



## Application Report: Chemical / Hazardous Waste Treatment and Recycling

### Introduction

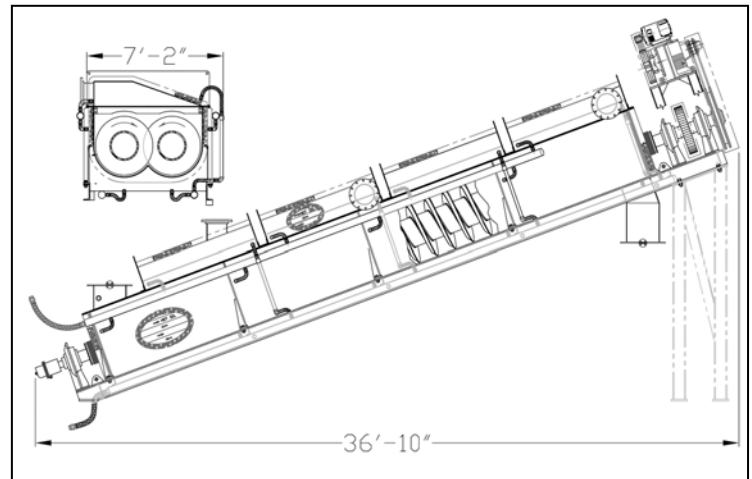
Due to the current regulations set forth by the Environmental Protection Agency and other Government bodies, handling, storage, destruction, and recycling of hazardous wastes has become increasingly difficult in the past decade. Also, the re-use of and resale of many products has become progressively more attractive as economists demand more efficiency, less waste, and in less time than ever before.

Companies are now looking for new ways to handle products that were considered 'waste' or 'unusable' and turn them into cost reducing or profit producing assets. Many such products fall into the realm of bulk powders, granular solids, pastes or cake. Handling these materials can be troublesome due to their 'bulk' nature but even more so if the products are also explosive, corrosive, abrasive, toxic, sticky, or at high temperature.



Therma-Flite has been handling these products for decades and continues to provide custom

engineered heat exchangers for products that have never been handled before as well as providing new solutions for products that have been around a long time. Our experience with new technologies is unrivaled in the screw heat exchanger industry. Where designing and building prototypes in conjunction with customers is foreign to other manufactures, it is commonplace to Therma-Flite.



### HAZMAT Disposal Case Study

With the need to heat a hazardous bulk product that was explosive, highly toxic and inconsistent, one customer came to Therma-Flite looking for answers. It was immediately apparent that a unit able to handle such a product would need to be designed from the ground up.

By working with the customer we were able to design a twin rotor screw heater with many special features. Extra thick metal was used everywhere to ensure a long operating life as well as enable it to sustain substantial wear.



Custom shaft seals were designed to keep the product chamber sealed, and prevent ambient contamination. The vapor recovery system was designed for maximum efficiency.

The final product was a piece of equipment that was robust and reliable, even in a harsh environment processing materials that have never been handled by a screw heat exchanger before.

### Specifications:

Twin Rotor, "Holo-Flite"  
Rotor Diameter: 36"  
Rotor Length: 30'  
Rate: 12,000 lbs/hr or 720 cu.ft/hr  
Product Inlet Temp.: 70° F  
Product Outlet Temp.: 400° F

### Chemical Waste Recycle Case Study

Another application brought to Therma-Flite was to volatize sodium from a metal and chemical waste compound. Because the compound was extremely toxic and the consistency of paste, a twin rotor screw conveyor was the best option.

Due to the inherent problems with volatizing sodium, the process had to be completed at temperatures exceeding 1000 degrees Fahrenheit and in a 50 milli torr vacuum.

By using 316 stainless steel, a twin rotor, our exclusive "Electro-Scru" technology, and a tubular design, we manufactured a unit able to meet and exceed the process conditions required in less time than most manufacturers build one of their 'cookie cutter' units.



### Specifications:

Twin rotor, Electrically heated,  
Rate: 1000 lbs/hr or 23 cu.ft/hr  
Rotor Diameter: 14"  
Rotor Length: 16'  
Heating element design temp: 1600° F  
Product Inlet Temp.: 200° F  
Product Outlet Temp.: 1000° F

### Conclusion

**Therma-Flite's Experience in designing screw heat exchangers for never before handled or difficult to handle products is unsurpassed in the Screw Conveyor industry. If there is any question as to if a product can be processed, give us a call and we will be happy to work with you to find out.**

**With Therma-Flite, you can expect custom designed equipment at 'off the shelf' prices and lead times as much as half of that of our competitors. Give us a call; we are ready to provide you with process solutions, not process constraints.**