

**Name of the organization**

Karlsruher Institut für Technologie (KIT)

Name of the infrastructure / laboratory

HYKA-HyJet (a High Pressure Hydrogen Jet Release)

Address and country of the infrastructure / laboratory

Karlsruher Institut für Technologie (KIT), Campus Nord, Hermann-von-Helmholtz-Platz 1 - 76344 Eggenstein-Leopoldshafen, Germany

Person responsible of the access / Contact person

Dr. Mike KUZNETSOV

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Main field of activity of the infrastructure / laboratory

► Hydrogen safety, hydrogen storages, refueling

Short description of the infrastructure / laboratory

Different high pressure vessels with a volume from 0.2 to 12 dm³ at initial pressure up to 700 bar can be investigated with respect to high pressure hydrogen releases through different nozzles. The facility was used to study hydrogen releases from pressurized vessel, dynamic hydrogen concentrations and flow velocity profiles, investigations self-ignition of hydrogen and flammability of the turbulent hydrogen jet at different pressures from several bar to 700 bar. The facility is equipped with measuring ports for pressure transducers and a schlieren system for visual observations. The measuring system consists of thermocouples array (gas temperature), piezoelectric and piezoresistive gauges (bulk pressure, local pressure), gas analyzer and mass spectrometer (to control mixture composition), ultrasonic detector for hydrogen concentrations and PIV technique as well. The data acquisition system is based on multi-channel (64) ADC with a sampling rate of 1 MHz.

Main research area(s) of the infrastructure / laboratory

Hydrogen jet combustion, high pressure hydrogen releases, hydrogen distribution, self-ignition limits for hydrogen jets

Instruments and tools available for the above mentioned research

Gas filling system, high speed imaging (up to 200000 fr.p.s.) combined with BOS or/and PIV technique

