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, ghs/v, 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 Vinci Technologies 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:

<table>
<thead>
<tr>
<th>Products</th>
<th>Configuration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alcohols (Methanol, etc.)</td>
<td>High Pressure FT</td>
</tr>
<tr>
<td>Gasoline</td>
<td>High Temperature FT</td>
</tr>
<tr>
<td>Diesel, waxes and syncrude</td>
<td>Low Temperature FT</td>
</tr>
</tbody>
</table>

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