

Application**brief**

- Eclipse Product:** RatioMatic burners and ThermJet burners
- Submitted by:** Dan McCullough, Eclipse, GA
- Application:** Biosolids Dryer
- Description:** US Filter, Inc. chooses Eclipse expertise in combustion systems for their first waste water treatment plant for China.

US Filter, DAVCO Products division in Thomasville, GA offers filtration, separation, clarification, aeration, biological treatment, and sludge drying equipment for municipal and industrial wastewater treatment. US Filter has designed and built many wastewater treatment plants for the domestic US market, but recently they were selected to design and build a plant for China.

US Filter, like Eclipse and many other U.S. manufacturing companies hopes to take advantage of the tremendous industrial growth in China. The Chinese government recognizes the need to modernize, thus the selection of the US Filter plant, their first to be installed in China. One component in the China plant was one of the US Filter "Dragon Dryer Indirect Rotating Chamber Biosolids Dryer. This is an efficient heat drying system designed to minimize the consumption of energy, maximize the reduction of biosolids volume, protect the environment from unwanted emissions, and offer a high degree of system safety and reliability.

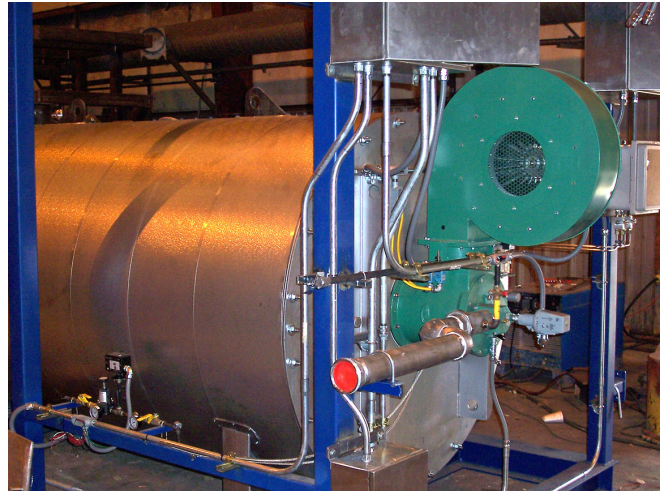
With the Dragon Dryer you can:

- Process 1-100 wet tons a day.
- Reduce sludge volume by 75%.
- Eliminate the need for external backmixing.
- Produces a "Class A" environmentally friendly end product.

The dryer has 2 indirect heat sources to ensure the sludge does not come into contact with the heat source. The primary heat source is from a thermal fluid heater (fired by a RA0750) supplying heated fluid to a hollow flight auger in the center of the dryer. The secondary source comes from (4) TJ300 burners firing in a chamber around the rotating drum. These 2 heat sources use 1100-1500 BTU's per lb. of water evaporated. The end product is marketable and has the following characteristics:

- Density: 45 lb./cubic ft.
- Dry solids content: 90-100%
- Color: brown to black
- Appearance: granular – fines to 4 mm.

The end users want the ability to fire the burners on natural gas or digester gas. After consulting with the Eclipse engineering department it was determined that we could achieve this using a modified TJ burner for the secondary zone and a RA0750 for the thermal fluid heater. Because the digester gas contains only 500 BTU per cubic foot we suggested a TJ300 de-rated to 2.0 MM BTU each to keep drops in a reasonable range. We also supplied dual valve trains for each burner. The digester gas trains were stainless steel. We fired the TJ burners with fixed air, modulating fuel. This was to keep the flames shorter and provide maximum circulation in the chamber. The total order was approx. \$123,000.00 They anticipate early summer start up, which will be provided by our office in China.



Thermal Fluid Heater with Eclipse RatioAir Burner (RA0750).



Two of four Eclipse ThermJet (TJ0300) burners firing around the rotary drum.



Dual valve trains on rotary drum unit.



Dual valve trains for each burner can supply natural or digester gas.

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