Tank Heating System Products

Selection Process

INTERNAL HEATING

- high viscosity product? — no → QCB
- high viscosity product? — yes → is aluminum acceptable? — no → QCB
- is aluminum acceptable? — yes → QFIN

STEAM / HOT OIL / GLYCOL / WATER

- is cross-contamination a concern? — no → INTERNAL HEATING
- is cross-contamination a concern? — yes → EXTERNAL HEATING

EXTERNAL HEATING

- STEAM → FTS WITH TUBING
- HOT OIL / GLYCOL / WATER → CST (WELDED)

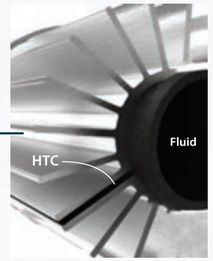
Product Description

QMax Standard Coil Banks

QMax Industries offers a wide variety of internal heating coil options including bare pipe coils and spiral welded finned tube coils. Our engineers often size and design custom heating coils to ensure we meet specific needs of the project.

We also offer standard coil bank configurations for one-pick installation. QMax coils can be designed using several heating media including steam, hot oil, water or explosion-proof catalyst (by QMax Catalytic, LLC). These coils can also be designed to fit into existing tank manway openings or into any specialty tank or vessel.

QCB STANDARD COIL BANK



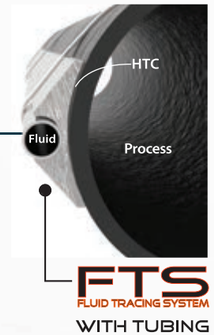
QFin Revolutionary Design

maximizes the heat input of carbon or stainless steel internal heating coils, and it is fully removable and replaceable.

QFin is a bolt-on heating fin that attaches to any size pipe. The highly conductive aluminum material of QFin increases the heating surface area by 1,000% which allows for greater heating capabilities or decreased total footage of the internal coil.

QFin is specifically designed for high viscosity fluids such as Asphalt, Bitumen and Heavy Oils to allow for easy removal and reinstallation if the product cokes on the fins.

QFIN TANK HEATING SYSTEM



QMax FTS Innovative Design

maximizes the heat input of regular stainless steel or copper tube tracer and offers guaranteed results.

First, **QMax** transforms the nature of the tracer from inefficient convective heat transfer to high-efficiency conductive heat transfer. Second, the heating surface area is increased to as much as 2 inches using highly conductive aluminum.

A single tracer, with the addition of **QMax FTS**, can achieve the same results as multiple tube tracers or even jacketed pipe. This saves time and money on capital projects and reduces long-term maintenance costs.

FTS FLUID TRACING SYSTEM WITH TUBING

QMax CST (Carbon Steel Tracing)

is a 1" x 2" rectangular pipe contoured on one side to match the outside diameter of the process pipe. Specifically designed for long-run hot oil tracing, **QMax CST** can be pre-fabricated from customer drawings or can be provided as parts and pieces to be fabricated in the field. In either case, QMax Industries, Inc. will provide a thermal analysis to size the system.

QMax CST is formed from SA 178 Gr. A, carbon steel boiler tubing. The elements are fabricated and tested in accordance with ASME Boiler and Pressure Vessel Code, Section VIII, Div. 1 or Section IX.

CST CARBON STEEL TRACING (WELDED)

Typical Application

- SPECIALTY CHEMICAL / LIGHT OIL
- ASPHALT / BITUMEN / HEAVY CRUDE
- SULPHUR / SPECIALTY CHEMICAL
- HOT OIL JACKETING

QFin: Breakthrough Performance

QFin incorporates several unique design innovations to deliver breakthrough performance when compared with traditional fins.

QFin is not welded on so it can be removed and replaced without removing the internal heating coil itself. This eliminates the need for costly hydroblasting or total coil replacement after a coking event. Instead, the fins are simply removed by cutting straps, so new fins can be applied. Removability is a huge operational and cost advantage when heating asphalt, bitumen, and other high viscosity fluids that are prone to coking.

Yet **QFin**'s advantages are not limited to removability. Its horizontal design increases the heating footprint dramatically. For example, a two inch pipe coil with **QFin** is 5.75 inches (146mm) in diameter. That kind of gain in heating surface is crucial when heating high viscosity fluids.

