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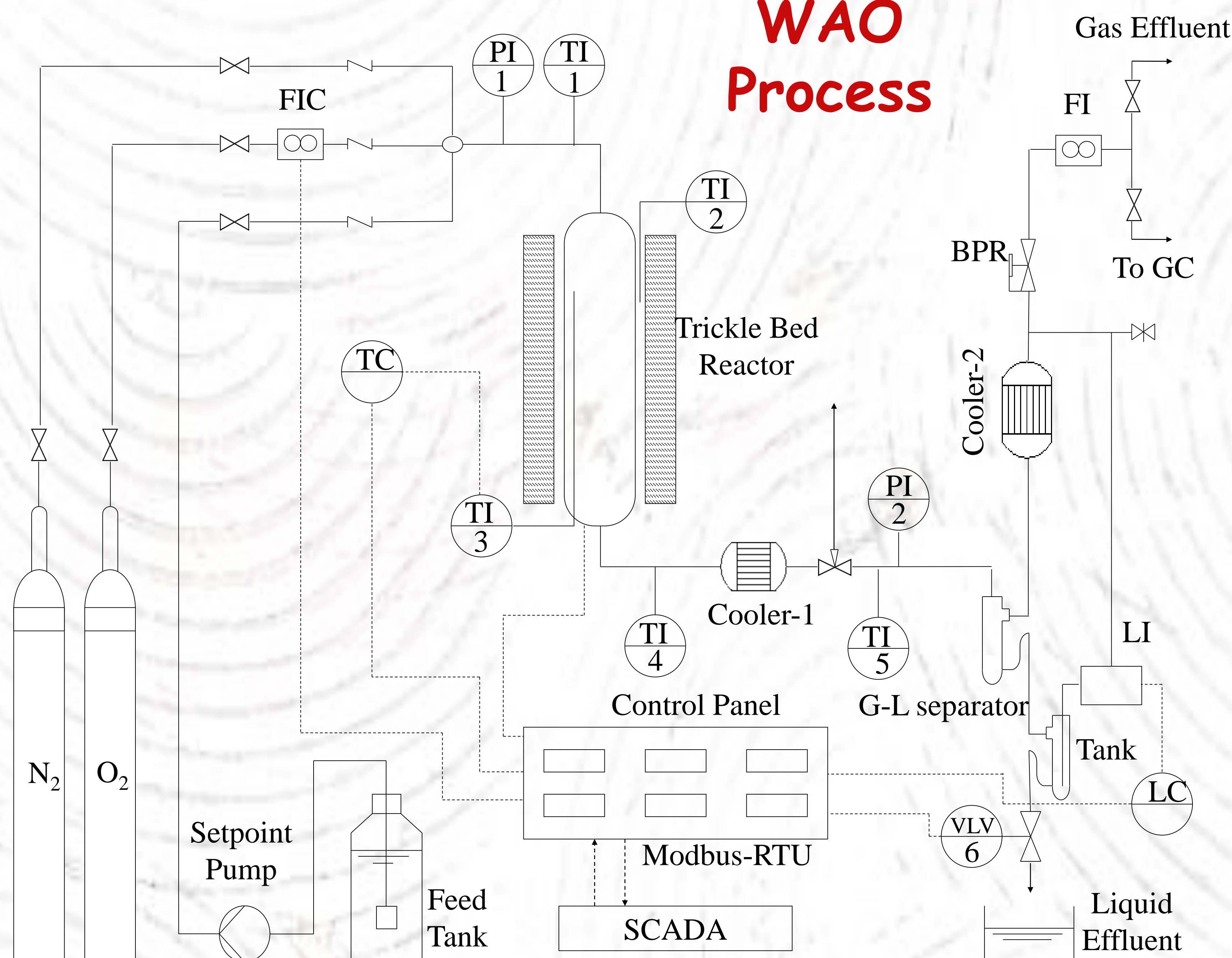
DESIGN OF AN AUTOMATED FIXED BED REACTOR USED FOR A CATALYTIC WET OXIDATION PROCESS

