

Sampling of synthesis gas "Syngas"

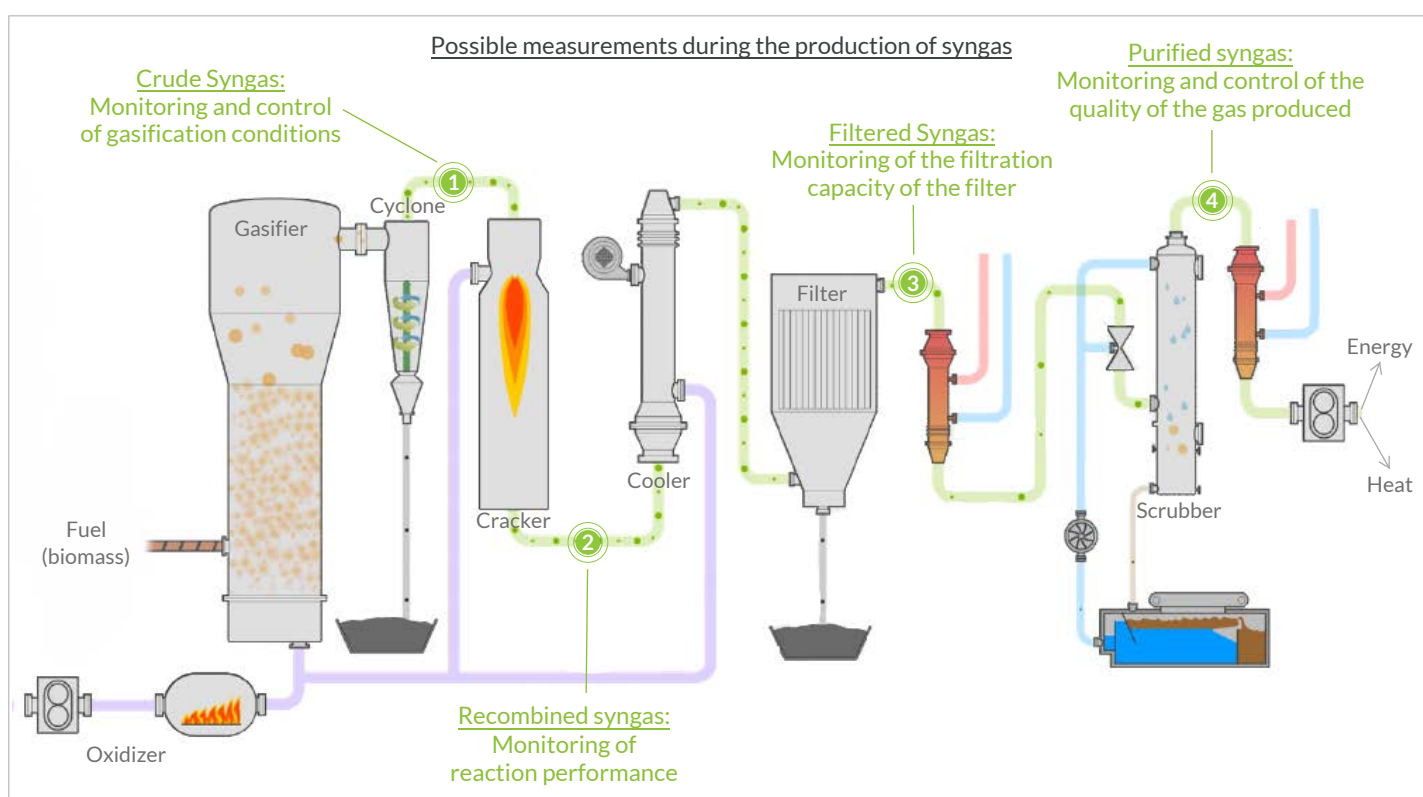
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The **Syngas**, or **synthesis gas** is an energy resulting from a process of **waste recovery** produced from local resources and which allows the reduction of CO₂ emissions in our industries.

This synthesis gas, which can be produced from biomass, is created by the pyrogasification of different carbon-containing materials to give a mixture consisting mainly of hydrogen (H₂), carbon monoxide (CO), methane (CH₄), oxygen (O₂), carbon dioxide (CO₂) and nitrogen (N₂).

This gas can be used directly after purification for the combined production of **electricity** and **heat** in cogeneration, or be burned directly in a conventional boiler to produce heat. The production of **biofuels** by Fischer-Tropsch or methanation processes, as well as the production of **bio-hydrogen** are also possible using syngas.

The control and monitoring of this production process are essential regardless of the final application.



2- Problematics

During the production of Syngas, due to the high temperatures and in an uncontrolled manner, several **heavy organic compounds** are generated by thermal decomposition. These compounds, called **tars**, easily condense on cold spots, which causes fouling of the pipes and a loss of efficiency of heat exchanges.

