

EVALUATING TANK HEATERS

POWERBLANKET VS ALTERNATIVES



EVALUATING TANK HEATERS

THE MANY WAYS TO HEAT A TANK

There are many ways to heat a tank. Selecting the right heating method is important. Factors to consider when selecting heating method include: size of tank, material of tank, material being heated, target temperature, location of tank, tank flowrate, tank details such as flanges, manways, fittings etc.

This whitepaper will take a look at several heating options for both internal and external heating systems. We will compare Powerblanket to pad heaters, steam trace, heat trace, and immersion heaters.

When choosing a tank heating system, you should consider the following critical factors:

SIZE

Tanks 15' in diameter and up to 25' tall can be externally heated. When tanks get larger than this it becomes less practical to heat externally and some form of immersion heater is recommended.

TANK MATERIAL

Tanks made of plastic or other materials with low melting points can get damaged by heating elements. An advantage of a Powerblanket or heat trace solution is that the Power provided into the blanket is spread out of a large surface area and therefore nowhere on the tank gets particularly hot. This reduces the likelihood of the tank or a nearby person being damaged/injured coming in contact with the heat source. If higher temperatures are not an issue then steam trace and pad heaters are a good external solution and immersion heaters are a good method of direct heating.

CONTENTS MATERIAL

Similarly to the tank material, if the contents of the tank can be damaged by a high heat source then an immersion heater could be a poor choice since all the heat is concentrated in a relatively small heating element. Heating materials with a low flash point also lends itself to an external heating solution where the power is spread over a large surface area and the difference in temperature between the heating element and the contents temperature is small. For this reason, Powerblanket and heat trace solutions are preferable when heating viscous materials.

TARGET TEMPERATURE

For freeze protection and maintenance heating Powerblanket and heat trace are an excellent choice. They are also good for heating up to approximately 200F, but the time to heat up could take a while. If you are in a hurry to heat something up, or if you need to get above 200F then external pad heaters, steam trace, or immersion heaters are better choices due to the higher power density.

LOCATION

If your tank is located near a good source of cheap labor then heat trace is a viable option, but in most cases Powerblanket will cost less to install. On remote job sites, Powerblanket products are faster, easier, and much safer to install. Immersion heaters and pad heaters are small and easy to ship and are good options just about anywhere.

FLOWRATE

If you tank has a high flowrate and warm fluid is being replaced by colder fluid then a higher power density heater (steam or immersion) may be the better option. Talk to an engineer to see if an external heating source like a Powerblanket or heat trace will work.

TANK DETAILS

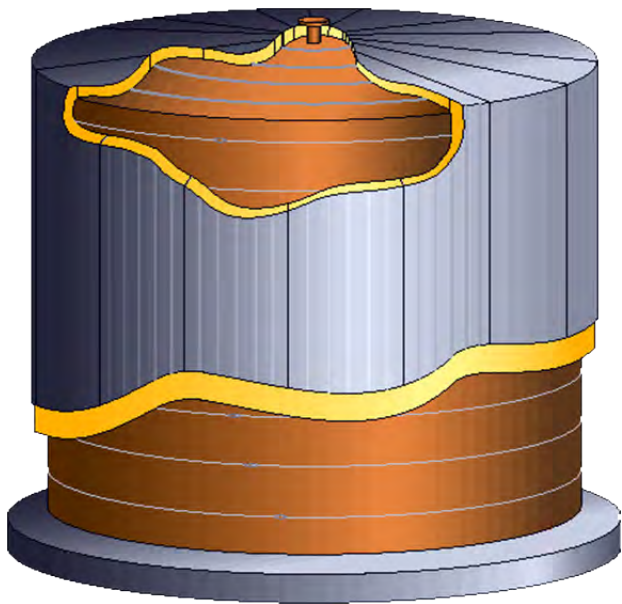
If a tank is equipped without any flanges then modifying the tank for immersion heaters could be expensive. Also, you will be required to drain the tank to install or replace an internal heater. If you do not want to modify or drain your tank, then an external heating source is preferable.



USE CASE & DESIGN CRITERIA

TANK HEATING SOLUTIONS

When companies choose a tank heating solution, the overall cost often becomes the deciding factor. To illustrate Powerblanket tank heaters' cost-effectiveness, let's consider a common use case: freeze protection during harsh winters. We'll delve into the specifics of the tank application and its temperature needs. By comparing the typical costs of each heating solution, we can determine which offers the best value.



