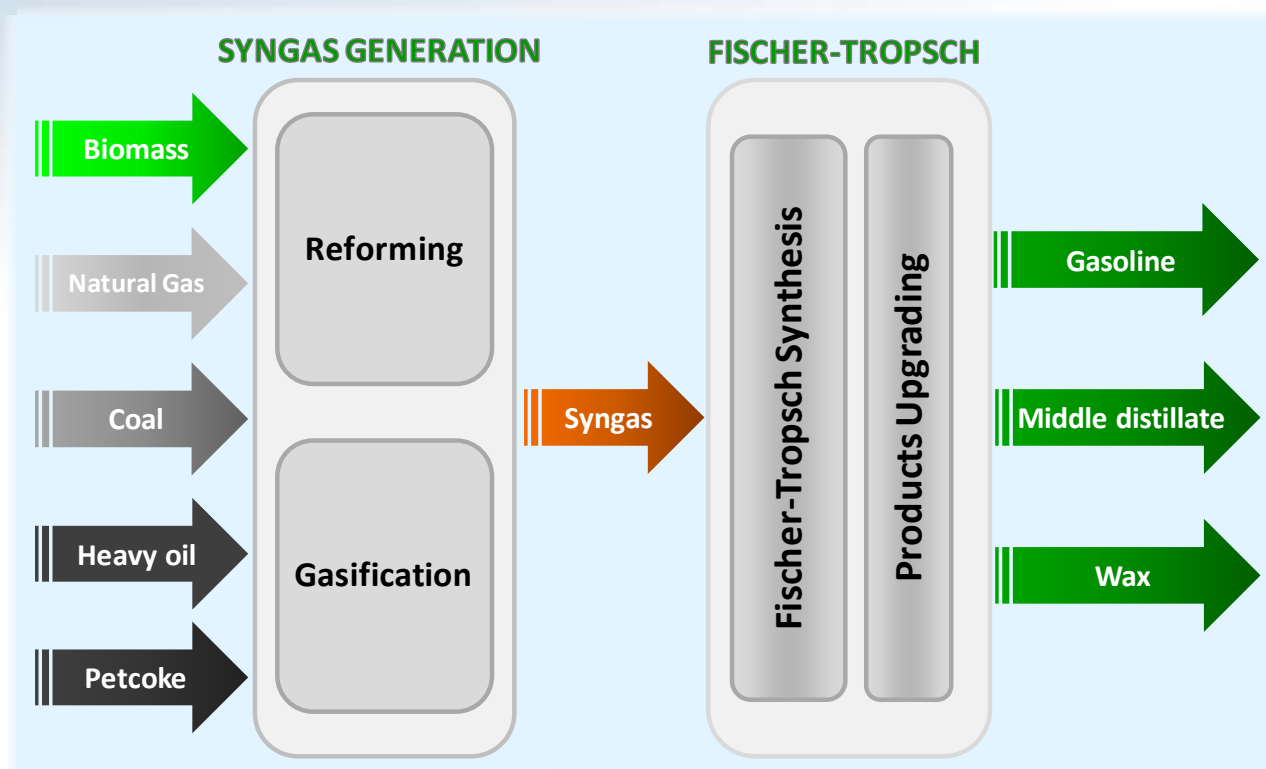


Interest in the Fischer-Tropsch synthesis aimed at hydrocarbon production is increasing in the actual context of alternate and clean fuel production.

Vinci-Technologies offers standard pilots in order to investigate Fischer-Tropsch catalysts and process with either a Fixed Bed unit or a Slurry Bed unit. These pilot plants are designed to study, on a turn key basis, catalyst evaluation, product development and process variables (pressure, temperature, ghsv, or heat transfert..), according to high quality level state of the art.

Vinci Technologies Fischer-Tropsch pilot plant are appropriate tools to investigate GTL reaction and complete 2nd generation biofuel synthesis (combined with a syngas generation unit).



✔ Fischer-Tropsch Pilot – Applications and key points

The VinciTechnologies Fischer-Tropsch pilot plants have been designed to perform :

- Catalyst activation by reduction
- Fischer-Tropsch synthesis
- Catalyst regeneration by oxidation and reduction

To complete catalyst and process stability tests, pilot can be operate unattended for more than a month.

The Fischer Tropsch pilot line applies to fixed-bed reactor design, as well as CSTR design, is highly reliable to **handle wax production**, due to an accurate thermal control of the exothermic reaction. More over, this **fully automatic** unit can be equipped with a automatic sampling device.

Fischer-Tropsch pilot plant are specially designed to perform FT process investigation and to support various products synthesis:

**Alcohols (Methanol, etc.)
High Pressure FT**

**Gasoline
High Temperature FT**

**Diesel, waxes and syncrude
Low Temperature FT**

Vinci Technologies pilot plant are specially made to overcome FT reaction main issues:

- heat reaction management via an accurate reaction temperature control and regulation
- high viscosity product handling (waxes) via an efficient line tracing to avoid paraffin crystallization

➤ Fischer-Tropsch Pilot – Main features

FT pilot standard configuration includes:

- Gas lines with mass flow controller
- Reactor: Fixed-Bed or CSTR (Vinci Technologies design)
- Products Separation with liquids withdrawal under level control
- Automatic pressure control
- Liquids recoveries tanks or automatic sampling system
- Control cabinet: the supervision software offers a user-friendly, safe and reliable control, providing process parameter monitoring and real time display (Gas and Liquid flow rate, Level, Pressure, Temperature), as well as process alarms.

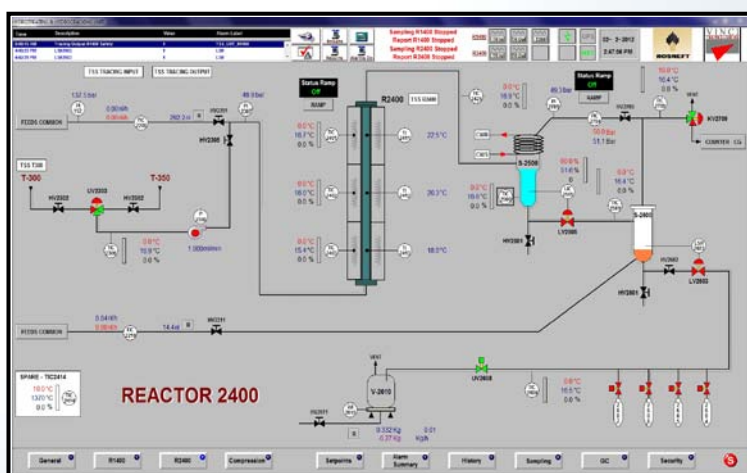
➤ Fixed bed design

A special attention is given to the design of the fixed bed reaction module (reactor/furnace) to allow an accurate temperature control while showing a radial and axial flat thermal profile, even with highly exothermic reaction as FT synthesis.

➤ Slurry bed design

FT pilot plant design is based on a 2 liters slurry-bed reactor (CSTR) allowing an accurate medium temperature control by an innovative heating/cooling system.

Vinci-Technologies proposes an efficient design avoiding catalyst filter plugging combined to a proven design to avoid any paraffin crystallization leading to line plugging



➤ Fischer-Tropsch Pilot – customization

FT Pilot can be designed to meet specific needs with appropriate:

- Number of gas line
- Number of liquid line
- Reactor size (catalyst loading volume)
- Reactor Heating technology (electrical, thermal fluid circulation, induction, etc...)
- Gas recycling module