The horizontal direction of **QFin** also allows for much greater circumferential distance between the fins. A thin layer of coke will not "close the gap" between fins as it so often will in a traditional spiral welded style fin.
This means **QFin** can deliver longer service life.

"The QFin System improved the heating performance in our tanks and helped us make better product"

– George Mariani
Terminal Manager
Mariani Asphalt
(An Associated Asphalt co.)

Internal Coil Bank
(Custom Design)

QFin's revolutionary design maximizes the heat input of carbon or stainless steel internal heating coils and it is fully removable and replaceable. **QFin** is a bolt-on heating fin that attaches to any size pipe. The highly conductive aluminum material of **QFin** increases the heating surface area by 1,000% which allows for greater heating capabilities or decreased total footage of the internal coil. **QFin** is specifically designed for high viscosity fluids such as Asphalt, Bitumen and Heavy Oils to allow for easy removal and reinstallation if the product cokes on the fins.

Estimated Cost Savings

Companies that implement **QFin** as an improvement to standard internal tank coil heating systems often realize significant capital and maintenance costs savings. The largest impact is the **reduction of internal coil infrastructure** (up to 4 times reduction in needed coil length). The following example demonstrates the potential savings based on historical prices. The material savings alone more than offset the cost of the **QFin** system. To run a more detailed analysis of savings, please send us the unit prices that apply to your site specifications.

Scenario "A" - Traditional 2 inch Internal Heating Coil
- 2400 feet of Heating Coil x $50 per foot = $120,000 Total Install Cost

Scenario "B" - QFin Installed on 2 inch Internal Heating Coil
- 600 feet* of Heating Coil x $80 per foot = $48,000 Total Install Cost

Total Cost Savings with QFin = $72,000

***Adding QFin to the system results in a 4X REDUCTION in coil length.**

QMAX QFIN TANK HEATING SYSTEM

> QFin is not a one size fits all system for all areas of industry. It is specifically designed for heating asphalt, bitumen, and other high viscosity fluids.

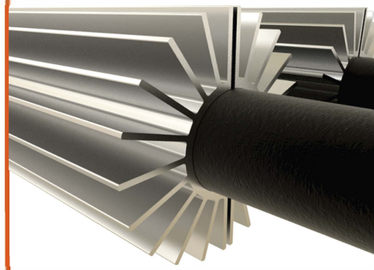
> QFin increases the heating surface area to reduce capital and energy costs.

> QFin continues to perform even after it is subjected to thin layers of coke.

> QFin is removable to reduce down time and maintenance costs associated with major coking events.

State-of-the-Art
TANK HEATING
High Performance, Capital Savings

No other company offers more Tank Heating solutions than QMax Industries. We offer both internal and external tank heating options as standard or custom designs. QMax provides qualified customers with complimentary thermal analysis to model heat-up and temperature maintenance scenarios. Our QFin system is specifically designed for high-viscosity fluids such as Asphalt, Bitumen and Heavy Oils. Its revolutionary design allows for 1,000% more heating surface area than standard pipe and allows for removal and reinstallation of the fins for easy maintenance.



Limits Of Traditional Options
Agitating asphalt inside a storage tank increases its convection coefficient, improving the overall heat transfer coefficient from heating medium to process. However, agitation is already commonly used whenever it is practical.

Increasing the heating medium temperature can improve performance and process control, but carries higher energy costs and can accelerate coking.

Increasing the internal coils' heating surface area can also substantially enhance heating performance and control. However, traditional options for increasing the heating surface area have limited practicality.

Adding length of internal heating coil:

- Increases capital cost – labor and materials.
- Increases maintenance costs – particularly regular cleaning, which is exacerbated by a coking event.
- Burdens the heating system – requires additional heat transfer fluid and creates higher pressure loss associated with greater length of pipe and associated fittings.

QMAX INDUSTRIES INC.

QMax Industries, Inc.
is a technology company based in Charlotte, NC, with several innovations in the field of process heating.

Our specialties include:

>High Performance Steam Tracing
>High Performance Electric Tracing
>Equipment Jacketing
>Tank Heating

"We are the world leader in steam tracing technologies"

Thomas W. Perry
President

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