



POULTRY EQUIPMENT MANUFACTURERS

VALLI S.r.l.

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EXCELLENCE IN POULTRY EQUIPMENT MANUFACTURING

Drying Poultry Manure



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Drying Poultry Manure

- Reduction in weight and volume**
Transport cost reduction
More easy to store than wet manure

- Smell Reduction**

- No development of insects (flies)**

- Reduction of ammonia and finedust emission**

- Final product ready for further processing**
Transformation into organic fertilizer
Possibility to burn for producing heater or electricity



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Poultry manure

Manure from cage



*Converting in to
organic fertilizer*

| Elements | Unit | Pellets |
|-------------------------------|----------|---------|
| Dry matter | kg/ton | 900 |
| Organic matter | kg/ton | 650 |
| N Total | kg/ton | 40 |
| N organic | kg/ton | 36 |
| P ₂ O ₅ | kg/ton | 30 |
| K ₂ O | kg/ton | 25 |
| MgO | kg/ton | 11 |
| CaO | kg/ton | 93 |
| Zinc | mg/kg dm | 300 |
| Copper | mg/kg dm | 90 |
| C/N | | 9 |



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Poultry manure

Litter



| | |
|------------------------------------|---------|
| Specifica heat (85% DM) | |
| 2500 | kCal/Kg |