VESSEL & INSULATION	
Req Maintenance Temperature	40°F
Design Heat Loss	5791 Watts
Safety Factor	20%
Vessel Diameter	14ft
Vessel Height	25ft
Vessel Orientation	Vertical
Vessel Support	Concrete Pad
Vessel Top	Flat
Vessel Bottom	Flat/Concrete
Wall Material	Mild Steel
Wall Thickness	0.25in
Insulation Type	MF (ASTM C612)
Insulation Thickness	1in
Insulation Coverage	Full Insulation
Insulation K Value	0.016 BTU/hr-ft-°F

PRODUCT & ENVIRONMENT	
Voltage	240 Vac
Min. Ambient Temperature	-20°F
Startup Ambient Temperature	0°F
Max Ambient Temperature	104°F
Wind Speed	25mph
Max Exposure Temperature	50°F
Area Classification	Non-hazardous (Ordinary)
Normal Product Level	25ft
Minimum Product Level	12.5ft

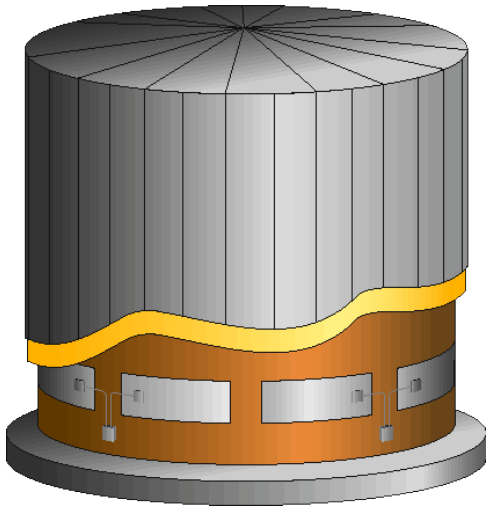
TOTAL INSTALLED COST COMPARISON

POWERBLANKET VS PAD HEATERS



POWERBLANKET

Description	Extension
Powerblanket Materials	\$17,943
Powerblanket Installation	\$424.40
	\$18,367.51



PAD HEATER

Description	Extension
Pad Heater Materials	\$29,366.31
Pad Heater Installation	\$5,517.20
Insulation Cost	\$9,435.00
Insulation Installation	\$22,634.26
	\$66,952.77

TOTAL INSTALLED COST COMPARISON

POWERBLANKET VS EHT



POWERBLANKET

Description	Extension
Powerblanket Materials	\$17,943
Powerblanket Installation	\$424.40
	\$18,367.51



EHT

Description	Extension (Parallel)	Extension (Series)
EHT Materials	\$7,313.42	\$9,609.52
EHT Installation	\$3,660.45	\$4,562.30
Insulation Cost	\$9,435.00	\$9,435.00
Insulation Installation	\$22,634.26	\$22,634.26
	\$43,043.13	\$46,241.08

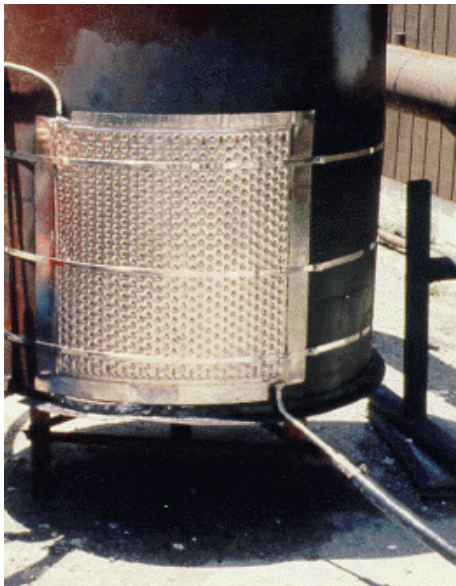
TOTAL INSTALLED COST COMPARISON

POWERBLANKET VS STEAM TANK HEATING UNITS



POWERBLANKET

Description	Extension
Powerblanket Materials	\$17,943
Powerblanket Installation	\$424.40
	\$18,367.51



STEAM TANK HEATING UNITS

Description	Extension
Steam Heating Materials	\$4,030.93
Steam Heating Installation	\$795.75
Insulation Cost	\$9,435.00
Insulation Installation	\$22,634.26
	\$36,895.94

