Use of Vibration Isolators with Cooling Towers

Vibration isolators are used with cooling towers as a method to reduce the transmission of vibration, produced by rotating mechanical equipment or water flow, into or within a building structure. SPX Cooling Technologies does not require the use of vibration isolators. Thousands of cooling tower cells have been installed without the use of vibration isolators.

When vibrations isolators are used it is important to know vibrations isolators will not decrease the seismic load on a tower, but will instead increase the loading. This is because the vibration isolators will actually magnify the shaking effects of an earthquake or other land movement. In these instances, it is recommended to have the cooling tower manufacturer review the seismic requirements to ensure the cooling tower design can handle the seismic load.

When there is a requirement for a cooling tower to be installed with vibration isolators here are a few important pieces of information to consider.

- Not all cooling tower models are designed to handle the point load connections, and therefore those models will require the isolators to be located under the supporting steel beams and not directly under the tower.
- For single-cell towers that can handle a point load, they may be mounted directly on isolators, provided that the center line of the isolators are aligned with the center line of the basin side and that the top of the isolator is restrained from rotation.

Vibration Spring Isolators located below the supporting steel on a multicell cooling tower

- SPX recommends multicell towers locate vibration isolators under the supporting steel beams and not directly under the tower. If the supporting steel is below the isolators, then cells can move independent of one another and cause issues with any connections from one cell to another. These connections between cells may include inlet piping, flumes, equalizer piping, outlet piping, fan deck walkways, access door platforms between cells, guardrail systems, etc.
- While piping may be isolated with flexible connections, other options can still deflect and fail when cells move independently. If individual cells are completely isolated from one another (no interconnecting basin flumes, equalizers, fan deck walkways, guardrails, etc.) then isolators can be directly attached to the tower. Otherwise, one cell could deflect independently of the adjacent cell and leaks and other issues may develop.
- If the use of vibration isolators is chosen, then the customer must make provisions to isolate all piping, ladder extensions, or other items attached to the tower, that connect back to the building. Failure to do so could negate the intent of having the isolators installed on the tower.
- Finally, it is important to understand that there are many different types of isolators in the industry. Some isolators use springs that are preset to a specific tension. Other isolators use foam pads. Regardless of the type or style of isolator, SPX recommends that the cooling tower is supported as the structural steel support drawing suggests. The decision as to the type of isolators used is up to the design engineer.

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