CLAIMS

1. A system for steam cracking a hydrocarbon stream to produce alkenes, said system comprising:

(a) a gas turbine for combusting fuel in the presence of compressed air (209) to produce a flue gas, wherein the flue gas drives a turbine to produce electricity in a coupled generator or work to power a coupled rotating equipment,

(b) a heat exchanger for being fed with a first portion of the flue gas and with ambient air, wherein the ambient air is heated by the first portion of the flue gas to provide heated air,

(c) a steam cracking unit comprising a furnace for cracking the hydrocarbon stream, wherein the furnace comprises a radiant section and a convection section, and fuel and a mixture of a second portion of the flue gas and the heated air is fed to the radiant section. while the hydrocarbon stream is introduced at the convection section, and

wherein the system comprises a plurality of the furnaces;

wherein the system further comprises a bypass stack for drawing a part of the flue gas from the gas turbine before splitting the flue gas into the first portion and the second portion.

2. The system of claim 1, wherein the air to be fed to the heat exchanger is increased in pressure before being fed to the heat exchanger.

3. The system of any one of 1 or 2, wherein the heat exchanger has a further function of at least one of feed preheating, boiler feed water preheating and steam superheating.

4. The system according to any one of 1 or 2, wherein each of the plurality of furnaces is fed with fuel and a mixture of a part of the flue gas from the gas turbine and a part of the heated air from the heat exchanger.

5. The system according to any one of claims 1 or 2, wherein the system comprises a corresponding number of the heat exchangers, wherein each of the furnaces is fed with fuel and a mixture of a part of the flue gas from the gas turbine and the heated air from the respective heat exchanger.