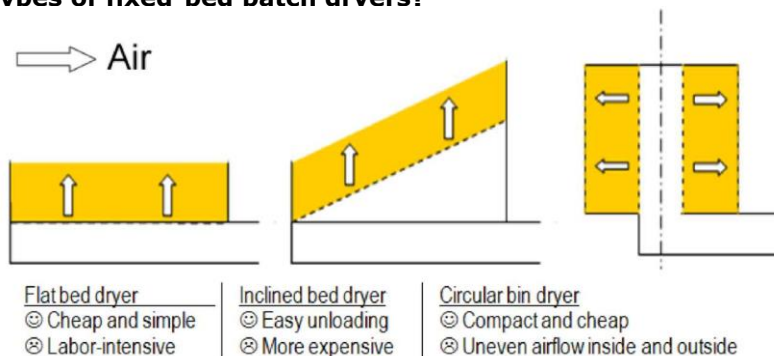


What is a fixed-bed batch dryer?

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 do we 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. They have certain advantages too:

- The simple design allows local production of the drying bin, blower and furnace and ensures easy maintenance and repair.
- It can be operated with a gasoline or diesel engine in areas where electricity is not available or very expensive. The disadvantage is a moisture gradient that develops in the grain bulk during drying from the air inlet to the air outlet.

What are the 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, and 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

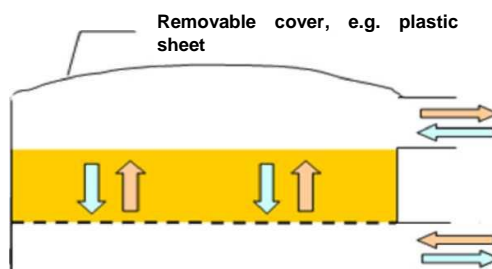
Air velocity: 0.15-0.3 m/s

Fan power requirement: 1.5-2.5 kW/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.



Typical capacity: 1-10 t/batch



⇒ Normal air flow during initial drying ⇒
Reversed airflow



Circular bin dryer