

Industrial Sorghum Malting: Technologies that can be used and practical considerations

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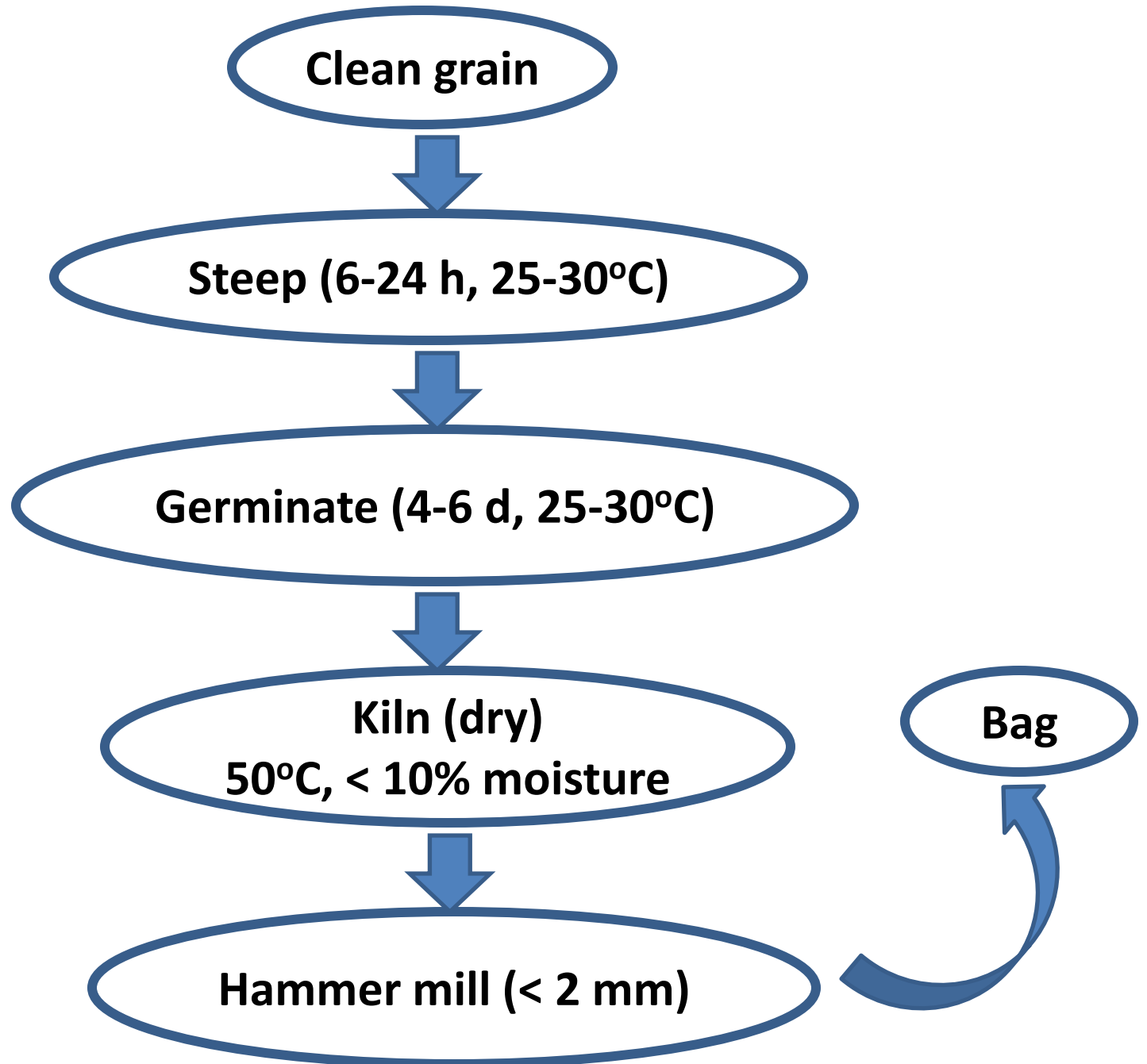
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Malting

