

## **Pyrolysis Unit Operations:**

The pyrolysis unit has been designed to operate as a single unit with the maximum capacity of 12 (dry) tonnes per hour. The pyrolysis unit has four rotating retorts, each of which assume a 25% load of the plant.

This configuration allows for a very high degree of modulation (0-25% - 1 retort, 25-50% - 2 retorts, etc) whilst still maintaining an ability to carry out operational maintenance without necessitating the need to shut down the entire plant.

The pyrolysis unit is serviced by a series of common ancillaries, each of which has been specified with an adequate level of redundancy (modular plants with a duty/standby etc) to allow for partial shutdown of the plant, should there be a requirement to maintain the equipment or operate at a lower capacity.

The common ancillaries include the pyrolysis unit feed conveyors systems, the heat recovery systems, syngas clean up, pyrolysis unit emissions abatement and ductwork systems. The entire system is served by a single induced draught fan which is located at the base of the main exhaust stack. The pyrolysis unit exhaust system is a common system which splits into two ducts just upstream of the two ceramic filtration plants and joins again prior to the intake of the main fan and SCR plant.

Through the use of actuated dampers, the flue emissions can be routed through either filtration unit, each filtration unit has sufficient capacity to treat 100% of the plant exhaust. Again a split system is the preferred choice as it allows for a very high range of operational flexibility depending on the specific load requirement of the pyrolysis unit, as well as providing a very high level of redundancy should any aspect of the filtration plant need to undergo repair or maintenance.

Vaporo Tech have previously provided details of all of the key ancillaries that apply to the pyrolysis unit and therefore the specific detail is not repeated.

### **Exhaust Fan**

The exhaust stack for the plant has been designed with two internal flues, housed within a single windshield.

This configuration allows the ID fan to modulate in accordance to the pyrolysis unit demand without having a detrimental effect on the efflux velocity. The system works on the principle that as the system modulates to below 50% airflow one of the actuated dampers fitted to the base of each flue will close such that all emissions are preferentially exhausted from a single exhaust flue.

The ID fan has been designed on a 'duty/standby' basis. All WID CEMS plant is located in the common duct downstream of the NOx Catalyst and upstream of the ID Fan intake.

The following page has a graphic depicting the Pyrolysis Unit Exhaust system.

# SIMPLE PYROLYSIS UNIT EXHAUST SCHEMATIC

