

PAID DIPLOMA/ MASTER'S THESIS

Modeling of Screw Conveyor / Screw Feeder

Ref.Nr. DA 111

To dedicated students of process engineering, mechanical engineering, pharmaceutical engineering, chemical engineering, physics, material science or related disciplines, we offer an opportunity to write a paid Diploma/Master's thesis. The project is conducted in close cooperation with some big players in pharmaceutical industry.

OBJECTIVE:

Highly accurate dosing is a critical process step in all continuous pharmaceutical solids handling processes. Typically, twin-screw feeders (see Figure on right side) are used to perform dosing of solids. In literature, simplified equations to describe the mass flow \dot{m} out of a screw are available. Other models describe powder densification with increasing fill level or the effect of agitators in hoppers.

The objective of this thesis is, to evaluate the validity of these equations for a range of materials. Real measurement data is available for calculations and validation.

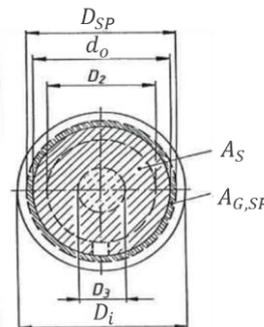
Furthermore, the suitability of these equations for predictive modeling should be evaluated. Together with the project team, such predictive models will be developed and tested.



Fig.: Twin screw loss-in-weight feeder KT20 (Coperion K-Tron).



Fig.: Inside of hopper and two different screw types.



$$\dot{m} = A_{c,eff} \cdot v_{ax} \cdot \rho_r \cdot \varepsilon$$

$$\text{with } A_{c,eff} = A_S + A_{G,SP}$$

$$\text{and } v_{ax} = K \cdot n_s$$

Fig.: Illustration of effective conveying cross section in single spiral screw (simple case). (Vetter 2001)

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- Assistance with the publication of results
- Adequate compensation and opportunities for personal and professional development

FINANCING: Compensation on the basis of a service contract

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