



# Forest Concepts receives \$1.8 million from DOE to improve the design of biomass handling systems

AUBURN, WASHINGTON, UNITED STATES, June 21, 2018 /EINPresswire.com/ -- Forest Concepts LLC has been awarded a \$1.8 million cooperative agreement from the U.S. Department of Energy's Bioenergy Technologies Office (<https://www.energy.gov/eere/bioenergy>) to address the critical issues of poor flowability, high friction, and highly variable physical properties that have plagued the biomass industry.

Biomass materials have a wide range of moisture contents that are subjected to varying temperature, pressures, and forces which traditional metrics provide little-to-no value for the engineering design of hoppers, feeders and mixers. Many of the reported failures at advanced biofuel and bioproducts production facilities are due in part to feedstock handling related problems resulting from a lack of useful and accurate engineering data.

Forest Concepts led by Dr. Jim Dooley, CTO, in collaboration with Penn State University's Dr. Virendra Puri, has an overall project goal to contribute to the design and operation of reliable, cost effective, continuous feeding of biomass feedstocks into various reactors typical of integrated biorefineries. For the past 30 plus years Dr. Puri has greatly advanced the modeling of compression, flowability, and storage of particulate materials while Dr. Dooley has made significant advances in low energy processing of uniform, flowable precision feedstocks from a variety of high moisture biomass.

"We appreciate DOE Bioenergy Technologies Office support for this important project. The new biomass characterization and flowability properties tools that will result should enable our engineers and others in the bioeconomy to improve process on-stream time and reduce operational risks associated with flowability issues," states Jim Dooley.

"From the characterization datasets generated using Penn State's laboratory scale Cubical Triaxial Tester (CTT), we will develop and validate a comprehensive computational model to predict mechanical and rheological behavior of biomass flow to enable systematic and reliable design of biomass handling/conveying/feeding systems," said Dr. Puri.

A component of the project will be to design and build a large scale CTT for commercial use in predicting biomass flows through feedstock handling systems, and final validation of the predictive model including all feedstock handling infeed and outfeed unit operations will be performed using Amaron Energy's mobile pyrolysis unit in Salt Lake City.

## [About Forest Concepts LLC:](#)

Forest Concepts has more than 10 years of experience with unique biomass flowability issues in its own facility and with the biorefinery clients it works with. The company is both a technology developer and a commercial-scale producer of reactor-ready feedstocks from biomass raw materials with 30 U.S. Patents issued and more pending.

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