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## **ROTARY IMPACTOR HEAD**

A very high quality standard in the PMx sampling with multi-jet inertial impactor



The Rotary impactor Head guarantees a very high quality standard in the PMx sampling with multi-jet inertial impactor. In particular it allows:

- A definite improvement of the temporal stability of the granulometric cut size efficiency
- A remarkable increase of the usable deposition surface (about 6 times larger in case of sampling inlets with 8 nozzles in compliance with the European Standard)
- a drastic reduction of the frequency of maintenance
- interventions needed for the sampling inlet cleaning



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#### Characteristics

- The rotation device of the impactor disc does in no way change the sampling inlet structure. Therefore, the Rotary Impactor Head is absolutely equivalent to a sampling inlet complying with the EN European Standard (EN 12341 for PM10 and EN 14907 for PM2.5)
- Interchanging the accelerating nozzles (available in standard kits) different cutting size can be easily obtained (PM 10, PM 2.5, PM 1 for 2.3 m<sup>3</sup>/h as well for 1 m<sup>3</sup>/h)

#### Structure

The rotary impactor head is made up of the components shown in the picture

#### Working principle

The air flow is conveyed through the acceleration nozzles and then directed against a rotary impactor disc, coated with lowvolatility mineral oils.

Depending on the cut size diameter chosen for the sampling (for example PM10, PM2.5, PM1), the particles with a diameter larger than the programmed one collide with the impactor disc and they stop here.

The Rotary Impactor Head allows to overcome the limits of the standard sampling inlets, where the particles progressive accumulation on the impactor disc gradually modifies the characteristics of the impactor disc itself, causing a high and rapid reduction of the cut size efficiency and therefore calling for frequent cleaning interventions.



With the Rotary Impactor Head, the impactor disc rotation on the axis of symmetry of the multi-jet impactor allows to increase the particulate matter deposition surface, making considerably slower the accumulation process and the progressive impoverishment of the grease film covering the impactor disc. Therefore, the granulometric cut efficiency is kept constant for a longer time compared with the traditional sampling inlets.



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### **ROTARY IMPACTOR HEAD**

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Standard multi-jet impactor

Impact disc



Impact surface of a single nozzle with circular section

> On every accumulation point corresponding to the single nozzle, the particles tend to settle on a larger and larger no more flat impact surface, till the jet let circulate also the particles with a diameter higher than the cut size. In these conditions, the impact does no more take place on a greasy anelastic surface and the particles are free to bounce off the already accumulated material.

> > Technical specifications

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Impact disc

Impact surface distributed for all the acceleration nozzles

The slow impactor plane rotation allows to present constantly to the flow coming out from the nozzles an impact surface anelastic, plane and as poor as possible in accumulated material. So the particulate matter accumulates on a circular crown distributed on the rotary impactor disc surface. That allows to keep the optimal conditions for the particulate matter capture for a time remarkably longer, drastically reducing the frequency of the interventions needed for the impact plane cleaning.

Weight	2 kg
Size	diameter: 95 mm (baseline) height: 230 mm
Power supply	Internal battery 3,6 V (autonomy: 3 months) or external power supply module with rechargeable batteries connected to a photovoltaic panel
Granulometric cut size	PM <sub>10</sub> , PM <sub>2.5</sub> , PM <sub>1</sub> at 2.3 m <sup>3</sup> /h and 1 m <sup>3</sup> /h operating flow rates Different interchangeable accelerating nozzles in standard kits are available to obtain the different desired cutting size

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