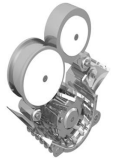


GERTEIS
MASCHINEN + PROCESSENGINEERING AG

DRY GRANULATION

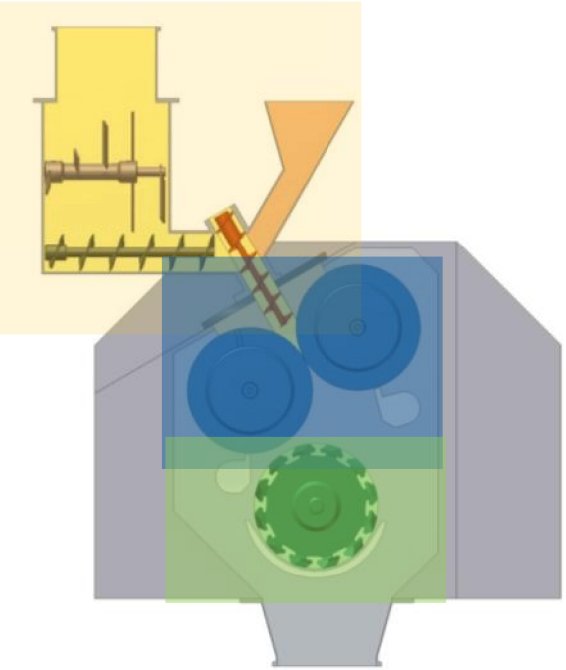
Made by Gerteis

Michael Hanisch

Senior Project Manager
Gerteis Maschinen + Processengineering AG

DRY Granulation Process

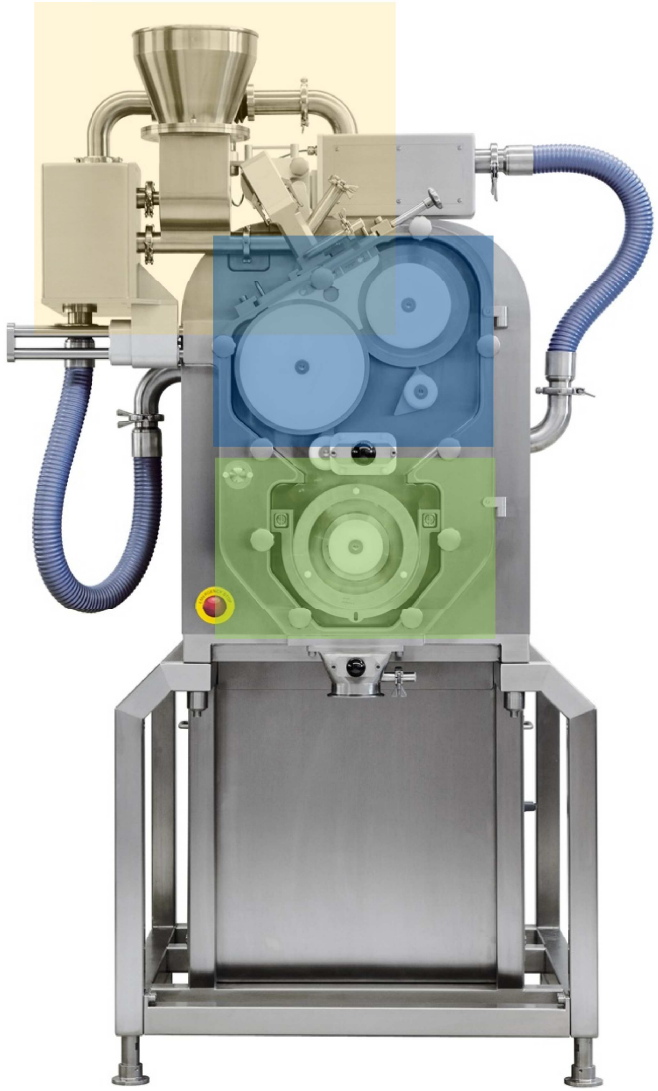
DRY GRANULATION PROCESS
Equipment



Powder Feeding

Compaction

Milling



DRY GRANULATION PROCESS
Advantages

Low Energy Costs

- Energy consumption of 0.03 kW/kg

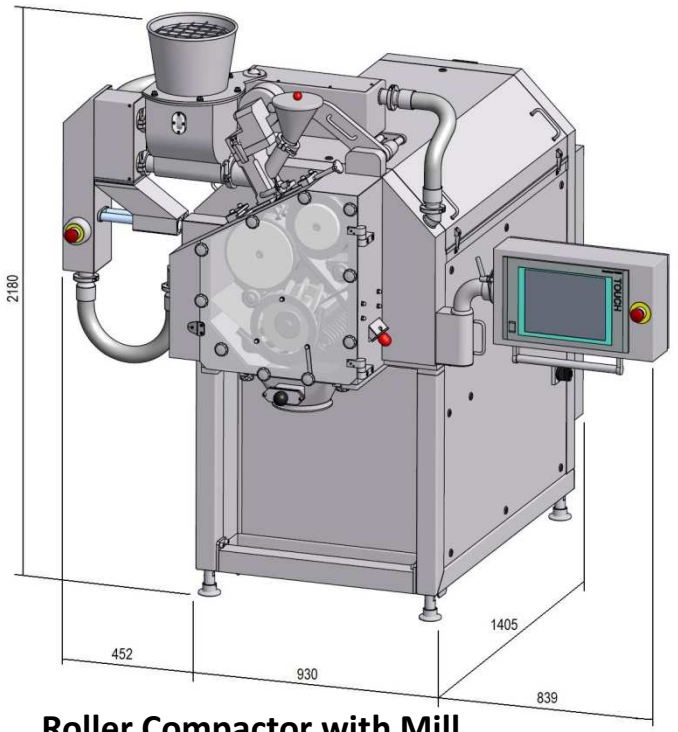
Building requirements

