For the highly effective, energy efficient collection of dust from industrial processes

The VARIO eco units have a modular design in order to meet different application requirements, such as dust characteristics or the volume of exhausted air.

The VARIO eco series is known for low filter resistance with very high separation efficiency.
**The Task**

Keller plans, engineers and fabricates systems to keep air clean in all industrial sectors in which air pollutants are collected, transported and separated. Innovative filter technologies and a systematic equipment design ensure optimal separation results.

The VARIO eco series is particularly suitable for separation of fine dust. Nearly all types of dust can be successfully separated, including those created in metal and polymer processing, chemical, pharmaceutical, and ceramic industries, as well as non-metallic minerals.

The VARIO eco units have a modular design in order to meet different requirements, such as dust characteristics or the volume of exhausted air. These sturdy, low-noise units allow for reliable 24-hour operation with constant air flow.

**Examples of applications**

Mechanical and thermal processes during which dry, airborne dust is created.

- Turning
- Drilling
- Milling
- Grinding
- Brushing
- Welding
- Blasting
- Deburring
- Painting
- Mixing
- Weighing
- Recycling

The VARIO was further improved to minimize energy consumption. Savings are achieved by using more efficient fans as well as reducing compressed air consumption during filter element cleaning. Lower filter resistance by state-of-the-art KLR filters results in additional savings, since use of the fan can be significantly decreased.

**Advantages**

- Reduced noise with integrated sound insulation for sizes VARIO 1 - 3 eco
- Flexible/modular design
- Flexible setup
- Integrated deflection design for protection against wear and improved air distribution
- Easily accessible inspection doors

VARIO 6 eco with chip preseparation
The dust-laden air flows through the dirty air inlet into the filter unit. A baffle plate slows down and deflects the dust particles to protect the filter elements from direct impact. An air down-flow is created between the filter elements, allowing the dust particles to drop. The fan in the clean air chamber draws the polluted air through the filter elements, depositing the dust particles onto the filter surface. Because the filter elements are cleaned continuously by compressed air pulses during operation, the airflow remains constant. The cleaned air exits through the top of the unit and can be recirculated into the work area or vented outdoors. The separated dust falls into the dust collector containers.

Cartridges or plate filters are used, depending on the application, for enhanced separation efficiency and service life. All filter elements used are of high quality and easy to clean.

The pulse cleaning cycle can be adjusted for each application by means of an integrated control unit. The airflow of the fan remains nearly constant. The cleaning operation is activated either by a differential pressure regulator while in operation, or by a programmable downtime cleaning cycle.

Features of the VARIO eco

1. Dirty air inlet; on either side of the unit
2. Baffle plate; at the dirty air inlet
3. Filter elements
4. Waste disposal bin
5. Clamping mechanism for disposal bin
6. Jet piping to clean the filter elements
7. Radial fan (VARIO 1-3 eco)
8. Compressed air tank
9. Diaphragm valves; electromagnetic
10. Sound absorbent lining
11. Compressed air connection
12. Clean air outlet; pipe connection possible
**Waste disposal**

Standard: The air-tight and dust-tight disposal bins are connected to the filter’s hopper with a clamping device, simplifying the exchange of dust collector containers.

For larger dust volumes or in 24-hour operations, the waste is continuously removed via rotary valve disposal into drums/containers or Big Bags. Alternative methods are available.

---

**Waste disposal 1**
- hopper
- buckets/bins

**Waste disposal 2**
- rotary lock
- 55 gal drum

**Waste disposal 3**
- rotary lock
- Big-Bag

---

**Safety**

It is possible to equip the VARIO eco units with safety technology for combustible or explosive dusts that are created during the manufacturing process.

Flameless explosion pressure relief for installation indoors

Burst disk for explosion pressure relief outdoors

Explosion suppression by automatic entry of extinguishing agent

ProFlap back pressure flap for explosion decoupling of clean air and dirty air pipes

For additional information regarding explosion protection see: [www.exschutz.net](http://www.exschutz.net)
Fan section
The direct-drive radial fan is very silent. Depending on the size of the filter unit, the fan is either integrated, top-mounted or placed next to it (stand-alone).

Placement
Installation outdoors is possible if weather protection is provided and is within local noise requirements.

Venting outdoors or re-circulation
Clean air return is usually feasible during separation with our high quality filter elements. The cleaned air can be ducted and channeled (even with heat exchangers) to the outdoors, or re-circulated back into the workplace. Alternate venting or re-circulation can be accomplished by activating a switch within the exhaust duct.

