



IMU 2000

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Quadrupole Mass Spectrometer
for UF₆ Analysis



The *IMU 2000* is the perfect solution for measuring isotope ratios and impurities in uranium hexafluoride.

IMU 2000

Technical Data

Mass Range

1 - 512 amu

Interfaces

Ethernet to PC, others on request
PLC: PROFIBUS, PROFINET, OPC

Electrical Requirements

Main voltage 115/230 V, 50/60 Hz,
single-phase, others on request

Environment

Temperature + 15 to 35 °C
Rel. humidity < 75 %

Dimensions / Weight (approx.)

1450 x 920 x 1790 mm (w x d x h) /
500 kg

Details

Detector

SEM / Faraday

Special Ion Source

Molecular beam inlet
Liquid nitrogen trap

Precision

1×10^{-3} - relative standard deviation
of the α -value
($\alpha = R1/R2$, isotope ratio 235/238 for two
different samples)

Sensitivity

2.5×10^{-10} A - for $^{238}\text{UF}_5^+$ with
unit resolution at an inlet pressure
of 0.4 mbar

Application Areas



Online Process Analysis

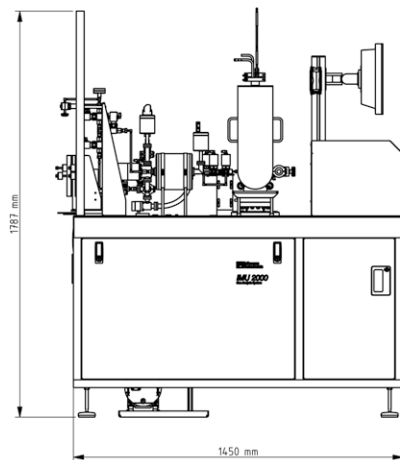


Quality Control

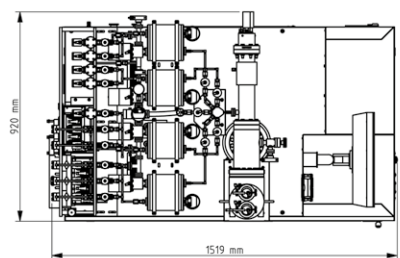


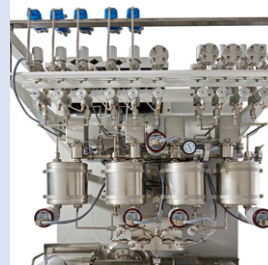
Special Applications

Front view



Top view



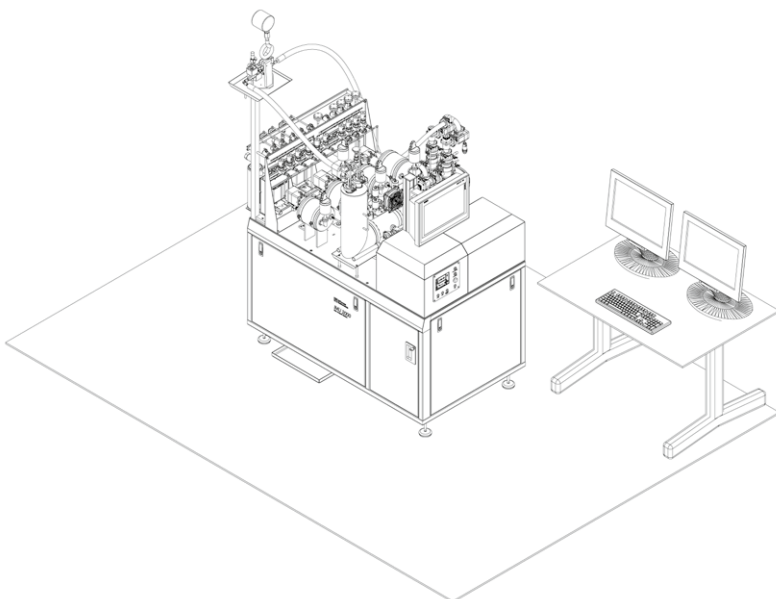


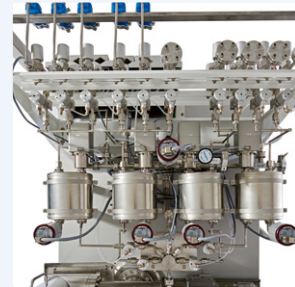
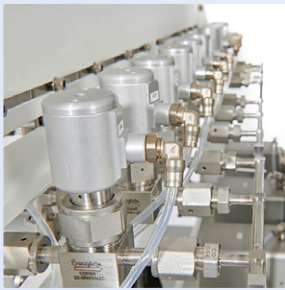
System

- Computer-controlled quadrupole mass spectrometer for precise isotope analysis
- Patented hyperbolic rod system with digitally controlled RF generator
- SEM with discrete dynodes and integrated Faraday detector
- Windows® based IPI isoWare software for automated calibrations and process gas measurements
- IPI Tune Up for instrument tuning, mass spectra acquisition and visualization

Benefits

- Routine monitoring of enriched and depleted uranium
- Determination of UF_6 isotope ratios in the process streams Feed, Product and Tail, also for the minor isotopes
- Continuous online measurement of isotope enrichment in the UF_6 process stream and manual sample measurement in batch process
- Fully automated calibration and measurement with the IPI isoWare software
- Uncompromising and reliable monitoring of the pumping system and the LN_2 supply
- LN_2 cooling finger at the ion source for highest analytical requirements
- LN_2 cold trap for the sample material to ensure a safe operation
- Low sample consumption and high availability
- Customized configurations of the entire system on request





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