



**UNIVERSITY OF  
CHEMISTRY AND TECHNOLOGY  
PRAGUE**



EVROPSKÁ UNIE  
Evropské strukturální a investiční fondy  
Operační program Výzkum, vývoj a vzdělávání

**MS  
MT**  
MINISTERSTVO ŠKOLSTVÍ,  
MLÁDEŽE A TĚLOVÝCHOVY

# Chemical Engineering 3

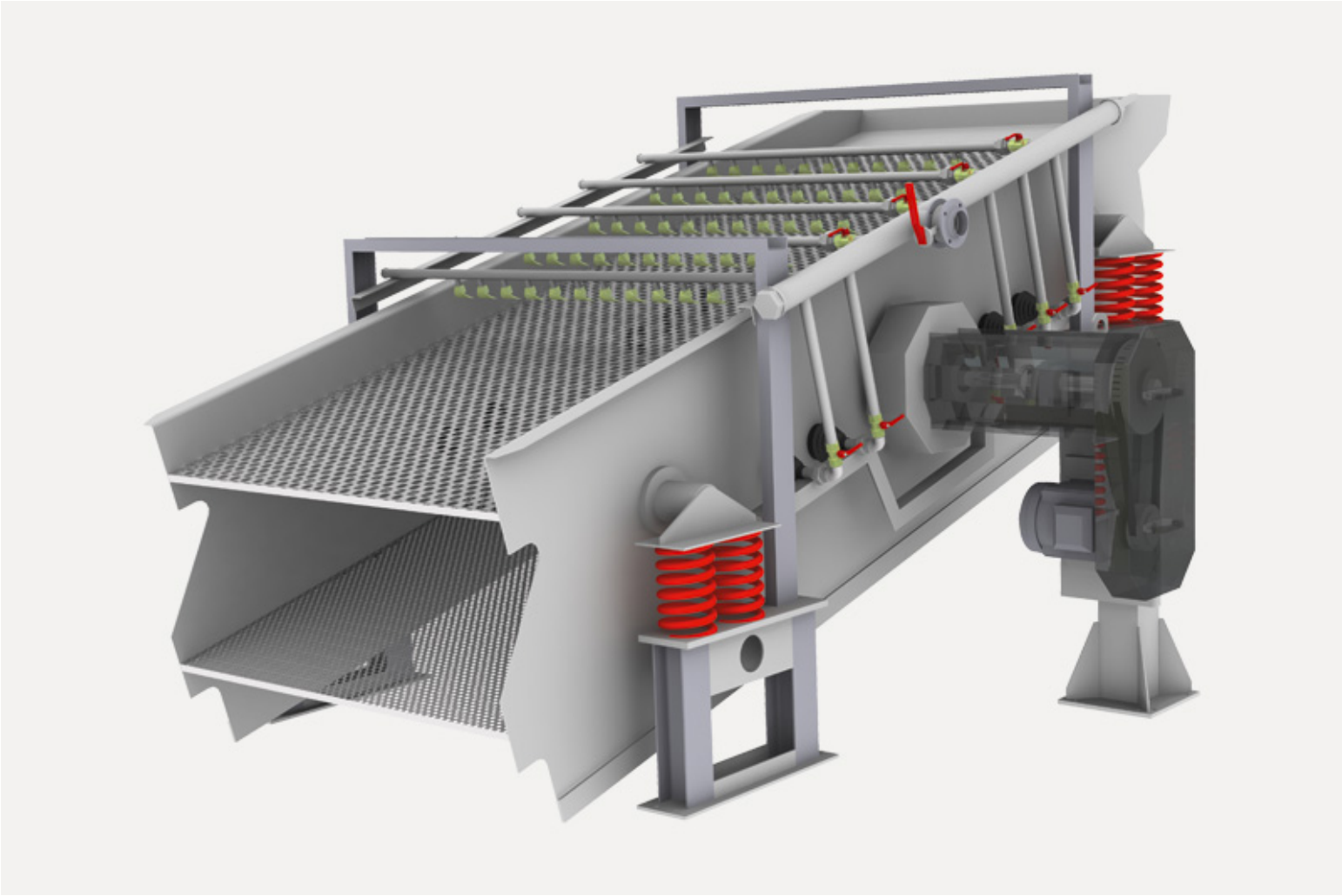
Fluid-particle separation  
(cyclones, hindered settling)