*Converting to
Energy*



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Process explanation



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Process explanation

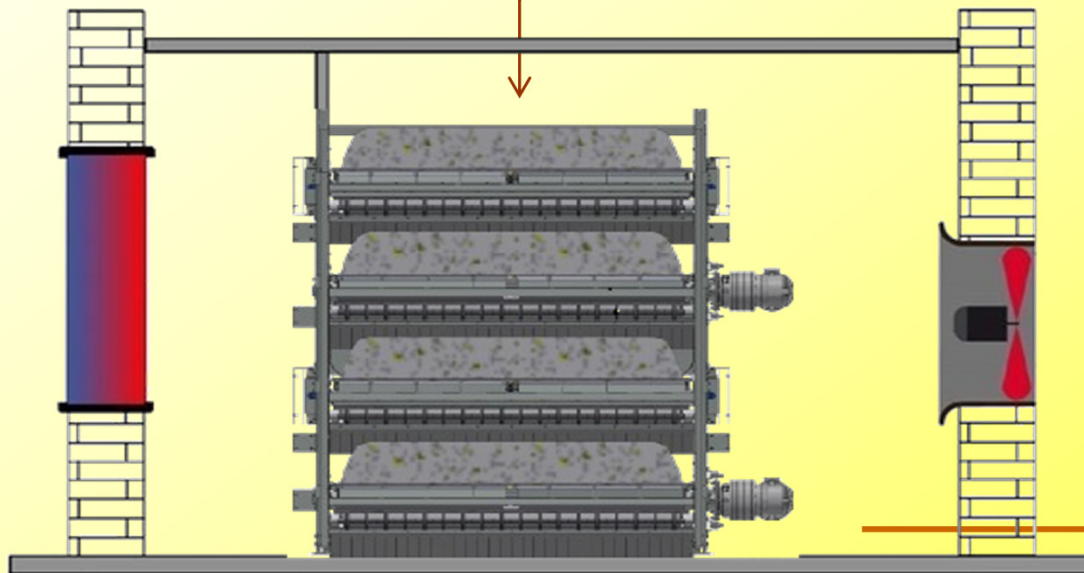
Wet manure



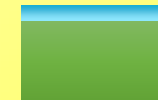
25% dry matter
75 % water



Water
evaporated
in the air



Dry manure



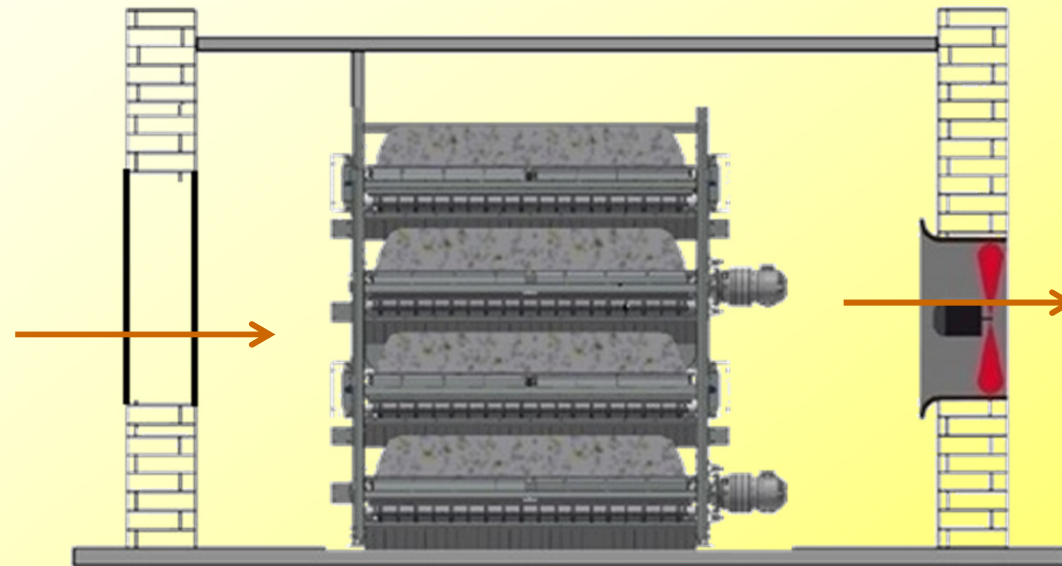
85% dry matter
15% water



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Process explanation

Low humidity Air



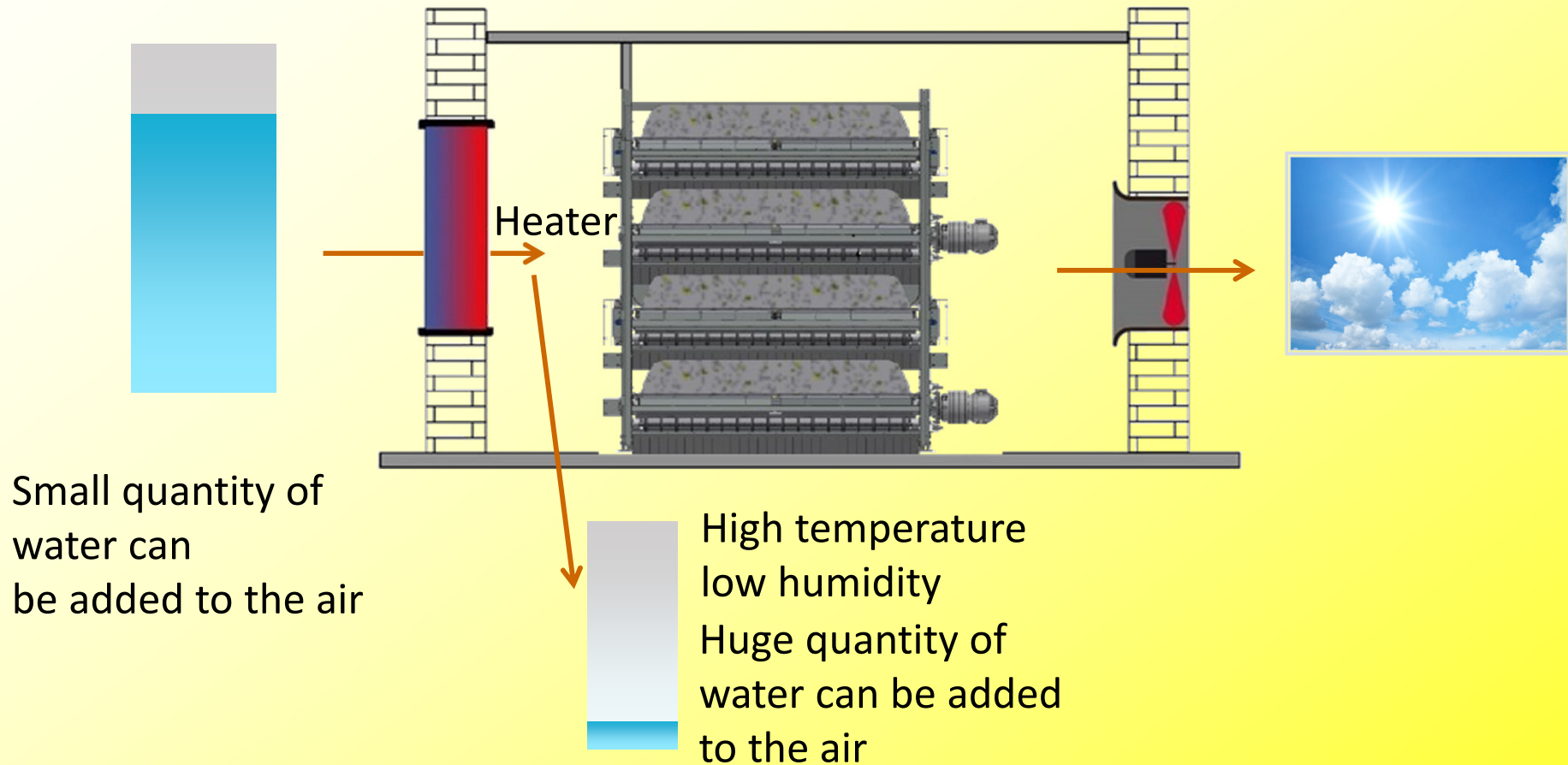
Huge quantity of water can be added to the air



