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# Roll Compaction FEM Model

**Advanced simulation models predict roll force, torque, and material density distribution for roll compaction, enabling better control over the uniform density of granulated powder for industries like drug and food production.**

Powder roll compaction is a processing technique used in many industries to compress a fine powder into larger granules. The larger particles are generally easier to process than the fine powder, but their density and size must be consistent.

Researchers at Purdue University have developed models for Abaqus, a software suite for finite element analysis and computer-aided engineering, which simulate the powder properties of a 3D roll compactor. The models predict the roll force, roll torque, and roller-compacted ribbon density distribution. Better simulations allow for control over the uniform density of the granulated powder.

**Advantages**:

-Increases uniform density of granulated powder

-Predicts the roll force, torque, and compacted ribbon density distribution

Potential Applications:

-Drug production

-Food processing

**TRL:** 7

**Intellectual Property:**



**Keywords:** Powder roll compaction, fine powder compression, larger granules, consistent density, finite element analysis, computer-aided engineering, 3D roll compactor simulation, roll force prediction, roll torque prediction, ribbon density distribution, Application Software, Computer

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