Dekati® eDiluter™ Pro 1200C

- eDiluter™ Pro for sampling from extreme temperatures
- Particle sampling from up to 1200 °C
- Optimized for diluting combustion aerosols

Sampling from extreme temperatures

VERSION **1200C**

DEKATI

Excellence in Particle Measurements

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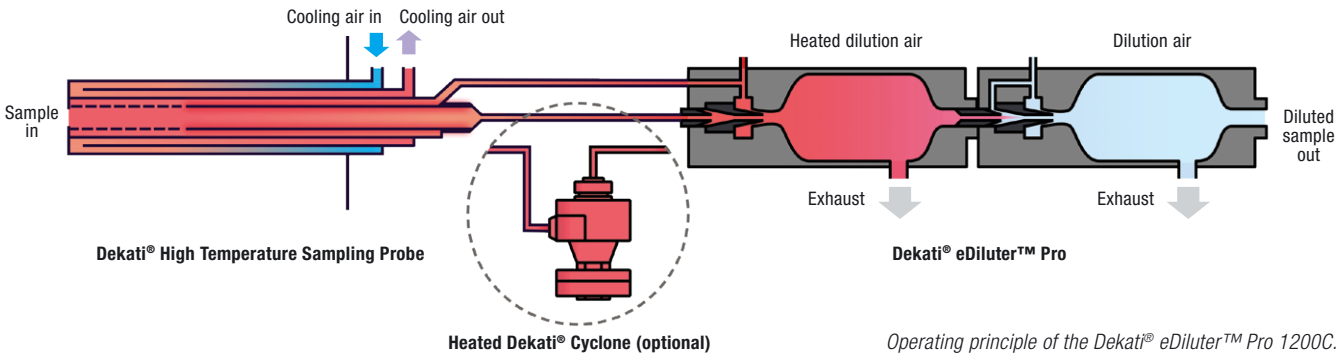
Description

The **Dekati® eDiluter™ Pro 1200C** is a modified version of the eDiluter™ Pro dilution system specifically designed for particle measurements from extreme temperatures such as measurements directly from a combustion zone or flame. The eDiluter™ Pro 1200C includes the standard eDiluter™ Pro unit combined with the Dekati® High Temperature Sampling probe that enables particle sampling from up to 1200 °C. The system has all the benefits of the standard eDiluter™ Pro added with the ability to take aerosol sample from extremely high temperatures.

The Dekati® High Temperature Sampling Probe is a heated dilution probe connected in front of the eDiluter™ Pro to take the sample from the high temperature source. The active cooling system built into the probe allows measurements from up to 1200 °C and direct aerosol sampling from a combustion zone or a flame. The High Temperature Probe includes a dilution stage where the sample is rapidly cooled to about 400 °C and a heated section to maintain stable sample conditions. To minimize particle losses within the probe, the sample is diluted inside a porous type diluter where dilution air is introduced into the sample stream through small pores on the sample line walls. The dilution air to the High Temperature Sampling Probe as well as the temperature of the probe are controlled via the eDiluter™ Pro unit that is connected at the outlet of the probe to further dilute the sample. An additional pre-separator cyclone is included in the setup and it can be installed between the High Temperature Probe and the eDiluter™ Pro to remove excess large particles from the sample.

The Dekati® eDiluter Pro™ is a two-stage dilution system where the sample is further diluted. Its compact structure includes two ejector diluters with additional sheath air flow for the second stage diluter. The dilution factor can be adjusted by changing the pressure of the dilution air and the system additionally includes an innovative method for compensating the effects of sample (inlet) pressure fluctuations on the dilution factor. The dilution factor of the complete setup with the High Temperature Sampling Probe ranges from 1:25 to 1:225. The first dilution stage within the eDiluter™ Pro is heated while the second dilution stage operates at room temperature where the aerosol sample is also cooled in a controlled manner. Built-in sensors constantly monitor the dilution parameters including the inlet pressure, and the pressure of the dilution air is continuously and automatically adjusted to maintain constant dilution factor under all conditions. All these features guarantee repeatable and reliable measurement results even in variable sample conditions.

The dilution factor, dilution temperature and external heaters are all controlled with the eDiluter™ Pro front panel user interface where different dilution parameters are also monitored during the measurement. The diluted sample output flow from the system is more than 50 lpm and it can be used as a dilution and conditioning system for all commercially available particle measurement instruments. The Dekati® eDiluter™ Pro can also be used as a standalone unit without the High Temperature Sampling Probe for sampling from up to 600 °C.



Operating principle of the Dekati® eDiluter™ Pro 1200C.