- What is malting?
 - Germination of grain in moist air under controlled conditions
- Objectives for opaque beer brewing
 - Mobilization of endogenous enzymes of the grain
 - Use of the endogenous enzymes to modify grain constituents for ready solubilisation
 - Use of the endogenous enzymes to solubilise starchy adjunct during mashing



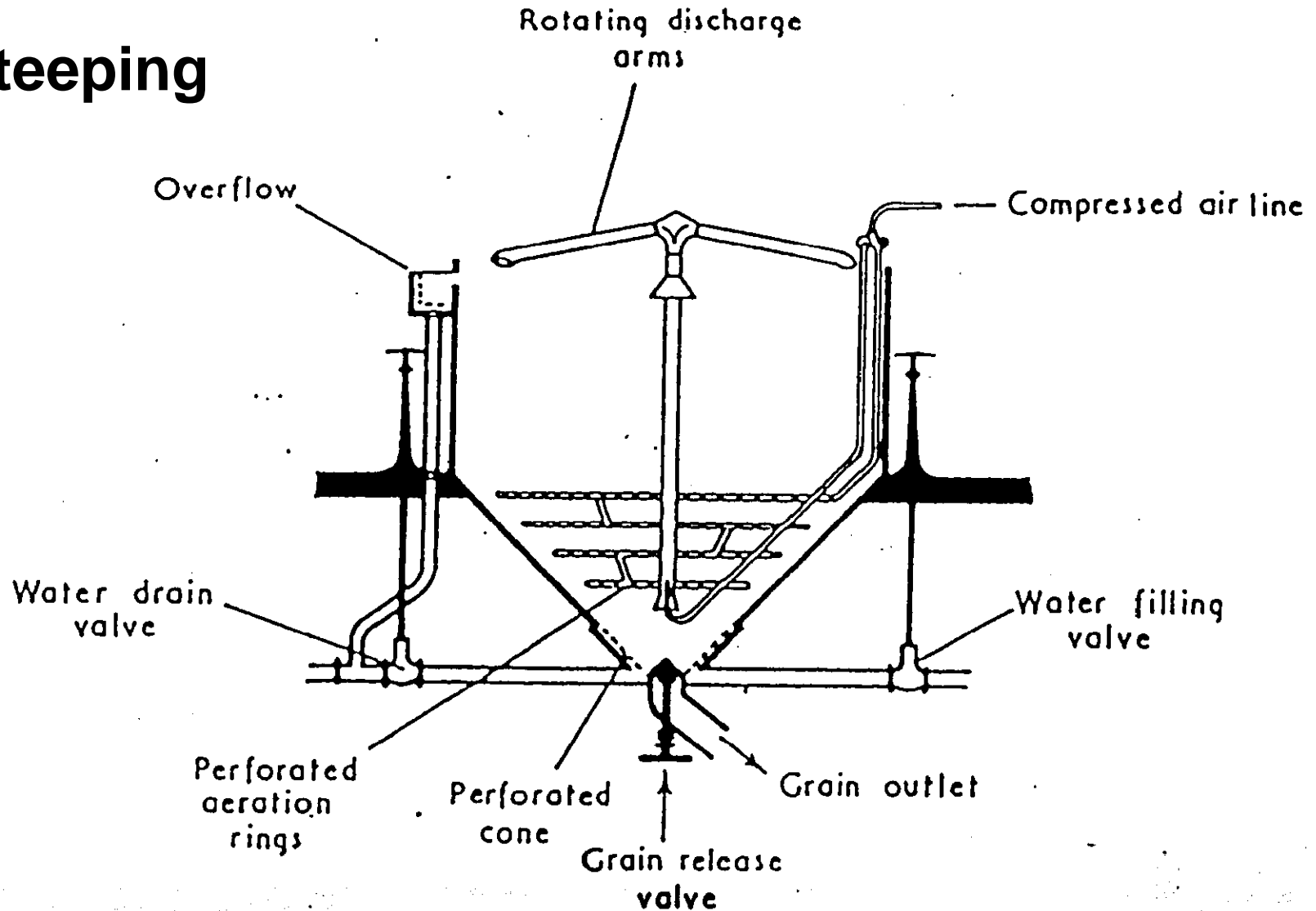


Grain reception

Storage in silos



Steeping



Self-emptying conical steep tank

