

Tyre manufacturers prefers HMX for sustainable cooling

Background

MRF Tyres is one of the largest Indian multinational tyre manufacturing companies, headquartered in Chennai. The company manufactures diverse rubber products including tyres, treads, tubes, conveyor belts, paints and toys. MRF was named the world's second-strongest tyre brand by Brand Finance, with a AAA- brand grade.

"MRF is 2nd strongest tyre brand in world" – *The Times of India*, 13 April 2023

Challenges

The tyre manufacturing process comprises of various stages:

1. Compounding and mixing using banbury mixers
2. Component preparation
3. Tyre building
4. Curing
5. Final finish

High sensible heat is generated in different stages such as compounding and mixing, moulding and curing, sending the temperatures soaring up to 50°C around the processing areas. Additionally, steam is used in multiple stages during the manufacturing process generating latent heat and raising humidity levels.

The combined effect of sensible and latent heat causes a lot of distress to workers resulting in fatigue and consequent drop in productivity.

MRF was using conventional air-washers in some of its manufacturing units to provide comfort to workers. However, these air-washers provided only partial relief as the temperature reduction was inadequate while also adding excessive moisture to the air.

Solution

After evaluating multiple options to provide better comfort to workers, MRF management zeroed in on HMX-IDEA (Indirect-Direct Evaporative Cooling), a well-proven solution that provides better temperature reduction with lower moisture addition to air as compared to air-washers. Additionally, HMX-IDEA consumes up to 60% less energy when compared to air-conditioning systems.

Since 2014, MRF Tyres has installed 88 HMX-IDEA machines with a combined capacity of 4.7 million CFM across multiple locations in South India.

Results

HMX-IDEA units have consistently provided comfortable working conditions for the workers by maintaining temperatures in the range of 30-35 °C, with significantly lower moisture addition compared to air-washers.

The unique blow through configuration of HMX-IDEA also ensures that critical components such as the blower and motor do not come in contact with moist air, minimising the risk of rust and corrosion.

HMX-IDEA units have gained widespread adoption among reputed tyre manufacturers such as Apollo Tyres, ATG, BKT, and TVS Eurogrip, which have installed these units in different manufacturing plants across India.