## Fluid-particle separation/classification methods:

- Particle size range
- Separation mechanism/force field
- Objective: particle recovery vs. disposal

- 1) **Screening: gravity & vibration**
- 2) **Air classification: momentum vs. drag force**
- 3) Electrostatic separators: electrostatic charge
- 4) Wet scrubbers: capillary force
- 5) Filters: mechanical barrier

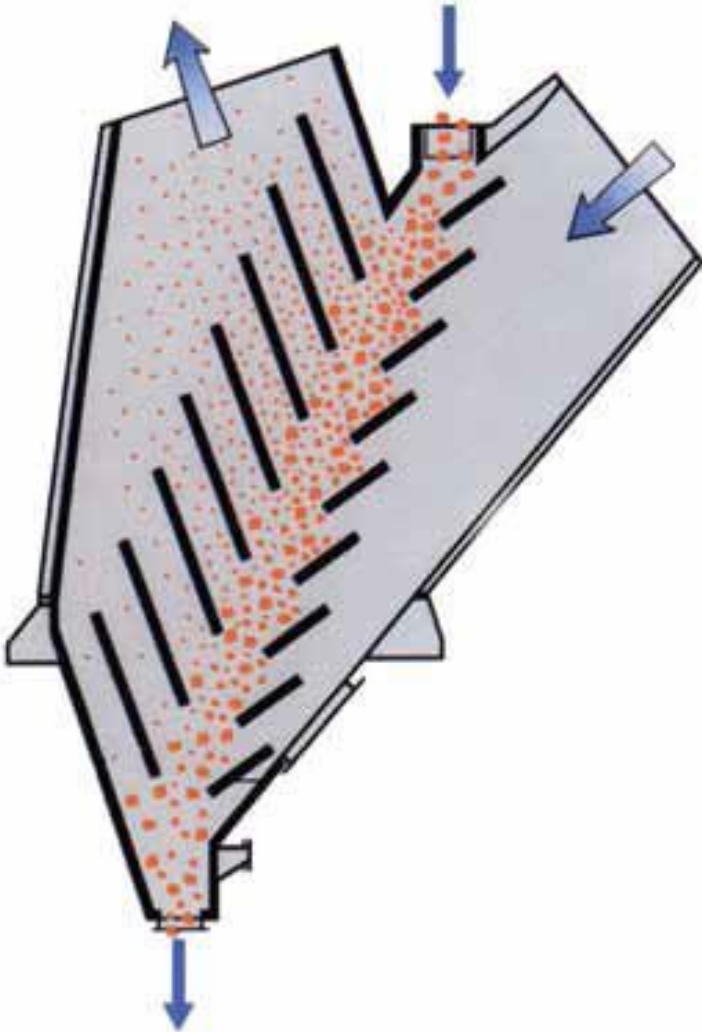
# Screening / Sieving



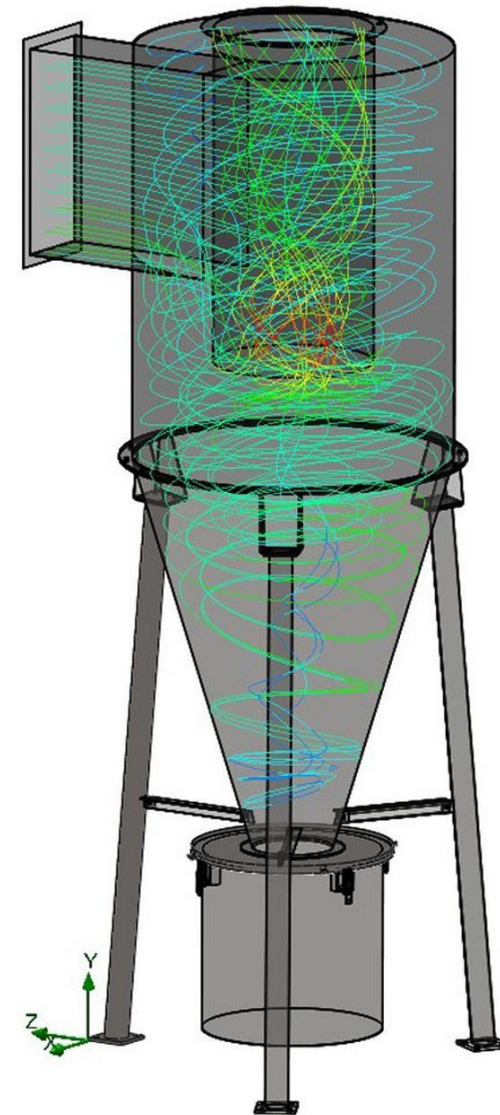
# Screening / Sieving



Air classification – Static V separator

