**System description:**

The subject of the delivery is a batch reactor usable for laboratory study of model chemical reactions with a focus on the study of hydrogenation of oxygen compounds. The required technical specifications are given below, the said requirements being considered as a minimum and must be met at least at the specified level.

1. **Minimum technical requirements for the device:**

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| **Requirements** | **Participant's statement (the participant states the specifications that meet the equipment offered by them)** |
| Fixed Head |  |
| Removable 100 ml reactor body; the ratio of the external height to the width of the reactor body is at least 2, i.e. significantly higher than wider |  |
| Support structure with lifting mechanism |  |
| The construction material of the main parts (parts in direct contact with the processed media) - corrosion resistance at least at the level of stainless steel SS 316 |  |
| Operating conditions: It must be possible to work at maximum temperature and pressure at the same time, i.e. 350 ° C and at least 210 bar |  |
| Heating mantle with programmable temperature ensuring the setting of the required internal temperature in the autoclave with an accuracy of at least ± 1 ° C |  |
| Mixing of the whole volume - a part of the delivery will be a set of stirrers for mixing two liquid phases, liquid and solid phase, liquid and gas phase, a mixture of liquid and suspended solid phase with gas phase |  |
| Continuously controllable mixing speed up to at least 1000 rpm |  |
| Supply pipe for connection to a gas source (hydrogen or nitrogen) from a cylinder or central distribution with a shut-off valve and a Hy-Lok / Swagelok connection system. The connection must be in metric system. |  |
| Temperature sensor inside the reactor (thermocouple) |  |
| Safety valve (rupture disk) |  |
| Mechanical manometric gauge |  |
| Electronic pressure sensor |  |
| Electronic stirrer speed measurement |  |
| Gas outlet pipe with the possibility of sampling gaseous products directly from the autoclave with connection via a needle valve. |  |
| Removable liquid sampling tube in the reactor with both loose and sintered ends with needle valve and with the possibility of direct sampling |  |
| The reactor and its components must be chemically resistant to the usual extent, e.g. resistant to organic substances contained in petroleum and coal products, organic solvents, H2S, NH3, organic acids |  |
| **Device accessories** |
| Reactor control unit |  |

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| **Reactor** | **Type** | **Pressure at least to****[bar]** | **Volume in the range /ml/**  | **Maximum operating temperature /ºC/** |
| Autoclave | batch | 210 | 100 | 350 |