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Development of a Cross Flow Classifier Test Rig

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Abstract

A cross flow classifier test rig was developed at the Central Food Technological Research Institute, Mysore, India to study the feasibility of using air for the classification of grains and particle dynamics research. It is made up of a blower, blower frame, and feed hopper/vibratory feeder with frame, classifying chamber, and tilting mechanism. The classifying chamber is made up of a frame, collector trays and grain deflectors or guiding plates. One of the longitudinal sides is covered with sheet metal (18 gauges) and its inner wall is colored with black paint to provide a good back ground for the particle tracking, while the other side is covered with plain perspex sheet to enable visibility for particle tracking. The classifying chamber has a total dimension of 0.50×2.5×2.62 m and provided with four wheels for easy shifting. The total height of the assembly is 2.62 m with a floor area of 2.55 m2. The construction of the cross flow classifier system is made flexible such that many parameters include grain inlet velocity, feed rate, air speed, feed height, drop height, angle of inclination of blower and angle of inclination of deflector/guide plates can be varied. Preliminary test running was done and it was found out that the equipment could be used for the classification of legume grains, based on their densities and for the study of the velocity profile of the materials in the classifier chamber.