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:

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	
The ratio of the internal height to the width of the reactor vessel 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, H_2S, NH_3, organic acids	
Device accessories	
Reactor control unit	
Software for reactor unit controlling and recording of temperature and pressure during the measurement	

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