Steep tank

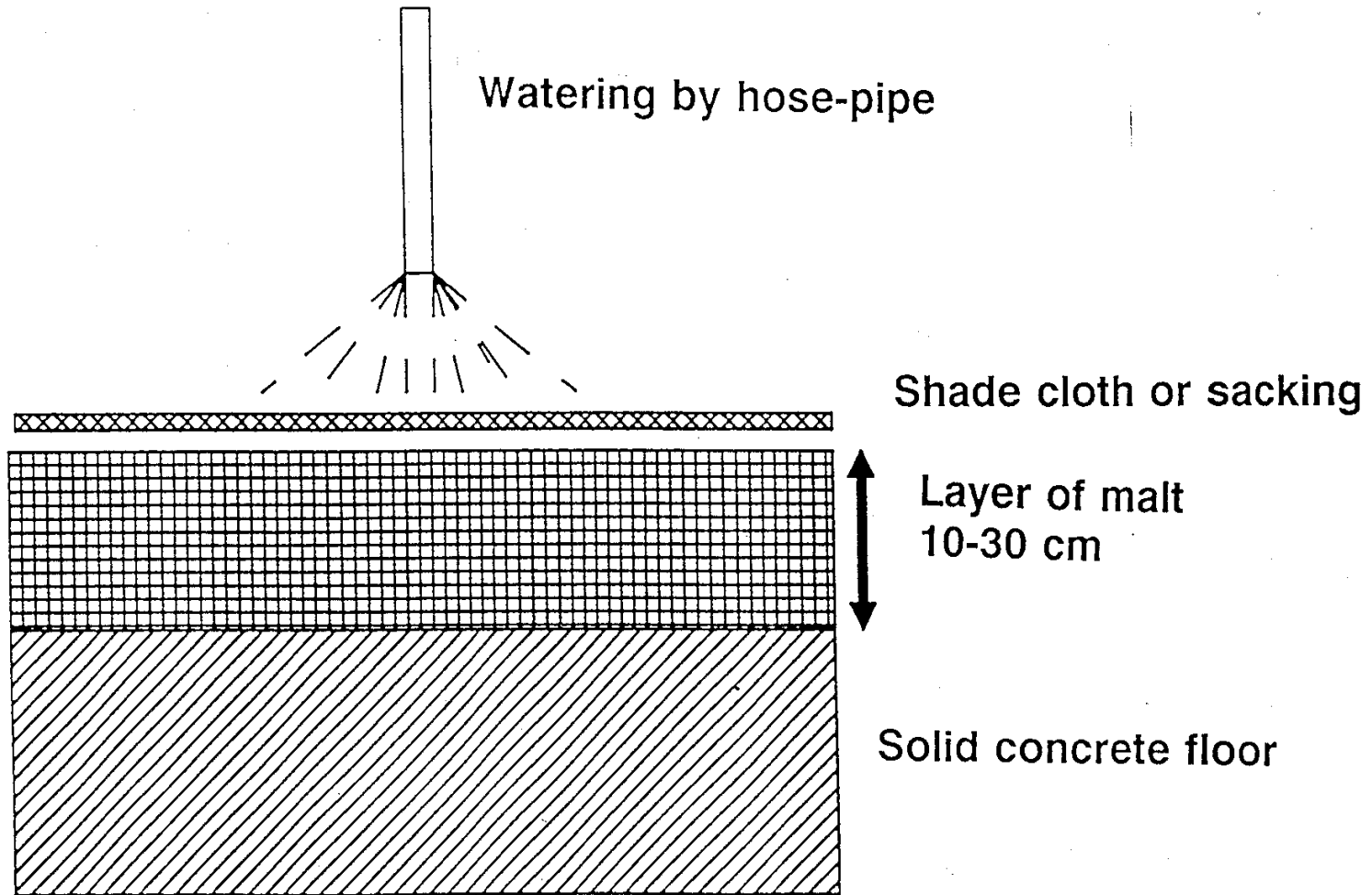






Loading of grain into the steep



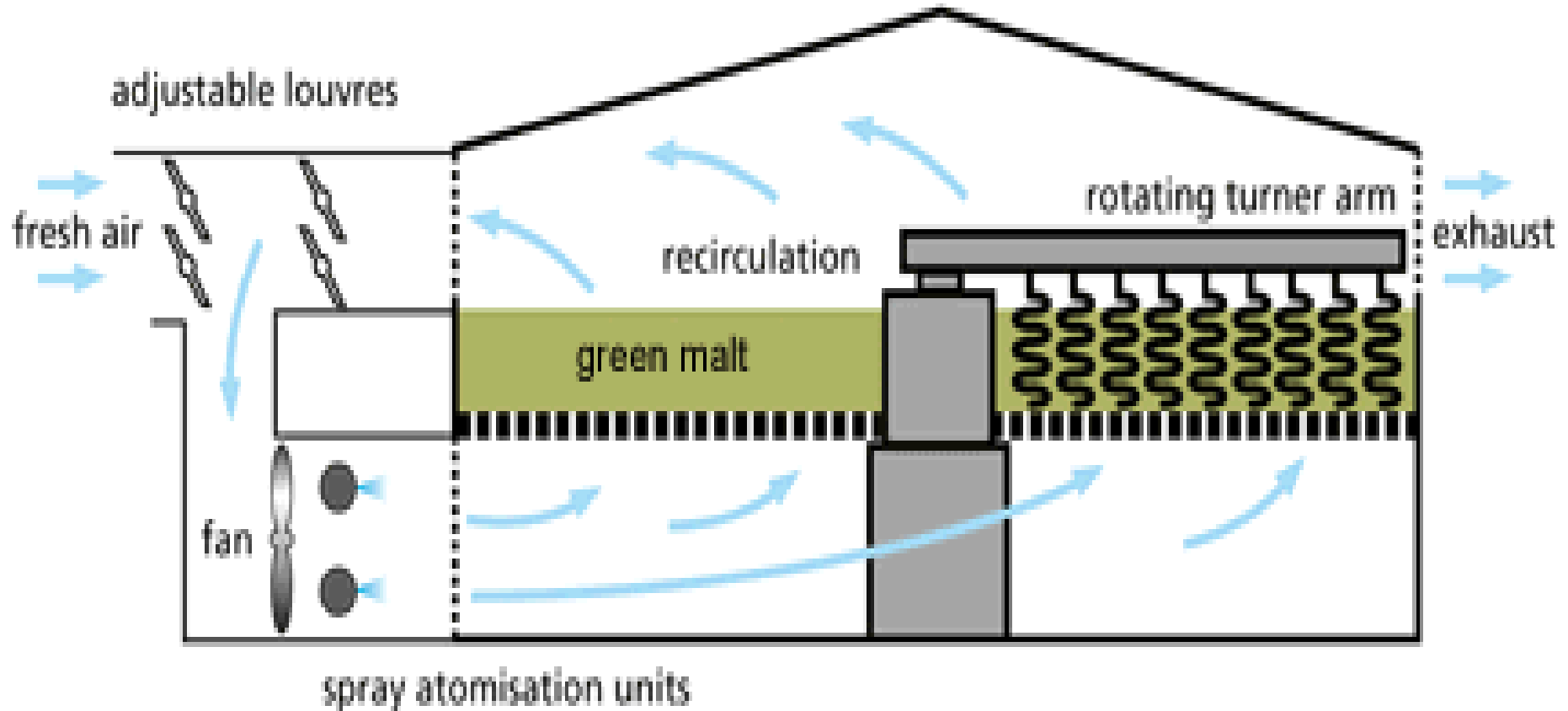


Germination in outdoor floor malting of sorghum

Pneumatic malting

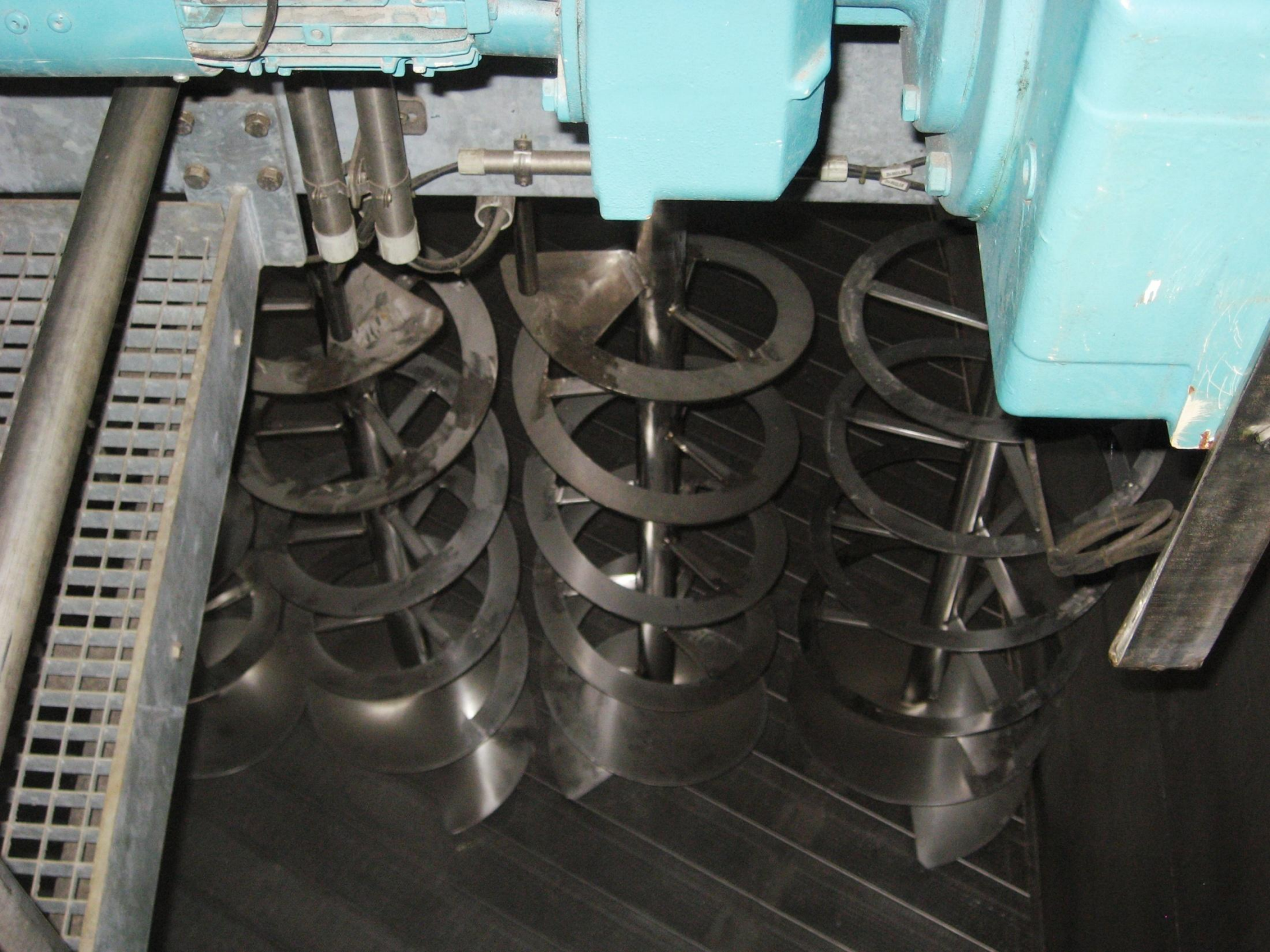
- Steeped grain is transferred onto a perforated steel floor indoors.
- Air is blown from underneath the floor through the grain.
 - “Pneumatic” – by means of compressed air
- Saladin box-type germination chambers

