

ADVANCED HEATING FOR INDUSTRIAL PROCESSES

QMax explains how its unique finned coils are revolutionising tank heating



▶ INDUSTRIAL PROCESSES with high viscosities and melt/pour points normally require active heating when being held in tanks. Vessels for both long-term storage and day-use are regularly equipped with finned internal heating coils to maintain these processes at the ideal temperature for flow and pumpability. Compared to finned coils, the heat transfer rates of un-finned coils (known as 'slick-pipe') are typically so inefficient that the length of coil required makes their use impractical.

As process viscosity increases, however, the primary challenge with finned internal heating coils is the build-up of process material on the external surface of the coils. This build-up leads to fouling of the coils and reduced performance of the system over time, decreasing system efficiency and shortening costly maintenance intervals.

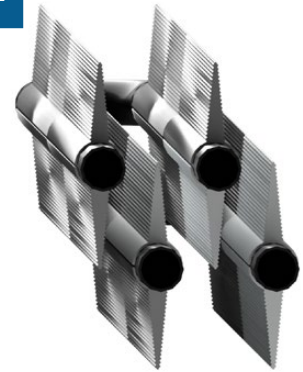
For context, a common fin technology used in asphalt service is the spiral welded fin (or helical welded fin). This is an inexpensive technology from a capital cost perspective and works well with lower viscosity neat asphalts. Due to the limitations in manufacturing and materials, spiral fins are prone to fouling

with higher viscosity modified asphalts. The long residence time of asphalt in the interstitial space between the fins can cause overheating, premature age hardening and build-up on the fin surface. Increasing the spacing between the fins and decreasing their height helps reduce overheating issues, but rapidly diminishes the coil performance along with its value proposition. In the past, many modified asphalt producers resorted to slick pipe coils to minimize fouling, requiring excessive lengths of pipe to make up the performance deficit.

NEW TECHNOLOGIES

Modern Polymer Modified Asphalts and Rubber Modified Asphalts (PMA & RMA), depending on their chemistry and state of cross linking, can be especially challenging to store from an internal coil perspective. QMax has identified the need for a finned coil apparatus, for service in high viscosity modified asphalts that may contain suspended particulates. QMax's new patent-pending fin technology, the MakoFin, is the bulk liquid industry's only purpose-built fin specifically for modified asphalt.

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INNOVATIVE DESIGNS

QMax's MakoFin design incorporates a highly conductive aluminium singular fin with an optimised mass to length ratio. This design includes a wave-form ridged surface to interrupt the formation of thick boundary layers, and yields a high fin efficiency. The singular fin does not create small interstitial spaces where overheating can occur, and there are no areas where particulates can collect if they fall out of suspension. When arranged in a serpentine bank configuration the collective fins create parallel heat transfer 'channels', that generate a greater buoyant force than standard coils, increasing flow velocity over the fins and promoting tank turn-over and mixing.

For more information:

www.qmaxindustries.com

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01 MakoFin bank formation

02 MakoFin close-up