Case Study

ProFlow Partners with R&D Dynamics to Fabricate & Assemble ThermoGen Waste Heat to Electric Power Converter

APPLICATION

R&D Dynamics Corporation developed their ThermoGen Waste Heat to Electric Power based on the Organic Rankine Cycle (ORC) to enable processes with excessive waste heat to harness the potential energy and convert it to electricity.

CHALLENGE

R&D Dynamics had the design and specifications of the ThermoGen product, but they were looking for the right partner to handle sourcing, fabrication, and assembly.

They had a few requirements for their preferred partner:

1. The partner needed to be able to scale systems to fit customized requirements
2. The partner needed to offer exceptional project management
3. The partner needed to have excellent turnkey capabilities—including engineers, fabricators, assemblers, and welders.

SOLUTION

The ThermoGen ORC Module includes a turbo alternator, power electronics, refrigerant pump, condenser, evaporator, pre-heater, and PLC, so the preferred partner needed to be highly familiar with these pieces of equipment.

After R&D Dynamics met with ProFlow, they knew immediately that ProFlow had the capabilities they required. ProFlow has a highly skilled, diverse staff of engineers, assemblers, and fabricators. Their North Haven, Connecticut facility is large, and includes a welding shop and certified welders.

ProFlow Inc

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> We fully believe in ProFlow, and are completely happy with the partnership. They have excellent engineers and technicians, and a capable fabrication facility.
>
> —Sam Rajendran, Project Manager, R&D Dynamics Corporation

The collaborative effort was somewhat different from the way both organizations normally worked. In the partnership, the ProFlow and R&D Dynamics teams both include project managers. With some situations, dual project managers can cause confusion. However, with the ProFlow and R&D Dynamics relationship, the dual project managers maintained an efficient flow of communication throughout both organizations.

THE SYSTEM

In the ThermoGen system, process fluid leaves the refrigerant pump and passes through an evaporator, where it vaporizes and expands through a turbogenerator, which produces electricity. After expanding through the turbine, it passes through a condenser and returns to a liquid state, before being pumped at a higher pressure into an evaporator. The evaporator is fed with thermal oil from the waste heat source, and the condenser is fed with water from the cooling tower. This process produces continuous electricity, which can then be sold back to the public grid or used on site. In either case, the system payback period is less than three years.

SUMMARY

ProFlow offers many benefits to R&D Dynamics, making this a strong partnership. ProFlow:

- Allows R&D Dynamics to allocate resources where they are most needed
- Provides a strong level of application-specific expertise
- Provides a turnkey facility that offers everything R&D Dynamics needs to manufacture the product

R&D Dynamics Corporation

ABOUT R&D DYNAMICS CORPORATION

R&D Dynamics Corporation is a world-class center for research, design, development, and production manufacturing of reliable, affordable, and energy-efficient, oil-free, foil air/gas bearing-supported, high-speed turbomachinery and systems for various aerospace and commercial applications.

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ABOUT PROFLOW

ProFlow specializes in fluid handling system solutions serving critical applications such as supplying emulsions directly into critical production process, online blending of high volume processes and metering low and high volume components into a critical manufacturing process.

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