

## Synthesis Gas/H<sub>2</sub> via SCT-CPO: a pilot-plant experience

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### **Abstract**

Hydrogen and Synthesis Gas have been extensively utilised for more than 70 years in chemical and refinery industries. Their uses are becoming today more complex being influenced by strategic, political, economic and sustainability considerations. Clean fuel production and heavy residues utilisation, Gas To Liquid initiatives and the desired but not yet accomplished Electric Energy production with Fuel Cells, are issues whose development and costs would benefit from innovations in Hydrogen and Synthesis Gas production and utilisation. The existing technological needs will be examined and their accomplishment will be discussed considering the utilisation of the Short Contact Time – Catalytic Partial Oxidation technologies. ENI has been studying the topic since the early '90es. An extensive work was carried out at lab-scale levels to understand the reaction principles and in bench scale plants to obtain reactivity data for the scaling-up of the technology. In 2001 ENI and Haldor Topsoe A/S successfully operated their first pilot plant in Houston, TX. A second multi-purpose plant has been recently started up in Milazzo, Sicily. This second realisation includes all the main operation units of an H<sub>2</sub>/synthesis gas industrial plant and is designed to process a wide class of hydrocarbons (from NG to liquid and heavy fuels). Its features and technological applications of SCT-CPO will be reviewed reporting on the current status of the industrial development.