Fixed-Bed Batch Dryer

What is a fixed-bed batch dryer?
A dryer is a mechanical device or machine that removes the water from wet grains by forcing either ambient air or heated air through the grain bulk. In a fixed-bed batch dryer the same quantity of grain is kept stationary in a holding bin until drying is completed.

Why to use fixed-bed batch dryers?
Fixed-bed batch dryers produce better grain quality than sun-drying, especially in the wet season. They are more affordable than re-circulating batch dryers of the same capacity or continuous flow dryers and have certain advantages

- Simple design allows local production of the drying bin, blower and furnace and ensures easy maintenance and repair.
- Can be operated with a gasoline or diesel engine in areas where electricity is not available or too expensive.

The disadvantage is a moisture gradient that develops in the grain bulk during drying from the air inlet to the air outlet.

Types of fixed-bed batch dryers

Bed configurations of fixed-bed batch dryers can either be rectangular (flat-bed dryer), inclined for better unloading or circular.

**Flat bed dryer**

Flat bed dryers have a simple drying bin a kerosene or rice hull furnace and are driven by electric motors, diesel or gasoline engines. Mixing improves grain quality.

**Reversible flow dryer**

To reduce the moisture gradient and eliminate the need for mixing the airflow can be reversed in reversible flow flat bed dryers.

**Circular bin dryer**

Circular bin dryers save floor area and can be made from cheap materials. Drying is more uneven than in flat bed dryers. If the grain bulk is thicker than 0.4 m low-temperature drying with around 4-6°C above ambient air should be practiced.

**Technical specifications**

- Drying air temperature: <43°C
- Grain depth: < 0.4 m
- Air velocity: 0.15-0.3 m/s
- Fan power requirement: 1.5-2.5kW/t

For checking whether a flat-bed dryer has sufficient and even air flow: A sheet of letter sized paper placed on top of the grain must float atop the grain at all locations of the drying bin.

For more information contact

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