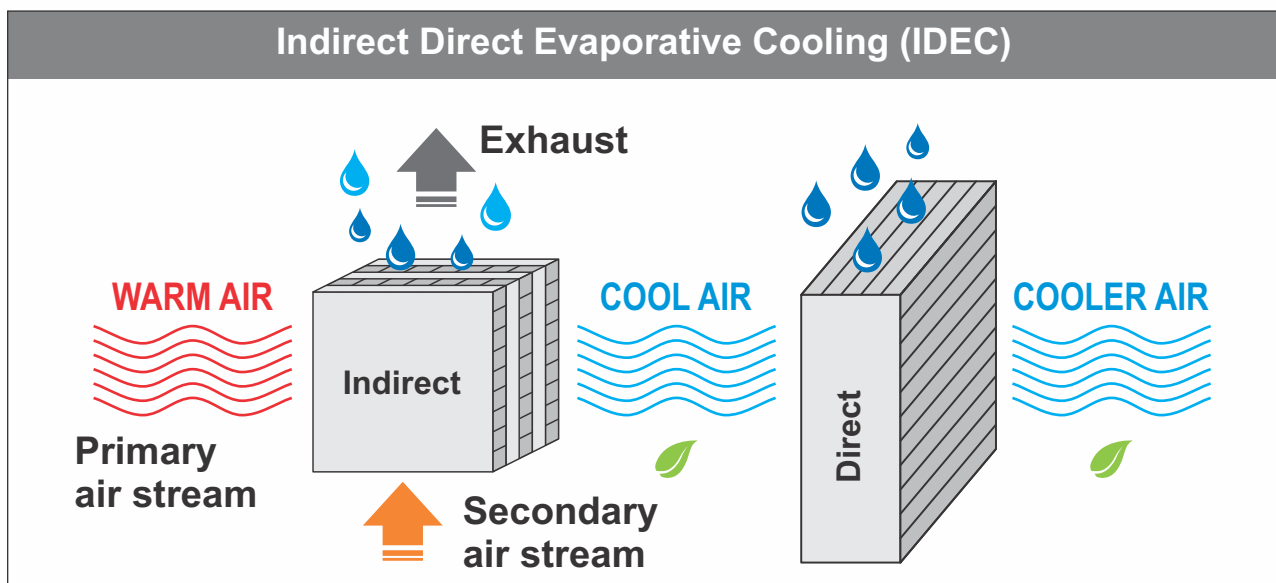
- High shop floor temperatures increased solvent losses due to evaporation
- Ingress of dust on shop floor due to lack of positive pressure
- Increasing volatile organic compounds (VOC) levels affected workers' productivity and efficiency
- Fumes generated in the printing process remained indoors, resulting in severe deterioration in the indoor air quality (IAQ)

Moreover, the dry climate of Rajkot increased the amount of static electricity on the shop floor; sparks from static electricity are a potential fire hazard. These problems had a direct impact on the daily operations and overall product quality.

Solution

To solve these problems, Balaji Multiflex needed an energy efficient, economical cooling and ventilation solution. After evaluating various cooling options, Balaji settled on the HMX-Ambiator – a well-proven plant conditioning system that meets many known as well as latent challenges of the print and packaging sector. The Ambiator is a space and process cooling solution which is based on IDEC (Indirect Direct Evaporative Cooling) technology. HMX's IDEC technology is used to cool the air in two stages. In the first stage, the primary air stream is cooled with indirect evaporative cooling. In the second stage, the air stream is cooled further using direct evaporative cooling. This provides 100% fresh, clean, and cool air.

Considering the high internal heat load and dry ambient conditions, Balaji Multiflex decided to go with HMX's recommendation of 90,000 CFM (3 units of 20,000 CFM and 1 unit of 30,000 CFM) to provide comfort cooling on the shop floor.



Result

The HMX-Ambiator proved to be the perfect solution for Balaji Multiflex as it addressed all their problems and is also energy efficient and eco-friendly. It transformed the hot, barely ventilated, dusty shop floor into a comfortable, dust-free environment by maintaining positive pressure with 100% fresh and cool air. The lower temperatures and better IAQ resulted in improved performance, productivity, and quality, leading to an improved bottom line.

With the HMX-Ambiator installed, Balaji Multiflex saw a number of changes:

- The average temperature on the shop floor is maintained at 32°C, even during hot summer days, thus improving worker comfort
- Low temperatures reduced loss of solvent, thereby lowering the solvent consumption
- Positive pressure maintained by the Ambiator reduced dust on the shop floor, thereby improving product quality. It also greatly reduced VOC levels.
- Reduced dryness of air, which resulted in reduced levels of static and minimised risk of fire.

The employees at Balaji Multiflex are quite happy with the improved indoor air quality.



Mr Pranav Bhalara, Director Balaji Multiflex Pvt. Ltd. said —

“Increasing shop-floor temperatures, solvent evaporation rate and employee comfort were our foremost challenges. The HMX-Ambiator helped us to address these problems with a single solution. Now, because of reduced temperature, we have removed chill roller installed on the machine and are still able to run the machine at high web speeds. The evaporation losses of ethyl-based solvents have also reduced. HMX’s executive explained all the product details in advance. All of my expectations are met by HMX-Ambiator, and I am satisfied with the product performance.”

