Mesh Belt Dryer Technical Parameters and Drying Duty Selection Guide

Product overview and confirmed HJWD model range

Continuous mesh-conveyor drying for briquettes, pellets, blocks and other air-permeable formed products.

1	**Model Range** HJWD6-HJWD30	2	**Belt Width** 600-3000 mm
3	**Drying Area** 3.6-600 m²	4	**Belt Layers** 1-5 layers
5	**Belt Speed** 0.06-1 m/min	6	**Evaporation Intensity** 5-20 kg water/m²·h
7	**Heat Sources** Hot air / electricity / steam		

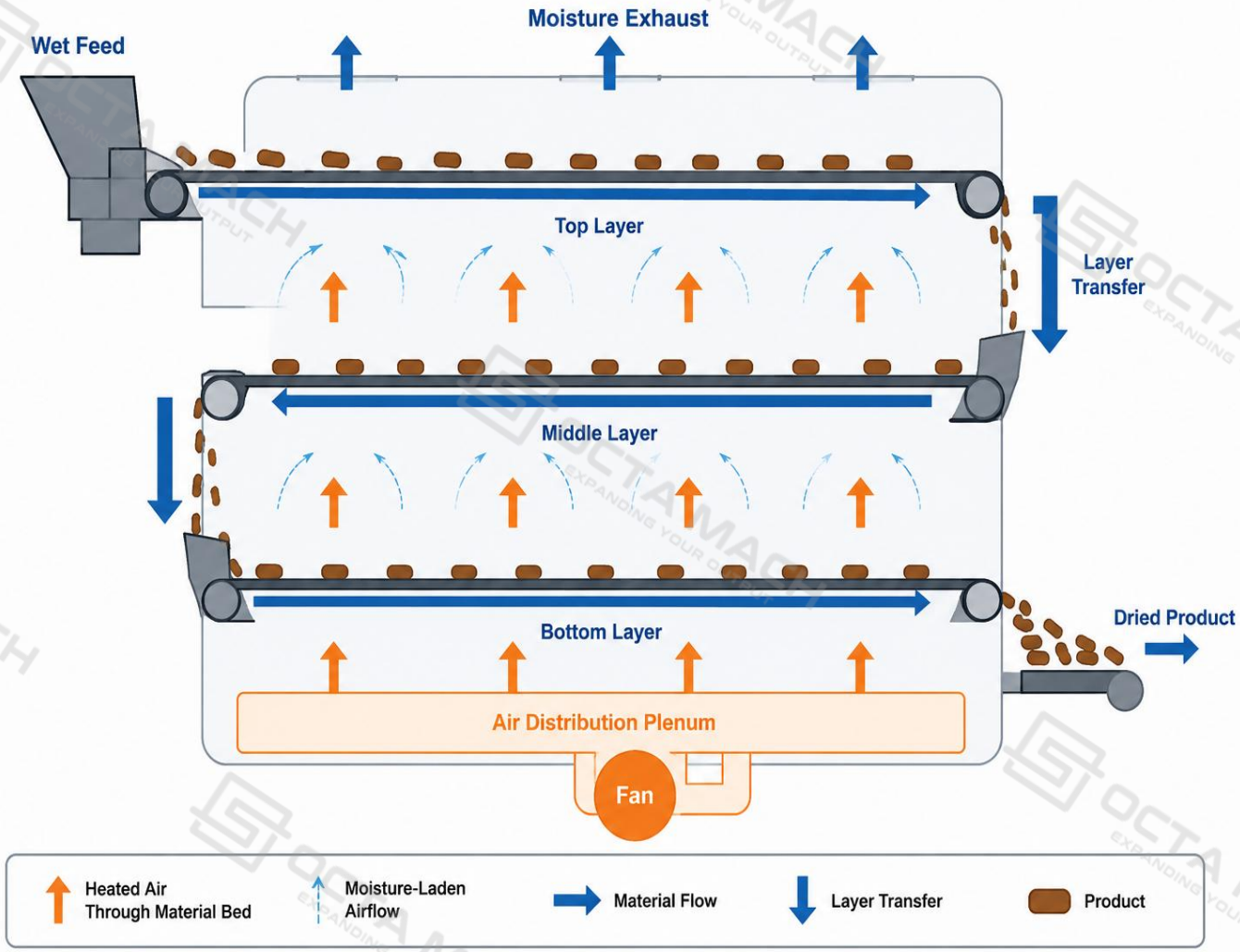
Confirmed Model Parameters

Model	Belt Width (mm)	Dry Length (m)	Feed Length (m)	Drive Length (m)	Drying Area (m²)	Drive Power (kW)
HJWD6	600	6-12	1	1	3.6-36	1.1-2.2
HJWD8	800	6-12	1	1	4.8-48	1.1-2.2
HJWD10	1000	6-16	1	1	6-80	1.1-2.2
HJWD12	1200	8-16	1	1	7.2-96	1.1-3
HJWD16	1600	8-22	1	1	13-106	1.5-3
HJWD20	2000	10-26	1.5	1.5	20-260	1.5-4
HJWD24	2400	12-30	1.5	1.5	28.8-360	3-7.5
HJWD30	3000	12-40	2	2	36-600	5-11

Drive power covers conveyor transmission only. Circulation fans, exhaust fans and heat-source loads are sized separately. Published ranges are for preliminary selection.