Germination Vessel



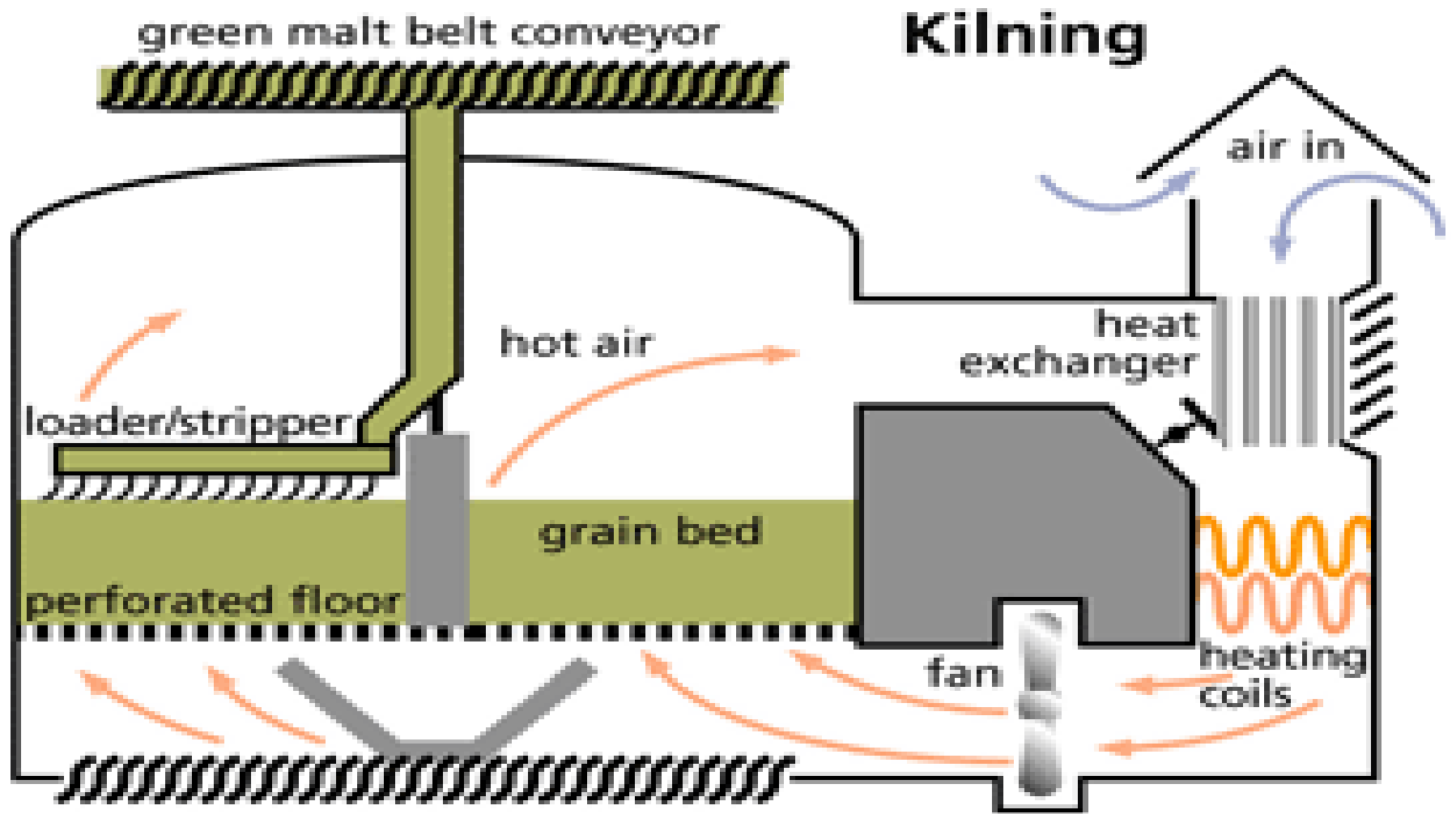
Saladin box or compartment germination vessel





Drying malt outdoors





The kiln



Kiln or malt drying chamber

Sorghum malt

Cereal adjunct

Opaque beer brewing process

Milling

Milling

Mixing

Mixing

Souring

Cooking the adjunct

Sorghum malt

Mashing (Conversion)

Wort separation

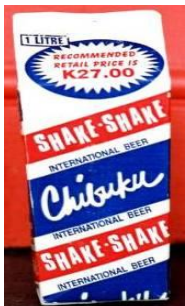
Yeast

Heat exchange

Packaging

Fermentation

Pasteurization



THANK YOU