



**TAS ENERGY HEAT-TO-POWER (H2P) UNIT ON WEYERHAUSER FACILITY
AYDEN, NC**

Project Overview

KGRA Energy LP, a premier U.S.-based waste heat recovery developer, signed a contract with Weyerhaeuser Company, one of the world's largest forest products companies. KGRA's subsidiary Ayden HTP Partners LLC will design and construct the 800kW waste heat recovery system at Weyerhaeuser's Greenville, NC lumber mill. The system, which is scheduled to come online in the summer of 2011, will recover waste heat from Weyerhaeuser's biomass-based thermal drying system to generate 4.5 million kWh of CO₂-free electricity per year. KGRA's system will displace the equivalent of more than 9 million pounds of carbon dioxide each year.

"KGRA is pleased to be selected by Weyerhaeuser, a leader in innovation and corporate sustainability, as a partner on this important waste heat recovery project," said Jason Gold, KGRA Energy Chief Executive Officer. "We look forward to expanding our relationship with Weyerhaeuser as the organization identifies ways to lower energy costs and reduce its carbon footprint at its forest products facilities across the country."

"We are pleased to be working with KGRA Energy and its partner TAS Energy on this project," said John Ryan, Region Energy Manager at Weyerhaeuser. "The technology the company uses is designed to produce clean energy, while reducing our emissions and lowering the plant's electricity bill."

KGRA Energy's system uses the organic Rankine cycle (ORC) to recover waste heat from viable sources, such as combustion engine exhausts, furnaces, boilers, and kilns, converting it into usable CO₂-free electricity, which lowers energy costs as well as heat pollution. KGRA's systems are modular and scalable, providing the ability to produce power from smaller and lower-temperature heat sources previously deemed unsuitable for standard cogeneration. KGRA projects are customized for the direct needs and specifications of each customer. At the Weyerhaeuser lumber mill, heat will be recovered from a kiln where cut lumber enters the drying process.

The organic Rankine cycle equipment that will be installed in Weyerhaeuser's Greenville, NC lumber mill will be made in America. Additionally, the project is expected to create 19.7 American jobs throughout the development, construction and installation process.

Weyerhaeuser and Ayden HTP Partners LLC, a joint-venture between KGRA Energy and the ORC equipment supplier, TAS Energy LLC, a subsidiary of Turbine Air Systems, LTD, completed the agreement in March 2011. Installation of the project is expected to begin in June and the plant intends to be operational by the end of July 2011.

Scope of the Project

The ORC plant will be installed in an existing lumber mill facility. The ORC plant will utilize heat from an existing thermal oil loop, which will be supplied directly to the ORC system. This ORC waste heat power project is comprised of:

- TAS H2P power island equipment operating on thermal oil
- Turnkey Installation of the TAS power island and Balance of Plant
- Structured financing
- Field piping of the thermal oil to connect to the new plant.

The lead time of the project is 5 months from order award to COD / power production.

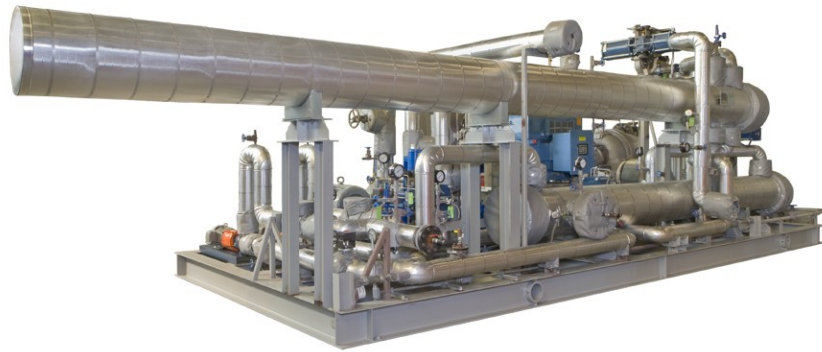
Project Details



TAS has full performance responsibility for the Power Island and will supply the complete system equipment as a singular integrated skid. TAS also provides support for the installation requirements. This installation of the Power Island will be responsibility of the installing contractor. Like most industrial waste heat applications, this plants and the resource already exists. As such, there is only a minimal amount of rework of the thermal oil pipework and power interconnection.

TAS Power Island

The TAS system is provided with rapidly deployable pre-finished module comprising all the major components to allow quick installation on site. This eliminates much of the time and risk associated with traditional power construction. The air cooled condenser is supplied in component form for field erection. The control system and electrical control gear is supplied in a self contained enclosed module. TAS is responsible for commissioning and verifying the plant performance.



Plant Installation

TAS coordinates with the installing contractor to prepare the site and install the Power Island. Due to the construction techniques employed by TAS, installation scope is minimal. Apart from site preparation the major scope comprises civil rework, and the electrical interconnection to the existing facility. All of the power will be consumed on-site.

Other Work

The only requirements outside the Power Island fence will be the tie-in to the existing thermal oil loop, which will require extending the piping from the facility to the location of the new TAS H2P ORC plant.

Conclusion

This straightforward heat-2-power project has very low risk compared to most waste heat projects; the resource already exists and is the TAS H2P plant is tied in the simplest, easiest and quickest manner possible with the absolute minimal disturbance to the existing process heat flow. TAS rapid deployment design further reduces risk associated with extended construction schedules in industrial locations.