# **KWS Problem Solvers**







**Plant Name and Location** Solazyme, Inc Peoria II



## **Cooling Food Product with Thermal Screw Processor**

### **General Description of the Application**

Solazyme, one of the leading global innovators in the industry of renewable oils, needed a solution for cooling and conveying a product discharging from a rotary dryer before loading into super sacks for transport. The equipment would need to be of food grade construction as the product would eventually be used for human consumption. KWS provided the ideal solution in the form of a thermal pipe screw processor with external cooling jacket.

#### **Design Parameters of Application**

Product Type: Agal Flour Material density: 13 Lbs. per Cubic Foot Conveyor System Capacity: 77 Cubic feet per Hour Product Inlet Temperature: 150-degrees F Product Outlet Temperature: 105-degrees F Cooling Medium: Chilled Water at 45-degrees F

#### **Advantages Provided by KWS**

KWS performed the thermodynamic heat transfer calculations and properly sized a thermal screw processor that would meet the cooling requirements as well as the conveying capacity requirements. KWS worked closely with engineers at Solazyme to ensure proper selection of a chilled water cooling system best suited for the application. Engineers at KWS designed both the screw and jacketed trough to meet the requirements of the ASME Boiler and Pressure Vessel Code. Pressure testing on both the screw pipe and trough jacket was performed at KWS facilities to ensure there would be no leakage issues in the field.

#### **Special Features of KWS Design**

To meet the requirements for a food grade application, KWS constructed this thermal processor from 304 stainless steel material with no pits or crevices present in the product contact area. KWS also provided the processor with food grade lubricants, and FDA approved seal and gasket materials. KWS thermal pipe processors utilize a dual flow rotary union, threaded end shaft, and internal syphon tube. This combination allows the thermal media to enter and exit the center pipe of the screw on the same end, eliminating the added expense and effort associated with piping at both ends of the unit.



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