

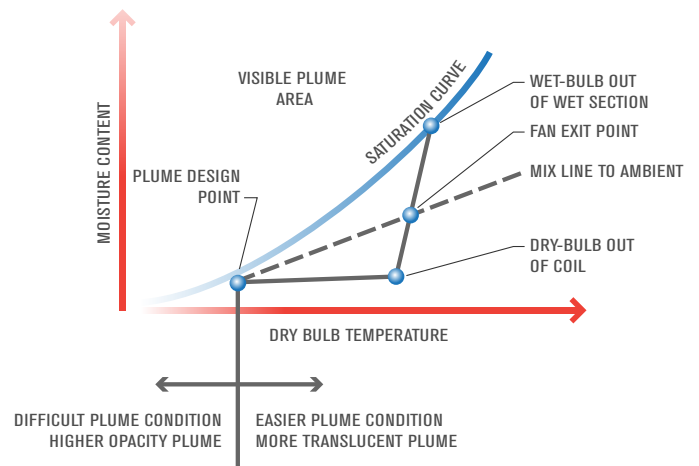
Understanding Plume Point

Visible plume is a cloud of pure water vapor produced by a cooling tower. It occurs when warm, moist discharge air is cooled by the ambient air. As ambient temperature drops, plume opacity (or visual density of the discharge cloud) tends to increase. This may cause issues in applications where visibility is important.

These applications may require a plume abated tower. The Marley NCWD cooling tower can reduce visible plume for many, *but not all* operating conditions. The NCWD can be designed around two operating conditions:

1. Summer Thermal – mode with water flow over fill in upper module (no visible plume reduction)
2. Winter Plume Abatement – mode with water flow through coil in upper module

The NCWD only runs in plume abatement mode during lower ambient conditions. Plume design point is a target ambient condition – combination of dry bulb temperature and coincident relative humidity – at which visible plume is greatly reduced. As tower operation approaches, then passes beyond this point to lower dry bulb temperatures, the discharge air transitions from more translucent to higher opacity plume.



The following factors increase plume point difficulty:

- Low ambient temperature
- High relative humidity
- Design or higher heat load

Plume point difficulty and NCWD coil hydraulic limitations often determine the quantity of cells required and the amount of coil rows. When a plume point has not been defined please work with your local Marley sales representative. They can either provide the best plume point possible with the selected tower or meet a specified plume point if provided.

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