

Clayton Steam Systems have supplied Exhaust Gas Boilers as part of a remarkable major energy saving project at the Agfa Combined Heat and Power Co-Generation Plant (CHP Plant) in Belgium where heat recovery has surpassed expectations and produces a remarkable overall yield of more than 100%.

In a traditional power station - where electricity production is the main objective - a large amount of energy is lost in the cooling cycles. In a Combined Heat and Power Co-Generation Plant (CHP Plant) however, heat production is the first priority and electricity and heat are produced simultaneously. For this reason energy consumption in a CHP plant is much lower than a stand alone electricity generating power station for the same amount of electricity and the total yield is normally around 86%. At the Agfa installation it has been calculated that, based on the lower calorific value of the fuel used to power the plant, 20 megawatts of natural gas

produces approximately 21 megawatts of heat and electricity.

This outstanding achievement had been possible by using engines with a high electrical efficiency and by recycling all of the available heat.

Four gas engines run simultaneously at the plant and each is fitted with a Clayton Exhaust Gas Boiler System which recovers heat in two stages to produce steam at a pressure of 20 barg and temperature of 340°C. This superheated steam is used to power pumps on the air conditioning system which requires a large amount of energy.

Further energy savings are achieved by pre-heating boiler feedwater in a waste gas economiser and from the engine block cooling. Agfa even make use of the low temperature heat from the engine intercooler as well as the low temperature stack heat. Finally the radiant heat that is ejected by the engines is recycled to provides warm air



for the regeneration of air dryers in the casing rooms

An added bonus for Agfa of installing this system is that it attracts energy saving certificates from the Flemish Energy Regulator that can be traded to other electricity producers to provide an energy savings subsidy. The Exhaust Gas Boilers were supplied in 2006 and it was estimated that costs would be recovered within two years.

The engineering specialists at Agfa concentrate on optimum use of recovered heat and integrate this technology into Agfa's own process as well as offering their expertise to the wider industry.

Adapted from an the Agfa Technicians Newsletter by Luc Brams and Stephen Thys of Agfa-Gevaert. The full article is available on request.