- No tailor made building needed
- Space saving

Dry Granulation is a continuous process

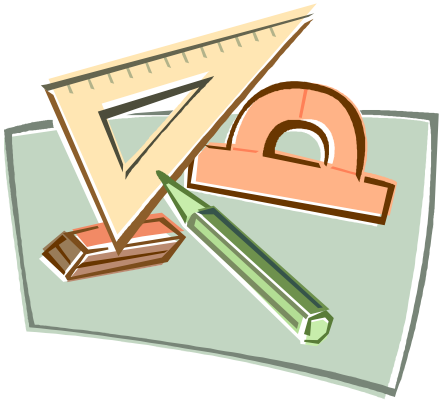
Addition of liquids or heat can be avoided

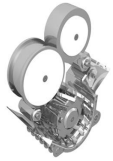
No material transfer between
process steps



Roller Compactor with Mill
throughput 400 kg/h, continuous

DRY GRANULATION parameters





DRY GRANULATION PARAMETERS
Influencing Factors

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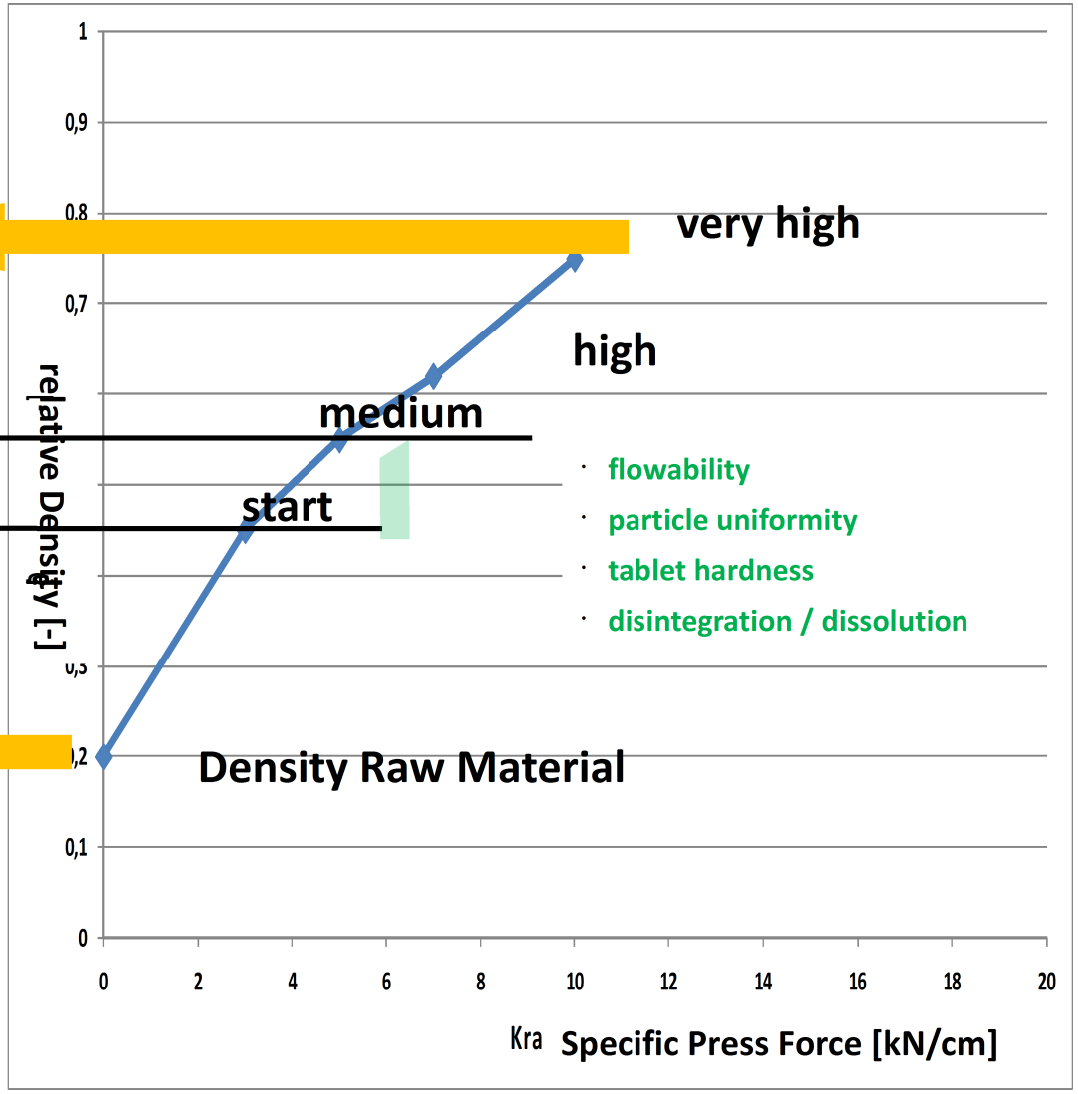
DRY GRANULATION PARAMETERS
Press Force