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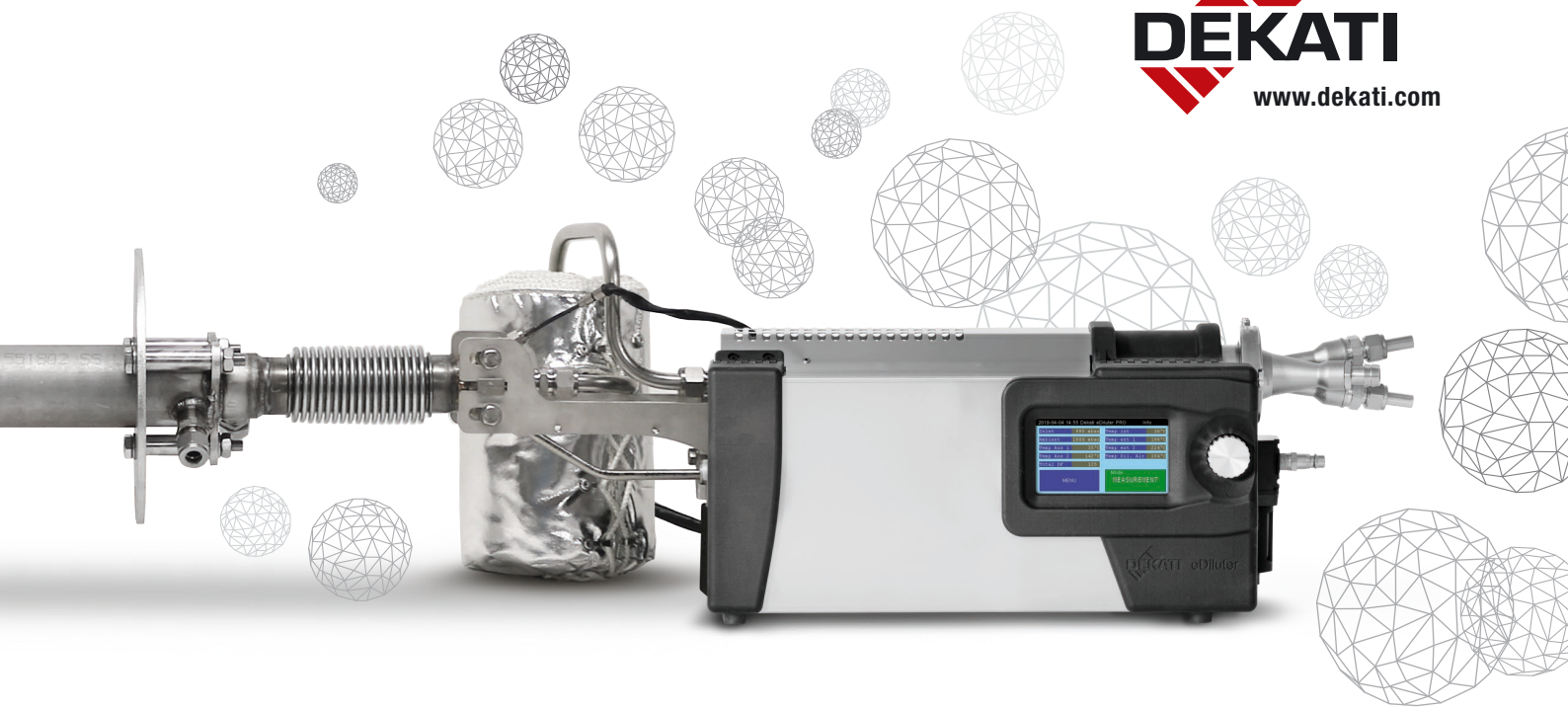
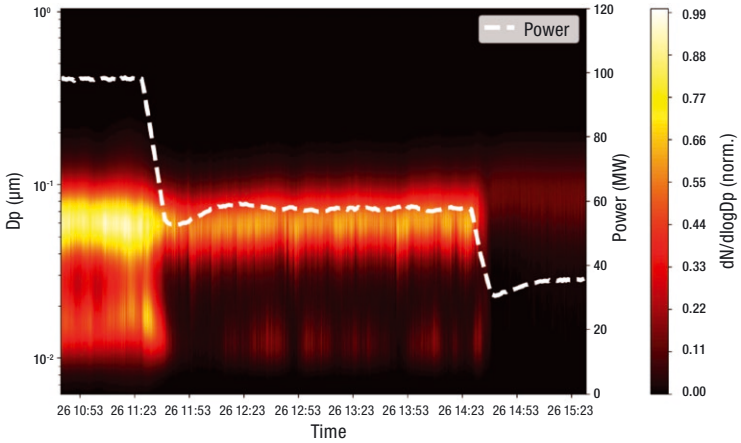


Measurement applications

The Dekati® eDiluter™ Pro 1200C system is designed by VTT (Technical Research Centre of Finland) specifically for corrosion studies in mix-fuel firing energy production plants. In these studies, the Dekati® eDiluter™ Pro 1200C is used together with the ELPI®+ to measure particle size distribution directly from the combustion zone.

The purpose of this is to identify markers in the particle size distribution to optimize the combustion process for minimal production of corrosive components. The Dekati® eDiluter™ Pro 1200C system can also be used in other particle measurement applications where the sample is in extremely high temperature.



HR-ELPI®+ measurement results from a wood-pellet fired biomass powerplant with different power settings. Samples were taken using the eDiluter™ Pro 1200C directly after the combustion zone where sample temperatures ranged 800-900 °C.