Mesh Belt Dryer Working Principle

Controlled material movement and through-flow hot air



1 — Controlled Feed
Wet product enters at a stable rate and is spread across the full belt width.

2 — Uniform Material Bed
Bed depth is controlled to avoid thick wet zones and lightly loaded bypass areas.

3 — Through-Flow Air
Heated air passes through belt openings and the voids between product pieces.

4 — Moisture Removal
Evaporated water leaves with the controlled exhaust-air stream.

5 — Layer Transfer
Multi-layer units extend residence time within a compact floor area.

6 — Continuous Discharge
Belt speed and total travel length control residence time and outlet moisture.

i **Bed depth, fines content and airflow distribution determine outlet-moisture uniformity.**

Drying Area and Water Evaporation

Drying duty is defined by water removal, not wet-feed tonnage alone

Wet Feed Rate
5.00 t/h

→

Inlet Moisture
18% wet basis

→

Target Outlet Moisture
5% wet basis

1 **Dry Solids Rate**

Wet Feed Rate × (1 - Inlet Moisture)

5.00 × (1 - 0.18) = 4.10 t/h

2 **Final Product Rate**

Dry Solids Rate ÷ (1 - Outlet Moisture)

4.10 ÷ (1 - 0.05) = 4.32 t/h

3 **Water Evaporation Rate**

Wet Feed Rate - Final Product Rate

5.00 - 4.32 = 0.68 t/h

Preliminary Drying Area

Example uses a preliminary selected intensity of 10 kg water/m²·h.

Required Water Evaporation ÷ Selected Evaporation Intensity

680 kg/h ÷ 10 kg/m²·h = 68 m²

Worked Example

Dry Solids
4.10 t/h

Final Product
4.32 t/h

Water Removed
0.68 t/h

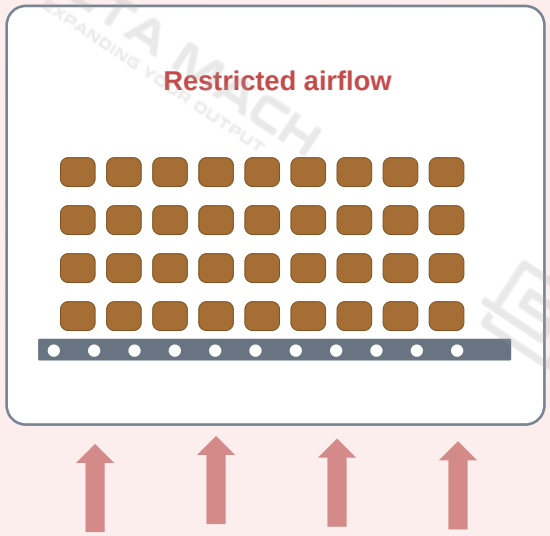
Equivalent Water Load
680 kg/h

i **The published 5-20 kg water/m²·h range is not a guaranteed value for every product. Final area must be checked against bed permeability, temperature, airflow and residence time.**

Material-Bed Depth and Air Permeability

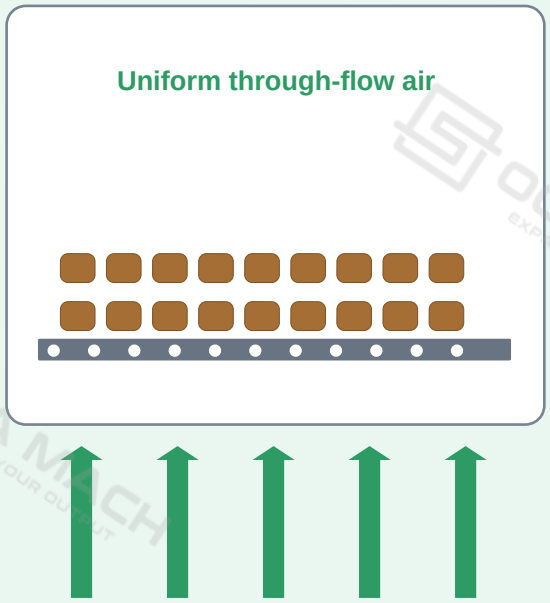
Airflow through the product bed controls actual drying performance