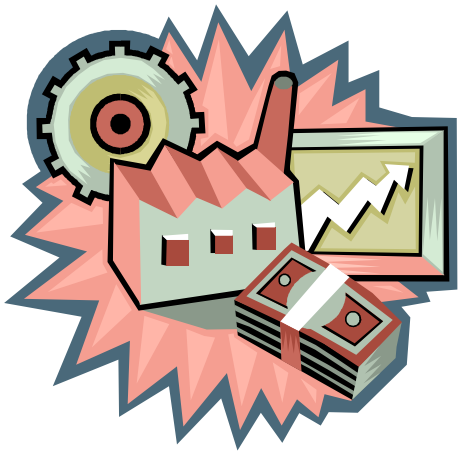
- flowability
- particle uniformity
- tablet hardness
- disintegration / dissolution

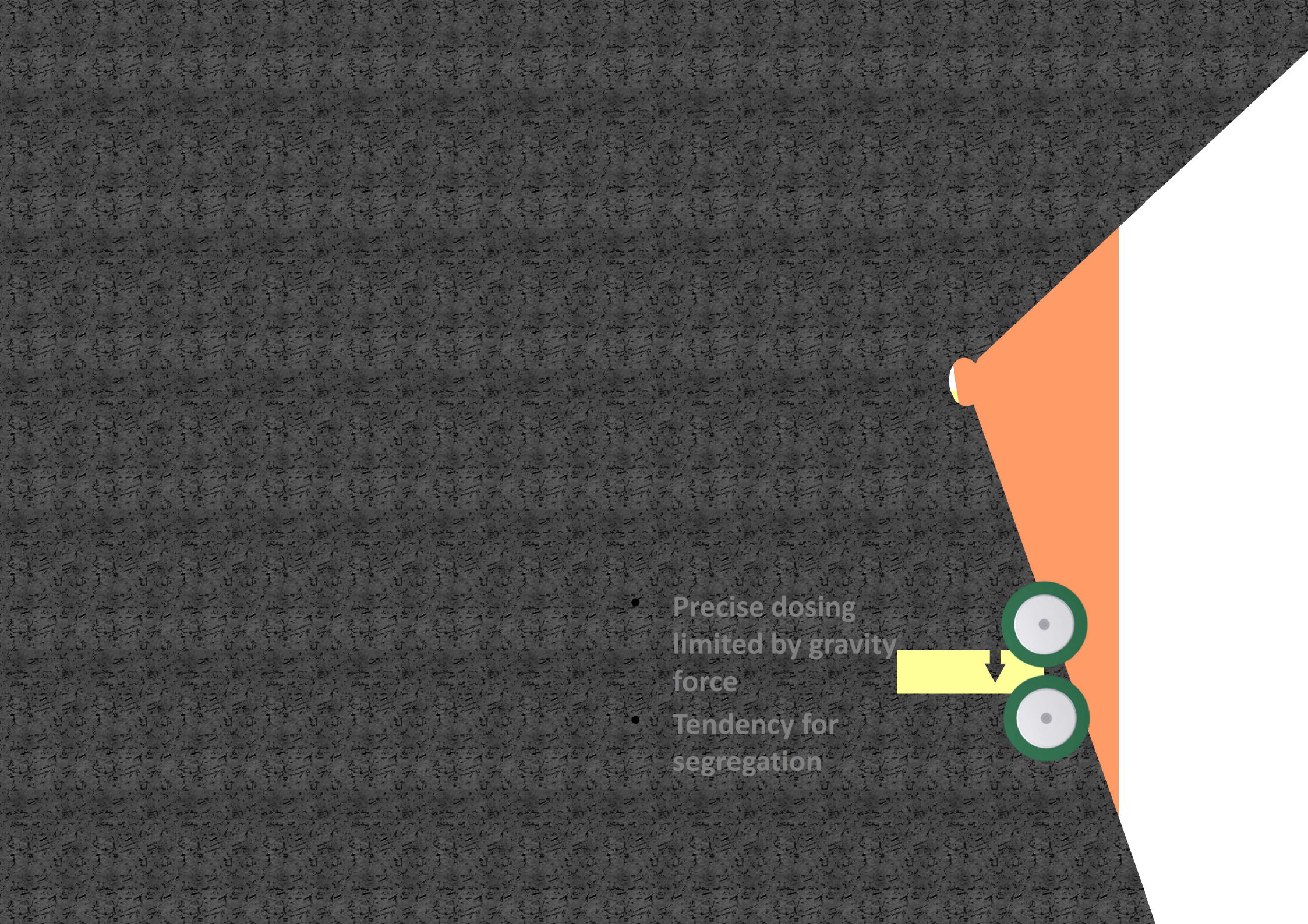
Target Press Force

- flowability
- particle uniformity
- tablet hardness
- disintegration / dissolution



GERTEIS Technology ADVANTAGES



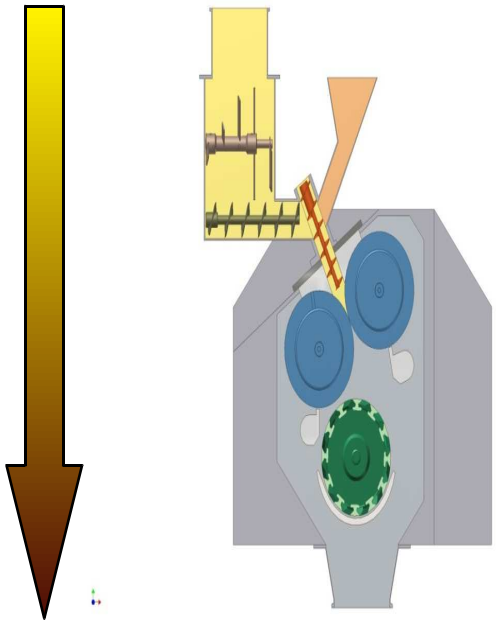

Precise dosing limited by gravity force
Tendency for segregation

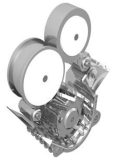
No temperatur issues

Heat up of material during whole process only 2 – 4°C

Roller cooling option for material with melting point < 30° C

Max. 4° C





GERTEIS TECHNOLOGY ADVANTAGES
Product Quality

GERTEIS MASCHINEN + PROCESSENGINEERING AG

Constant product quality and characteristics

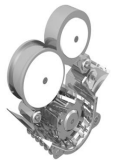
- Material feeding system allows precise dosing to process
- Unique combination of inclined roller arrangement, movable press roller and gap control

Minimized amount of fines

- Inclined press roller arrangement and press roll with rims minimizes the amount of uncompacted fines
- Gerteis mill system generates an optimal particle size distribution
- Recycling systems only needed for special applications

Long term stability, scale-up and site transfer

- Real Data Calibration
- Calibration of the whole system
- Reproduceable Results



GERTEIS TECHNOLOGY ADVANTAGES
Containment and Cleaning

GERTEIS MASCHINEN + PROCESSENGINEERING AG

Occupational Exposure Limit (OEL)

Design Level OEL < 3 µg/m3 : Standard for MINI-PACTOR® MACRO-PACTOR®

Design Level OEL < 1 µg/m3 : Optional with an unique shaft sealing system

Design Level OEL < 0.1 µg/m3 : With fully integrated Isolator for ULTRA-PACTOR®

Containment Safety

Integrated Air Handling System guarantees the Containment Safety (option)

Integrated Nitrogen Adding and Oxygen Monitoring available

Cleaning Options

Manual cleaning with easy and fast dismantling of the relevant components

Wash in Place (WiP) avoids airbourne dust during dismantling

Clean in Place (CiP) for completly automated cleaning without dismantling

Questions and Answers

Please visit our booth for further information.

Thank you for your attention.

International References