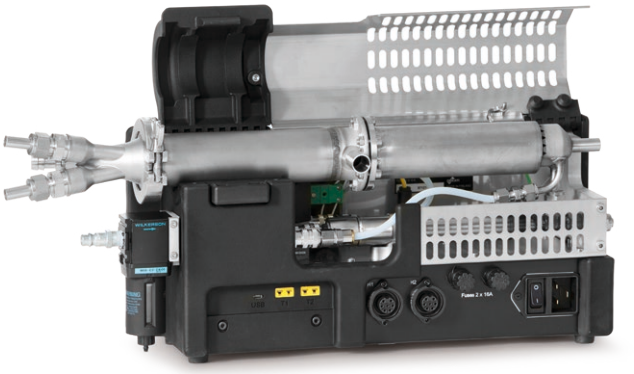
Features

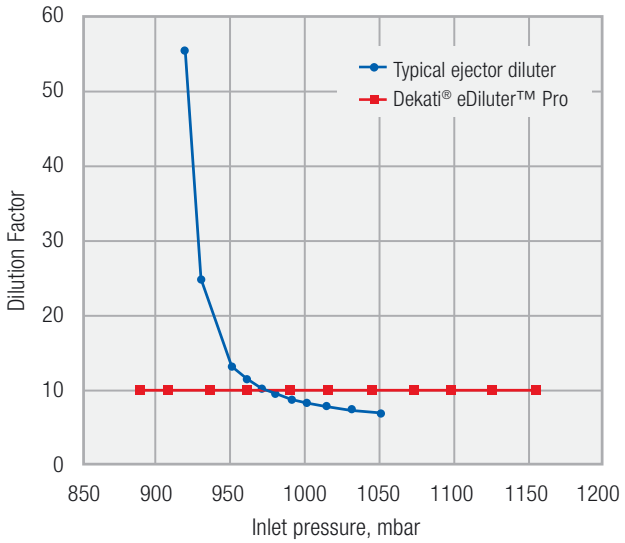
- eDiluter™ Pro combined with Dekati® High Temperature Sampling Probe
- Sampling from up to 1200 °C
- Three dilution stages: one in the sampling probe and two in the eDiluter™ Pro
- Pre-separator heated Dekati® Cyclone for removal of large particles included
- Adjustable dilution factor and dilution temperature
- Stable dilution factor even in variable sample pressure conditions
- Sophisticated dilution stage design, optimized for minimal particle losses
- High diluted output sample flow, up to 80 lpm
- Dilution factor not affected by the flow drawn to measurement instruments
- Two additional, integrated temperature controllers for controlling temperatures of the High Temperature Sampling Probe and the Dekati® Cyclone heater
- Instrument control via integrated display user interface
- Dilution factor output via USB/RS-232
- Complete measurement setups without the High Temperature Sampling Probe also available for engine exhaust measurements and stationary source emission measurements
- Each unit individually calibrated and provided with a calibration certificate

Dekati® eDiluter™ Pro 1200C

Accessories

- Pressurised air cleaning and drying units for dilution air
- Heated sampling lines





Dilution factor of the Dekati® eDiluter™ Pro remains constant in variable inlet pressure conditions.

Specifications*

Dilution factor	Adjustable, min. 1:25 – max. 1:225
Sample pressure (inlet)	850-2200** mbar
Sample temperature (inlet)	1200 °C 600 °C for eDiluter™ Pro without the Dekati® High Temperature Sampling Probe.
Diluted sample temperature (outlet)	Close to ambient***
Sample flow rate (inlet)	4-10 lpm, depending on dilution factor
Diluted sample flow (outlet)	50-80 lpm
Dilution temperature	Max. 400 ºC
High Temperature Probe heater	Max. 400 ºC
Dilution air	Clean and dry dilution air, 5 bar abs., max 200 lpm
Cooling air	2-3 bar abs. (150 - 220 lpm)
Power requirements	110 – 230 V Max 600 W with heated dilution Max 2.6 kW with two external heaters @ 230 V, max 1.6 kW @ 110 V
Dimensions	eDiluter™ Pro H205 x W168 x D520 mm HT Probe diameter 60.3 mm HT Probe flange diameter: 200 mm. Custom flanges available upon request. HT Probe length 1-2 m. Custom lengths up to 6 m available upon request.
Dilution stage material	Stainless steel, AISI 316
HT Probe material	Heat resistant stainless steel, 253MA

* Customized solutions also available

** Active monitoring and stabilization of the dilution factor. Absolute range may vary depending on the used dilution factor and dilution air pressure.

*** With lower dilution factors, additional sample line extension may need to be used at the outlet for additional cooling

For more information, please contact: sales@dekati.com

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Dekati Ltd. is a world leader in designing and manufacturing innovative fine particle measurement solutions. We have over 25 years of experience in providing measurement instruments and complete measurement solutions to a wide variety of environments and sample conditions. All Dekati® Products are developed and manufactured in Finland and are available with up to five-year warranty.

ISO 9001
BUREAU VERITAS
Certification
Nº FIHSK11145824A

Dekati Ltd. Tykkitie 1, FI-36240 Kangasala, Finland Tel. int. +358 3 3578 100 E-mail sales@dekati.com www.dekati.com

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