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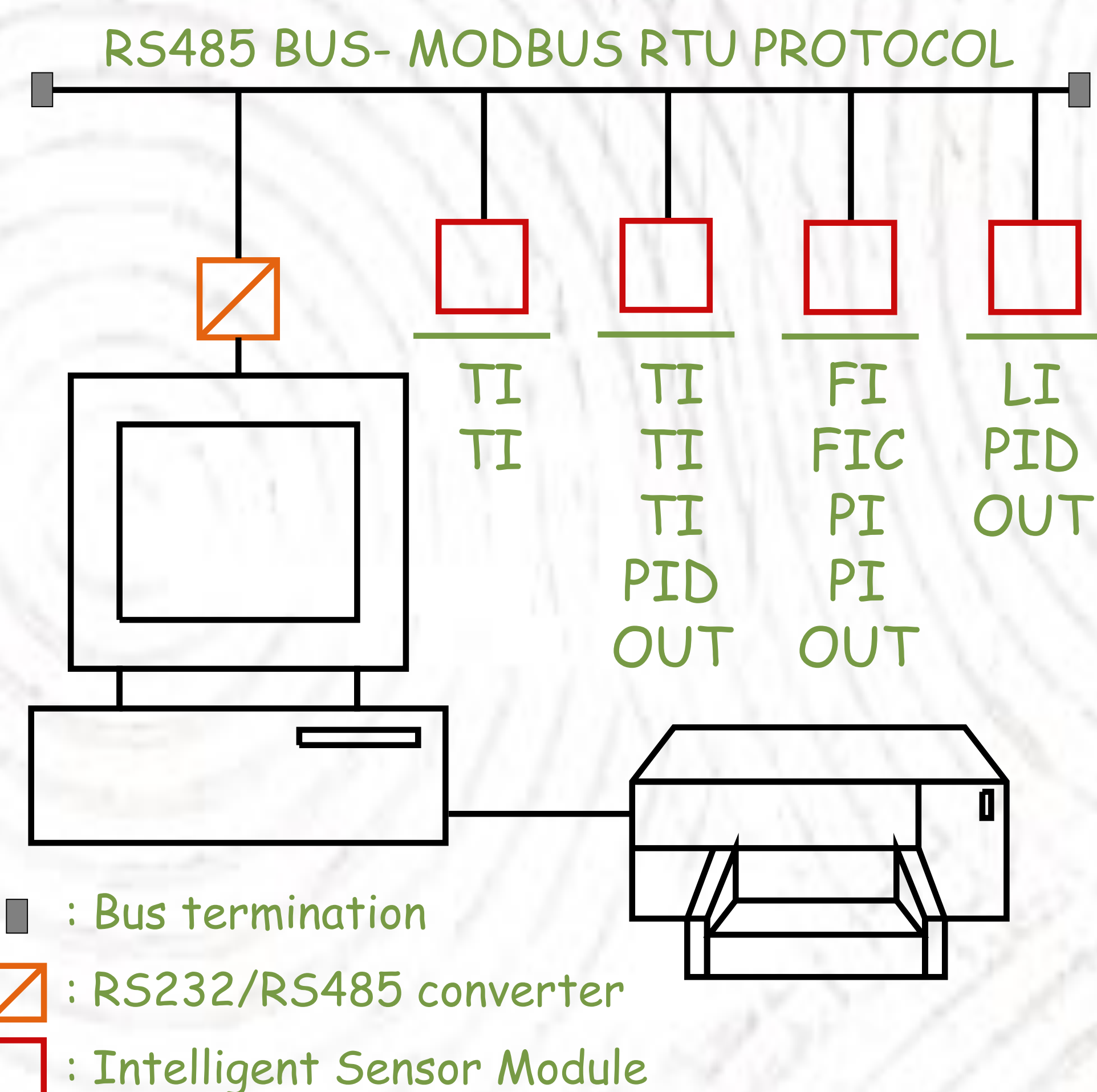
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The identification of highly refractory and non-biodegradable organic pollutants in wastewater, especially coming from the chemical and petrochemical industry, has challenged conventional wastewater treatments such as incineration or biological abatement. **Wet Air Oxidation** (WAO) is one of the emerging processes suited for the treatment of special aqueous wastes. It is an efficient process by which organic pollutants can be transformed by oxidation under high oxygen or air pressures (20-250 bar) and high temperatures (200-325°C), into carbon dioxide and water. The complexity and delicacy needed for the design of such processes depends on essential **automation** techniques and equipments necessary to adequately control and monitor the proper system operation. **Intelligent sensor modules** are used for system control and data acquisition. **Real-time monitoring** is achieved through the deployment of a **SCADA** software leading to the development of a **user-friendly graphical interface** (GUI).