We will be pleased to provide you with detailed information regarding the feasibility of a re-circulation system, ensuring compliance with your local rules and regulations.
Technical Data with plate filters:

<table>
<thead>
<tr>
<th>Unit type</th>
<th>VARIO 1</th>
<th>VARIO 2</th>
<th>VARIO 3</th>
<th>VARIO 4</th>
<th>VARIO 5</th>
<th>VARIO 6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max. airflow</td>
<td>1,350 cfm (2,300 m³/h)</td>
<td>3,800 cfm (6,600 m³/h)</td>
<td>5,750 cfm (9,800 m³/h)</td>
<td>8,500 cfm (14,500 m³/h)</td>
<td>11,500 cfm (19,600 m³/h)</td>
<td>17,000 cfm (29,000 m³/h)</td>
</tr>
<tr>
<td>Motor</td>
<td>4 hp (3 kW)</td>
<td>5-10 hp (4-7.5 kW)</td>
<td>15-20 hp (11-15 kW)</td>
<td>20-30 hp (15-22 kW)</td>
<td>40-50 hp (30-37 kW)</td>
<td>43-53 hp (32-40 kW)</td>
</tr>
<tr>
<td># of filter plates</td>
<td>8</td>
<td>12</td>
<td>14</td>
<td>20</td>
<td>28</td>
<td>40</td>
</tr>
<tr>
<td>Dimensions (L/W/H)</td>
<td>40” x 34” x 104” *(1000 x 860 x 2635 mm)</td>
<td>53” x 41” x 128” *(1350 x 1050 x 3255 mm)</td>
<td>58” x 58” x 156” *(1472 x 1472 x 3953 mm)</td>
<td>61” x 61” x 134” *(1544 x 1544 x 3390 mm)</td>
<td>95” x 61” x 134” *(2400 x 1542 x 3390 mm)</td>
<td>61” x 122” x 134” *(1544 x 3084 x 3390 mm)</td>
</tr>
</tbody>
</table>

* Without top-mounted fan

Subject to modifications

Technical Data with cartridge filters:

<table>
<thead>
<tr>
<th>Unit type</th>
<th>VARIO 1</th>
<th>VARIO 2</th>
<th>VARIO 3</th>
<th>VARIO 4</th>
<th>VARIO 5</th>
<th>VARIO 6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max. airflow</td>
<td>1,400 cfm (2,400 m³/h)</td>
<td>3,350 cfm (5,700 m³/h)</td>
<td>4,150 cfm (7,000 m³/h)</td>
<td>8,500 cfm (14,400 m³/h)</td>
<td>12,700 cfm (21,600 m³/h)</td>
<td>17,000 cfm (28,800 m³/h)</td>
</tr>
<tr>
<td>Motor</td>
<td>4 hp (3 kW)</td>
<td>7 hp (5.5 kW)</td>
<td>15hp (11kW)</td>
<td>20-30 hp (15-22 kW)</td>
<td>40-50 hp (30-37 kW)</td>
<td>43-53 hp (32-40 kW)</td>
</tr>
<tr>
<td># of filter cartridges</td>
<td>4</td>
<td>6</td>
<td>8</td>
<td>12</td>
<td>18</td>
<td>24</td>
</tr>
<tr>
<td>Dimensions (L/W/H)</td>
<td>40” x 34” x 104” *(1000 x 860 x 2635 mm)</td>
<td>53” x 41” x 128” *(1350 x 1050 x 3255 mm)</td>
<td>58” x 58” x 156” *(1472 x 1472 x 3953 mm)</td>
<td>61” x 61” x 134” *(1544 x 1544 x 3390 mm)</td>
<td>95” x 61” x 134” *(2400 x 1542 x 3390 mm)</td>
<td>61” x 122” x 134” *(1544 x 3084 x 3390 mm)</td>
</tr>
</tbody>
</table>

* Without top-mounted fan

Subject to modifications
References

VARIO 1 eco as a central vacuum system

VARIO 2 eco for the extraction of chips at an assembly line

VARIO 5 eco with spark preseparator and heat recovery system

Extraction of a grinding booth by a VARIO 3 eco

All VARIO eco systems are modular in design. Paint particles are separated here in three modules.

Two VARIO 6 eco units with a total air flow of 23,500 cfm (40,000 m³/h) condition the exhaust air following combustion with a renewable thermal oxidation process.
With the GREEN BALANCE initiative, Keller commits to Global Sustainability.

We balance Technological, Social, and Economic resources to sustain the environment.