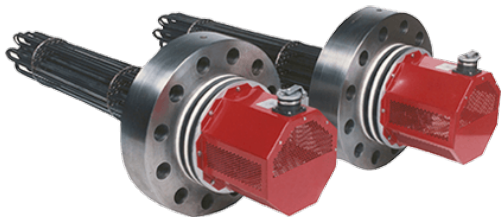
TOTAL INSTALLED COST COMPARISON

POWERBLANKET VS FLANGED IMMERSION HEATER



POWERBLANKET

Description	Extension
Powerblanket Materials	\$17,943
Powerblanket Installation	\$424.40
	\$18,367.51



FLANGED IMMERSION HEATER

Description	Extension
Flanged IH Materials	\$6,736.68
Insulation Cost	\$9,435.00
Insulation Installation	\$22,634.26
	\$38,805.94

OVINTIV'S LUBRICANT TANK HEATING SOLUTION

WITH POWERBLANKET

PROBLEM

Ovintiv, a key player in oil and gas exploration and production, was faced with a challenge in Northern Alberta. They required a robust solution to heat and insulate a tank filled with lubricants essential for their drilling operations. Given the severe and prolonged winters typical of the region, there was an urgent need for a cost-effective, efficient, and reliable heating solution that would ensure uninterrupted operations.

SOLUTION

HEAT TRACING VS POWERBLANKET SOLUTION

Two primary solutions were considered:

- **Heat Trace:** The heat tracing solution would come with a price tag of about \$25,000 for materials alone. However, with labor and insulation included it could be double that or even more, since heat tracing a skirted tank can be very challenging. Once insulation is applied, it makes it nearly impossible to troubleshoot or remove the heat trace
- **Powerblanket:** Priced at approximately \$20,000, not only was the Powerblanket solution more affordable from the outset, but it also promised a faster delivery and fewer man hours to install. In addition, the heating jacket's design made accessing the tank, removal, and reinstallation easy for the company's planned tank relocation.

A comparison between the two solutions indicated a clear advantage for the Powerblanket solution, especially when the labor costs for insulating the heat trace were factored in.

IMPLEMENTATION

To guarantee sufficient heating, the entire tank was wrapped with heated blankets, complemented by an insulated-only top covering. Additionally, to enhance the heating efficiency, a 5,000 W Catadyne heater powered by Natural Gas was strategically placed under the tank skirt improving



the overall reliability in the event of a power outage. This comprehensive approach was facilitated by the cost savings from Powerblanket's solution and ensured that the lubricant's temperature would be maintained even under the harshest winter conditions.

OUTCOME

The installation of the Powerblanket system progressed smoothly. With the system now fully commissioned, it stands ready to tackle the challenges of the cold season.

EVALUATING TANK HEATERS

THE POWERBLANKET ADVANTAGE

In the industrial landscape, maintaining consistent tank temperatures is pivotal for quality and safety. With a plethora of heating solutions available, making an informed decision is challenging. This white paper provides a comprehensive comparison of widely-used tank heating options against Powerblanket tank heaters.

UNDERSTANDING POWERBLANKET'S EDGE

While electric heat trace, pad heaters, and steam heating are often employed, Powerblanket tank heaters bring distinct advantages to the table:

1. COST AND TIME EFFICIENCY

Traditional methods can entail hidden costs from maintenance and energy inefficiency. Powerblanket heaters optimize energy use, conserving both time and money.

2. EASE & SPEED OF INSTALLATION

Powerblanket tank heaters streamline installation, reducing setup time and associated labor costs. This efficiency is consistent during setup, removal, or re-installation.

3. INTEGRATED INSULATION

Most heaters necessitate additional insulation. Powerblanket products are designed with inherent insulation, ensuring consistent heating while reducing operational complexities.

4. MINIMIZE DOWNTIME

Operations remain uninterrupted with Powerblanket, mitigating unplanned halts and maintaining workflow.

5. OPTIMIZE OPERATIONS

Powerblanket's advanced temperature control ensures critical temperatures remain precise. This accuracy is paramount to achieving and maintaining operational excellence, ensuring product quality and integrity.

AN OPTIMAL CHOICE FOR SPECIFIC TANKS

For tanks less than 15' in diameter and under 20' in height, Powerblanket's advantages are particularly pronounced. As this white paper progresses, we'll present data and in-depth analysis that positions Powerblanket tank heaters as a technically superior tank heating solution.

