

UNIVERSAL SAMPLING DEVICE

USD-1000 and USD-2000



- **Real time sampling and dilution system for gas and particle emissions**
- **Range of dilution ratio: 2-50 for USD-1000 and 10-100 for USD-2000**
- **Measurement and sampling in high humidity rate**
- **Range of temperature: standard up to 500°C – 1000°C in option**
- **High dynamic sampling and dilution**
- **No drift of the dilution ratio and particles losses**
- **Range of particle: 0,005 µm to 20 µm**
- **Isokinetic sampling**
- **Multiple quick connectors for gas and aerosols analyzers**
- **Low maintenance – Robust – Easy handling**

PRINCIPLE

The sampling and dilution system USD allows at sampling and conditioning all types of gas and aerosols in a large range of concentrations in the process conditions (high temperature, corrosive gas, high humidity rate). This device is well adapted for emissions monitoring especially stack sampling.

This patented product has been developed during a funded-ADEME project with company VEOLIA ENVIRONNEMENT, INERIS, ECOMESURE and ARCELOR-MITTAL. A new and innovative sampling probe geometry is used in order to make a heated dilution and conserve high sampling velocity and by consequence a high aerosol and gas sampling efficiency.

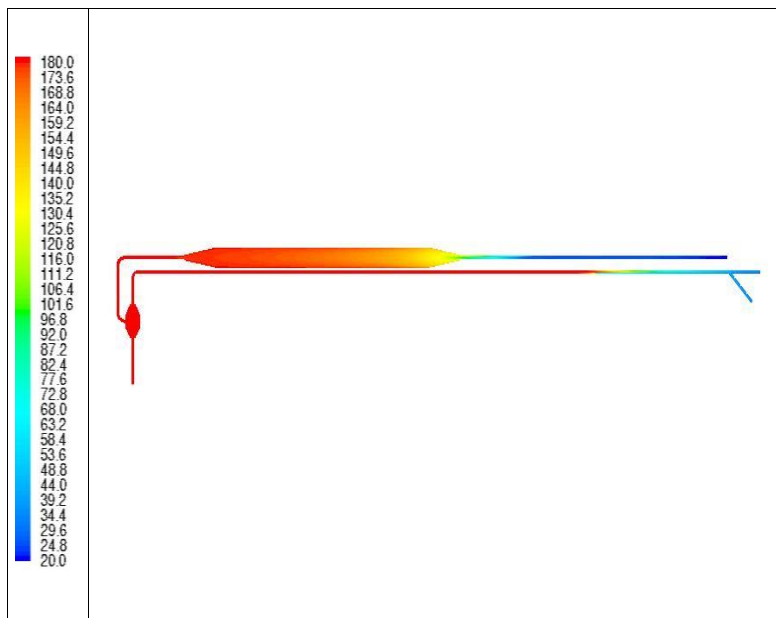


Fig 1: Probe Temperature for combustion sampling

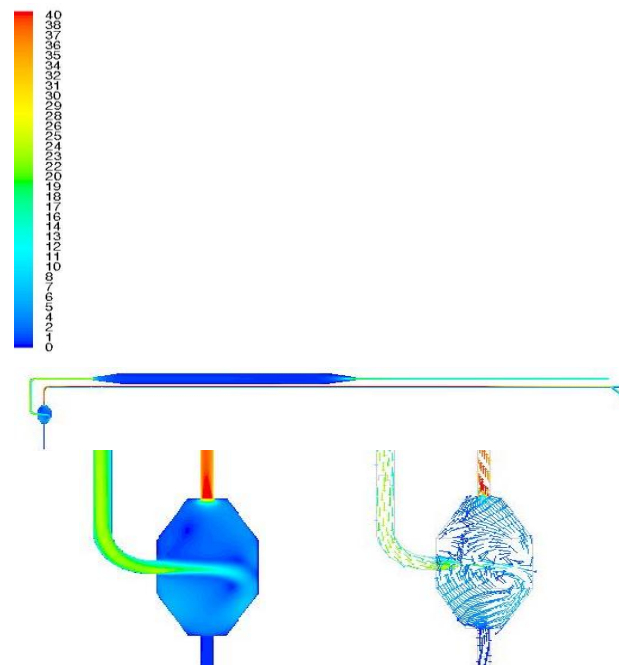


Fig 2: Velocity in the sampling probe

The USD has to be connected to the source of pressurized air (4 – 10 bar) and power supply (230 volt /110 volt). The pressurized air passes through a filtration and drying unit then is heated in the temperature conditioning chamber and mixed with raw sampling gas/aerosol in the high turbulence mixing chamber.

The sampling and dilution probe is connected to an automatic control unit which allows:

- At adjusting automatically the dilution ratio following the application.
- At conserving safety conditions for sampling (temperature/flow rate/filter pressure).
- At selecting the analyzers (gas and particles) connected to the device and to adjust the analyzers sampling conditions.
- At making an automatic purge and analyzers zeroing as needed.

APPLICATIONS

The USD-1000/USD-2000 can be used in a large range of application. One of the most interesting issue is to connect at same time all the type of analyzers (mass spectrometers, gas analyzers, particles analyzers) whatever the sampling point in industrial process:

- Stack emission monitoring (gas and particles)
- Combustion studies
- Aerosol research
- Corrosive emissions
- Filtration test bench
- Sampling in high temperature process