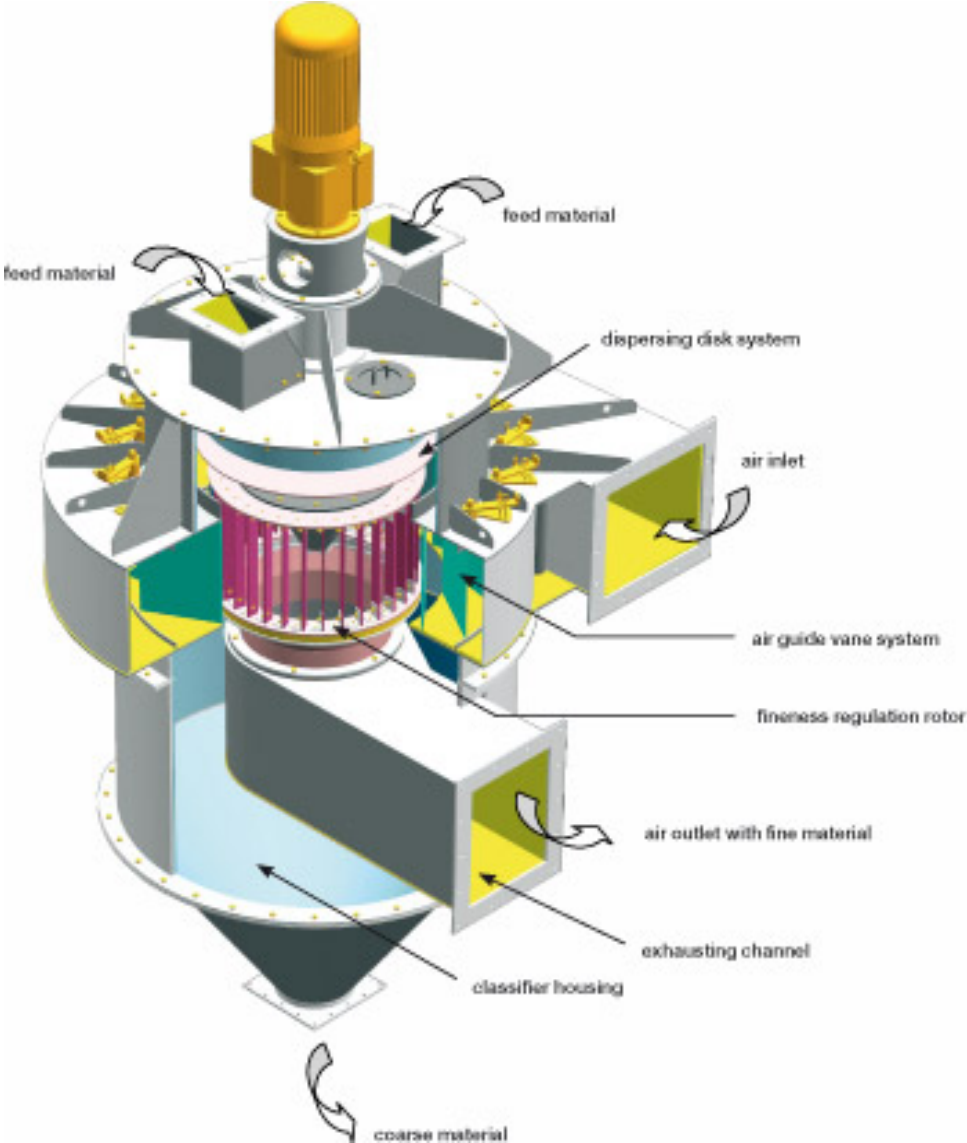
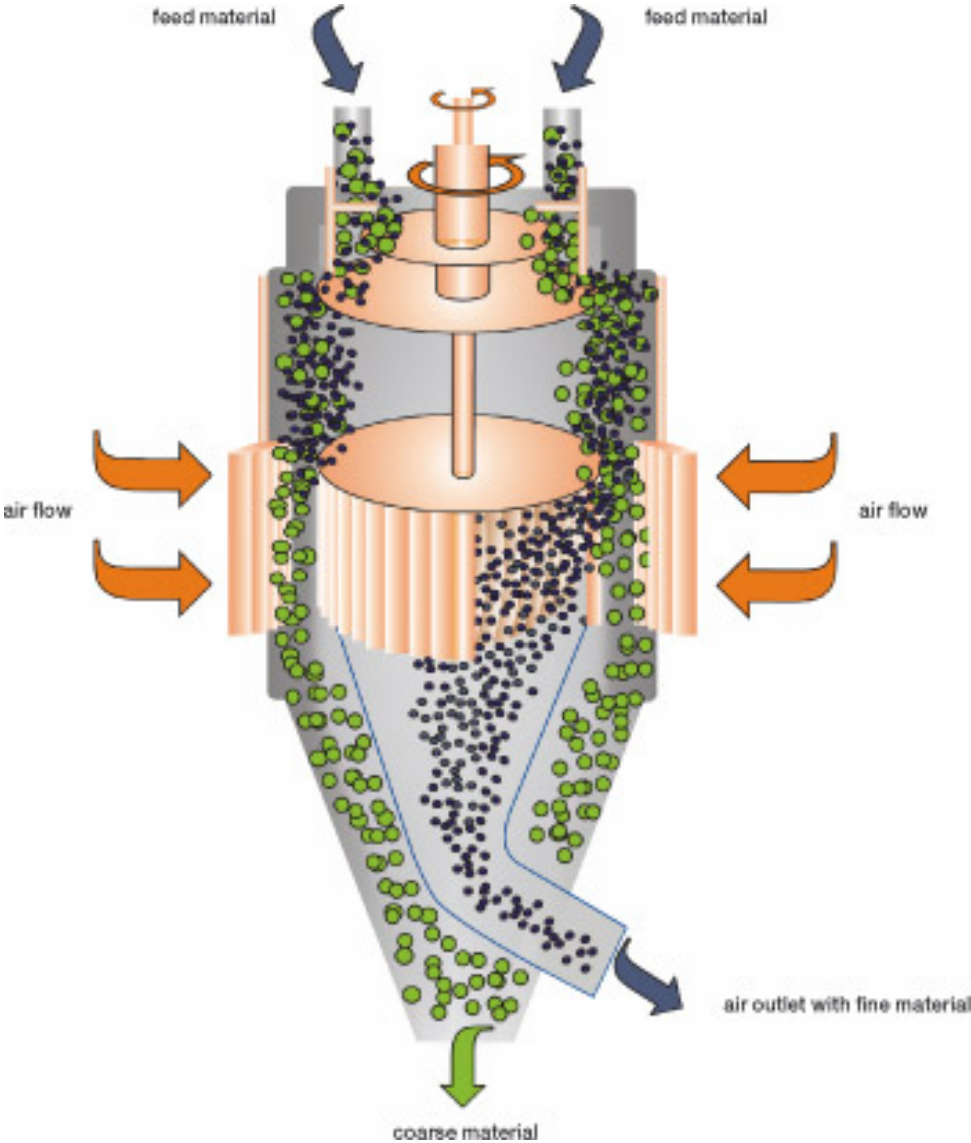


# Air classification - Cyclone



Force balance – Critical orbiting radius

# Air classification – Rotary classifier





# Settling in concentrated suspensions