Bed Too Deep



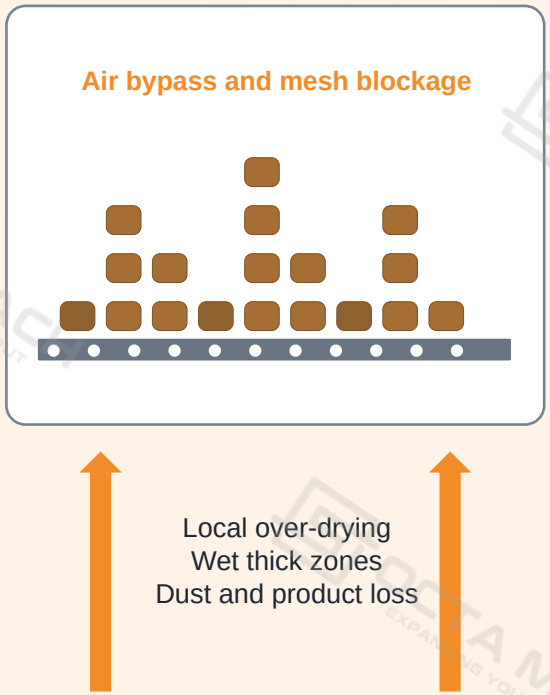
Wet lower layer
Higher pressure drop
Longer drying time

Controlled Bed Depth



Stable belt loading
Balanced pressure drop
Consistent outlet moisture

Uneven or Fine-Rich Bed



Local over-drying
Wet thick zones
Dust and product loss

Selection Relationship

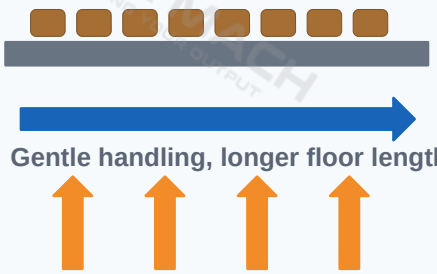
Product Size → Fines Content → Bed Depth → Belt Loading → Air Permeability → Actual Evaporation Rate

Operating bed depth is confirmed by airflow resistance and outlet-moisture variation, not by belt loading alone.

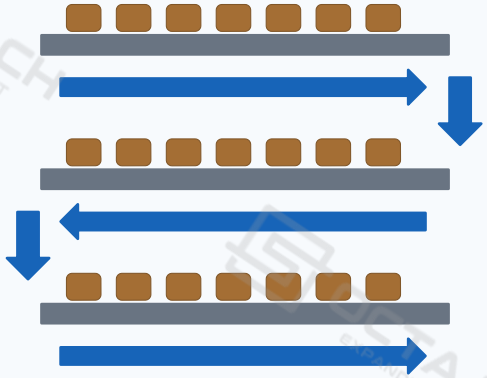
Single-Layer and Multi-Layer Configuration

Select layer count from drying area, floor space and product handling strength

Single-Layer Dryer



Multi-Layer Dryer



Item	Single-Layer Dryer	Multi-Layer Dryer
Material Path	One conveyor level	Several stacked conveyors
Floor Space	Greater length required	More compact layout
Transfer Points	None or limited	Multiple belt-to-belt transfers
Product Handling	Gentler	Requires adequate green strength
Drying Area	Limited by floor length	Expanded by stacked belt area
Best Fit	Fragile briquettes / easy cleaning	Stable pellets or briquettes / limited floor space

Multi-Layer Transfer Checks

Green Strength
Resistance before drying

Drop Height
Impact at transfer point

Binder Condition
Early-stage cohesion

Drying Shrinkage
Crack formation risk

Fines Generation
Product loss and blockage

Bed Redistribution
Uniform loading after transfer

Multi-layer drying is unsuitable when wet briquettes crack, stick or generate excessive fines during transfer.

Model Selection Inputs and System Scope

Convert drying duty and product behavior into a complete equipment configuration

Required Process Inputs

Product Form and Size	Briquette, pellet, block, strip or granule
Product Temperature Limit	Maximum allowable product temperature
Wet Feed Rate	Normal and peak t/h
Green Strength	Resistance to feeding and layer transfer
Inlet / Outlet Moisture	Wet-basis values and tolerance
Heat Source	Hot air, electricity or steam
Required Water Evaporation	kg water/h
Installation Space	Available length, width and height
Bed Depth and Fines	Planned loading and loose-fines content
Electrical Supply	Voltage and frequency

i **Final model selection should provide enough drying area and residence time without exceeding allowable bed loading, product temperature or airflow resistance.**

Final Selection Logic

1. **Calculate hourly water evaporation**
2. **Set bed depth and airflow requirement**
3. **Choose belt width and number of layers**
4. **Confirm belt speed and residence time**
5. **Define heat, exhaust and plant interfaces**

OctaMach System Scope

Mechanical	Mesh conveyor, chamber, feeding and discharge
Air / Heat	Fans, heat-source interface and exhaust system
Controls	Drive, speed adjustment and electrical cabinet

SYSTEM FLOW

Feed Conveyor → Distributor → Mesh Belt Dryer → Discharge Conveyor

Heat Source → Fans → Drying Chamber → Exhaust