



在许多研发、质量保证应用以及颗粒测量设备校准中，都需要使用由粉末产生的低浓度固态颗粒气溶胶。RBG 系统可分散非粘性粉末（如矿物粉尘、活性药物成分、花粉等），其粒径范围可达  $< 200 \mu\text{m}$ ，且细颗粒组分  $< 100 \text{nm}$ 。即便是黑板粉笔这类整体固体材料，也能以极高的投料均匀性实现精细分散。该投料与分散系统的独特优势在于，RBG 系统可在约  $40 \text{mg/h}$  至约  $800 \text{g/h}$  的宽质量流量范围内，实现最高水平的投料均匀性分散。

RBG professional 耐反压高达  $10 \text{bar}$ ，可使用氮气作为载气进行操作。

## 工作原理

### 历经验证的先进技术

待分散的粉末被逐步填入圆柱形固体物料储罐，并使用压实器进行压缩。卢塞恩大学研究确认，该储罐内的压实密度具有良好复现性，偏差为  $3.4\%$ 。填装完成的固体物料储罐被装入 RBG 的分散头中。经均匀压实后的粉末通过精确控制的进给速率输送至旋转刷上。可调节体积流量的气体以较高速度流过紧密编织的精密刷，将颗粒从刷中吹出。分散头组件包含分散支架、分散盖、精密刷及固体物料储罐。

图1: RBG 系统示意图

投料通过进给活塞的精确控制实现。基于固体物料储罐的横截面积、进给活塞的可调节进给速率以及储罐内粉末易于确定的压实密度，可快速、可重复地设定所需质量流量。

储罐直径

填装量

1 mm/h 进给速率

1 mm/h

10 mm/h 进给速率

10 mm/h

100 mm/h 进给速率

100 mm/h

**1000 mm/h 进给速率**

**1000 mm/h**

7 mm 2.7 g 38 mg/h 380 mg/h 3.8 g/h 38 g/h

10 mm 5.5 g 78 mg/h 780 mg/h 7.8 g/h 78 g/h

14 mm 17 g 150 mg/h 1.5 g/h 15 g/h 150 g/h

16 mm 30 g 200 mg/h 2 g/h 20 g/h 200 g/h

20 mm 35 g 310 mg/h 3.1 g/h 31 g/h 310 g/h

32 mm 88 g 800 mg/h 8 g/h 80 g/h 800 g/h

RBG basic / solo / professional 1 g/cm<sup>3</sup>

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		1 mm/h 1 mm/h	10 mm/h 10 mm/h	100 mm/h 100 mm/h	1000 mm/h 1000 mm/h
7 mm	2.7 g	38 mg/h	380 mg/h	3.8 g/h	38 g/h
10 mm	5.5 g	78 mg/h	780 mg/h	7.8 g/h	78 g/h
14 mm	17 g	150 mg/h	1.5 g/h	15 g/h	150 g/h
16 mm	30 g	200 mg/h	2 g/h	20 g/h	200 g/h
20 mm	35 g	310 mg/h	3.1 g/h	31 g/h	310 g/h
32 mm	88 g	800 mg/h	8 g/h	80 g/h	800 g/h

Table 2: RBG basic / solo / professional 1 g/cm<sup>3</sup>

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2 welas® digital 2000

A < 0.1 – 200 μm 7 – 32 mm 33 – 80 l/min

B < 0.1 – 200 μm 7, 10 and 14 mm 17 – 40 l/min

C < 0.1 – 200 μm 7 mm 8 – 20 l/min

D 200 – 1,000 μm 7 – 32 mm 33 – 80 l/min

RBG

RBG professional

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A	< 0.1 – 200 $\mu\text{m}$	7 – 32 mm	33 – 80 l/min
B	< 0.1 – 200 $\mu\text{m}$	7, 10 and 14 mm	17 – 40 l/min
C	< 0.1 – 200 $\mu\text{m}$	7 mm	8 – 20 l/min
D	200 – 1,000 $\mu\text{m}$	7 – 32 mm	33 – 80 l/min

Table 4: RBG

RBG ""/""

RBG professional Windows

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- 10 bar
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- LCD
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	0.1 – 200 $\mu\text{m}$
	Approx. $10^7$ particles/ $\text{cm}^3$
	8 – 180 NL/min
Mass flow (particles)	0.04 – 800 g/h (with an assumed compacted density of 1 g/ $\text{cm}^3$ )
Filling height	110 mm
Filling quantity	2.7 g (reservoir $\varnothing = 7$ mm), 5.5 g (reservoir $\varnothing = 10$ mm), 17 g (reservoir $\varnothing = 14$ mm), 35 g (reservoir $\varnothing = 20$ mm), 88 g (reservoir $\varnothing = 32$ mm) (with an assumed compacted density of 1 g/ $\text{cm}^3$ )
	USB type B
	115–230 V, 50/60 Hz
Particle material	Non-cohesive powders and bulks
Dosing time	Several hours nonstop
Pre-pressure	4 – 13 bar
Carrier/dispersion gas	Air, nitrogen
Maximum counter pressure	10 barg
Compressed air connection	Quick coupling
Feed rate	1 – 1,000 mm/h
Reservoir inner diameter	7, 10, 14, 20, 32 mm
Aerosol outlet connection	$\varnothing_{\text{inside}} = 5$ mm, $\varnothing_{\text{outside}} = 8$ mm
Dispersion lid	Type A, type B, type C, type D
Dimensions	515 • 330 • 240 mm (H • W • D) Approx. 15 kg

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Mehr Informationen:  
<https://www.palas.de/zh/product/RBGprofessional>