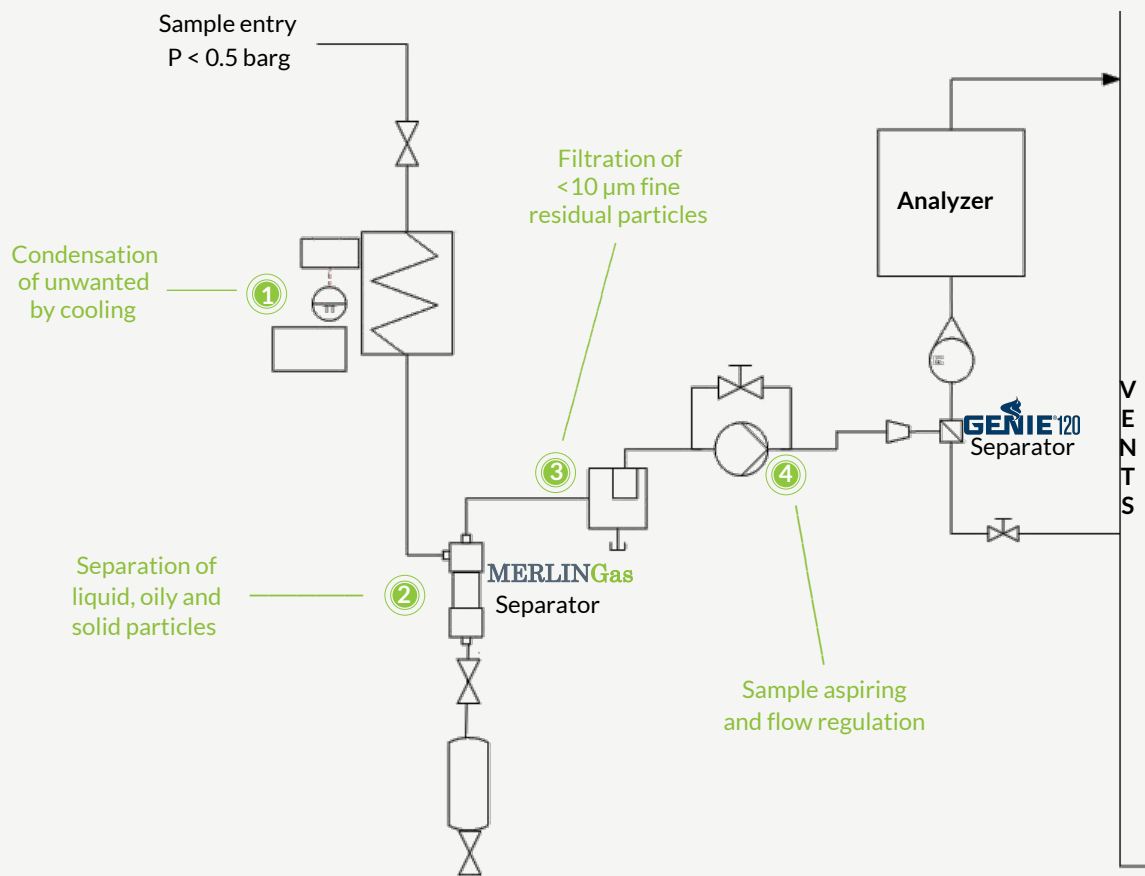


Although tars are not the only source of poisoning (particles, metallic salts, inorganic sulfur, chlorine and nitrogen compounds), they nevertheless remain the most difficult pollutant to eliminate and cause premature wear and corrosion problems.

These pollutants present in the manufacturing process are found in the sample when measurements are made. Whatever the type of measurement (gas chromatograph, infrared spectrometer, calorimeter, etc.) and its objective (process optimisation, control and/or validation of the characteristics of the gas produced), it is necessary to **eliminate these pollutants** while maintaining the **sample integrity**.

3- The SOCLEMA solution

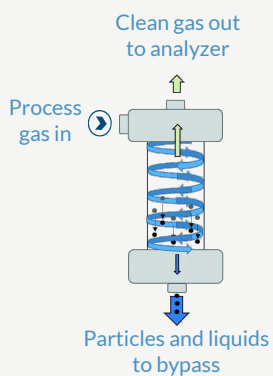
SOCLEMA, as an expert in sampling solutions, offers a turnkey system to eliminate tars and oily residues from this manufacturing process, while preserving the integrity of the sample and with reduced maintenance for any type of continuous gas analysis. This is our **SyngasClean** system. Through upstream sample cooling and cyclonic separation, liquid, oily and solid particles are removed from the sample.



MERLINGas separator

Centrifugal force and cyclone separate liquid and/or solid particles and pull them downwards by gravity.

The aspirating circulation of the sample on this separator (as shown in the diagram opposite) also helps to protect the pump.



Example of SyngasClean realisation



4- Benefits

- Processing of heavily loaded samples
- Modular for different types of analyzers
- Low maintenance: no filter element in the cyclone filter
- Available in fixed and mobile versions