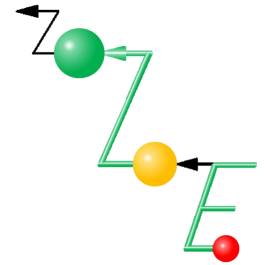


# Case Study

## ORC on Biomass Plant



A small Biomass waste2energy plant presents similar engineering challenges to the largest power plants. The solution requires a smart design that provides robust safety and operational efficiency. ZE Group worked closely with partner suppliers to deliver a this turnkey solution . Heat energy needs to be harvested and transferred to the ZE ORC. Crucial to the design was the selection of the biomass equipment and thermal heat exchanger, as its control is critical to efficient functionality. A proven solution is a thermal fluid transfer system integrating a thermal store to cope with variations in the biomass load.



This helps smooth out any fluctuations in thermal energy, to which the ZE ORC adapts well, when the biomass equipment is not able to consistently deliver the thermal output required for optimum electrical production. For additional safety, a gravity fed circuit was chosen, with storage tank and water heat exchanger to dump energy in an emergency. The interface of the ZE ORC with the installation's control is aimed at simplicity. The ORC has an integrated PLC control system to maintain internal operations whilst also controlling thermal oil and coolant circuits.

Safety circuits are hardwired to the installation control system, allowing the safe shutdown of all plant and the ZE ORC in the event of an emergency. Backup power from Uninterruptable Power Supplies are used to ensure that equipment is safely shutdown. Once started, the plant operates autonomously with minimal human intervention required, providing of course that there is sufficient biomass stock to supply the biomass equipment. The ORC delivers high quality 3 phase electrical output. A future plan for this site is to utilise the rejected heat from the cooling system for cogeneration, giving up to 98.5% efficiency.