WAO Process

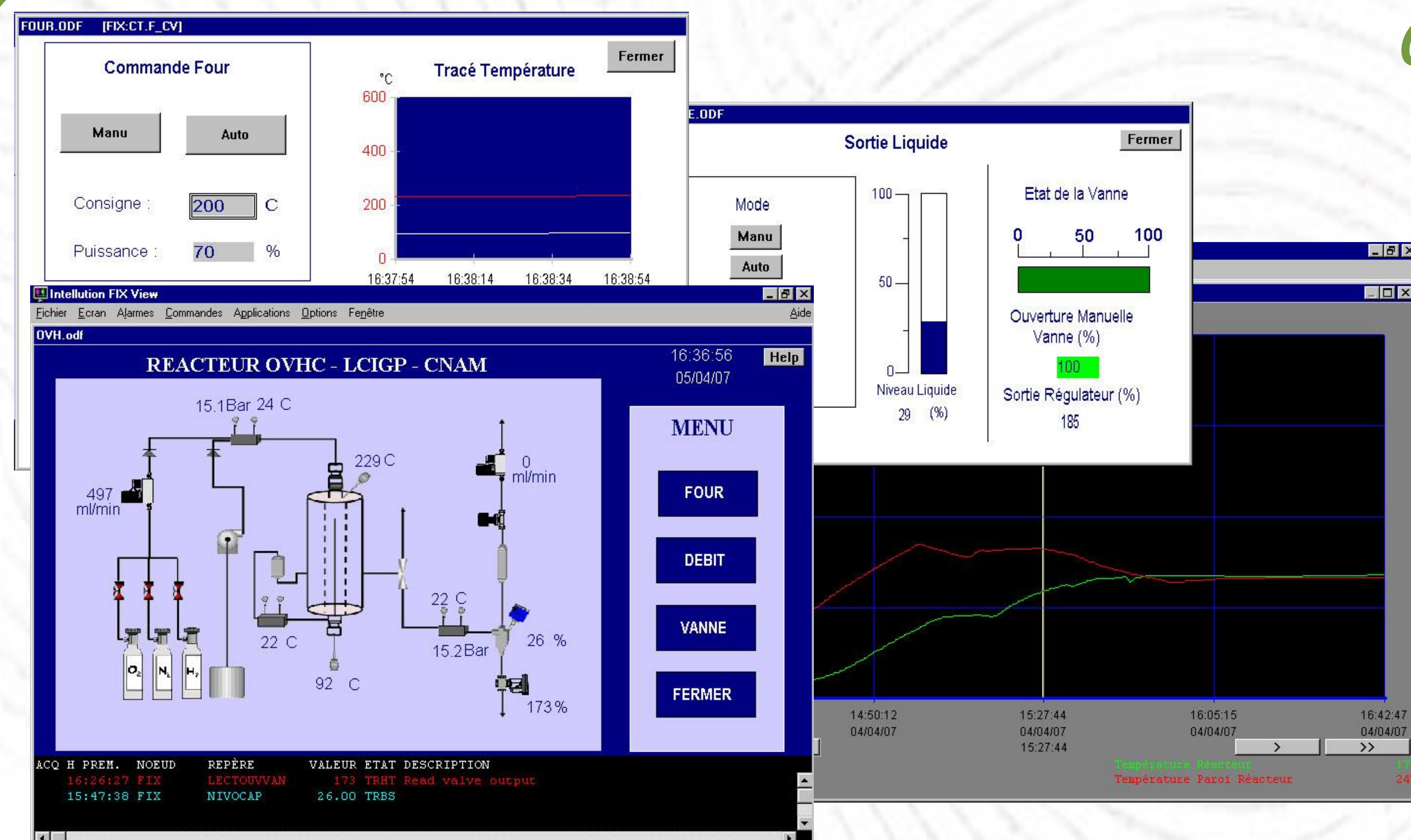


System Architecture



TI: Temperature Indicator PI: Pressure Indicator
 LI: Level Indicator FIC: Flow Indicator Controller
 PID: PID Controller OUT: Analog Output

Graphical User Interface



- SCADA Distributed Measurement
- User-friendly Graphical Interface
- Real-time System Monitoring
- DDE and Database Connectivity
- Distributed Alarms and Data Logging
- Historical Data Trending
- Easy Networking

The automation techniques and control equipment helped in the design of an **automated catalytic fixed bed reactor** that fulfills the required temperature and pressure conditions (up to 300°C and 25 bar) usually used for WAO processes. The developed **monitoring interface** allows the operator to easily manage and control the **process parameters**.