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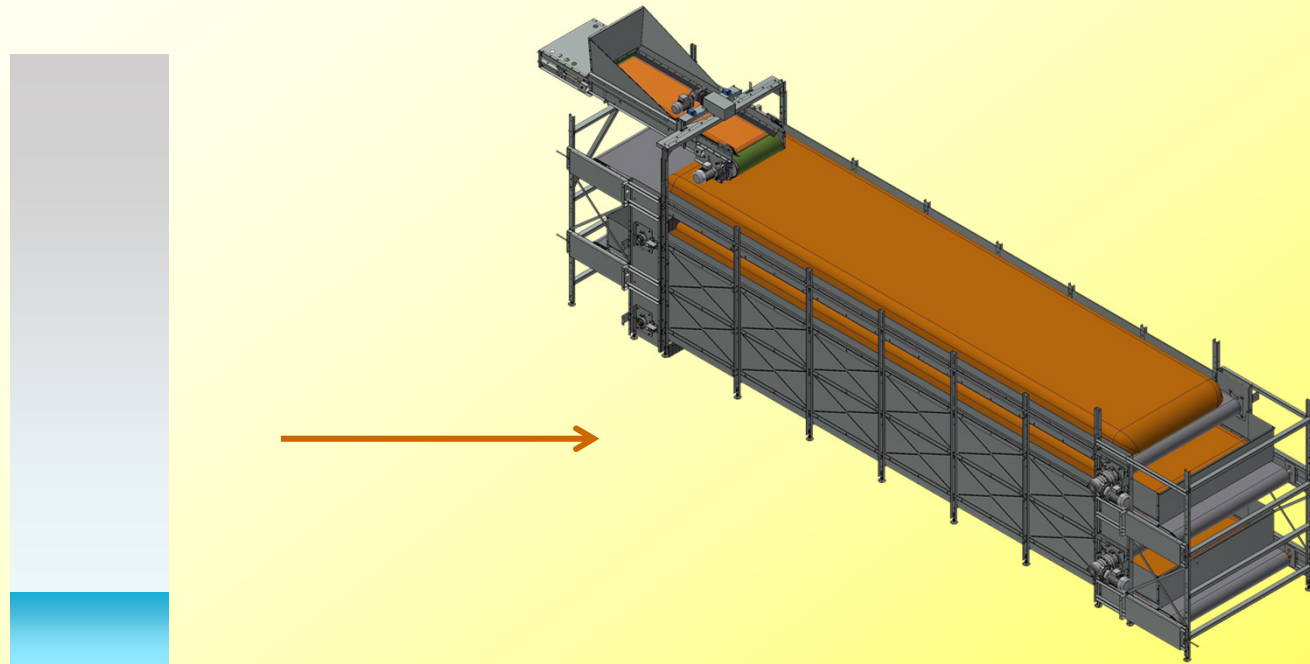
Process explanation

High humidity Air



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Proces explanation



The amount of air through the dryer is determined by the size

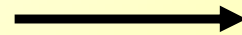


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Required size and configuration

Manure

Amount of manure to dry
Manure umidity



Quantity of water to
remove

- *Depending on food intake*
- *Depending on water intake*
- *Dry manure in the chicken house depend on the climate and ventilation*

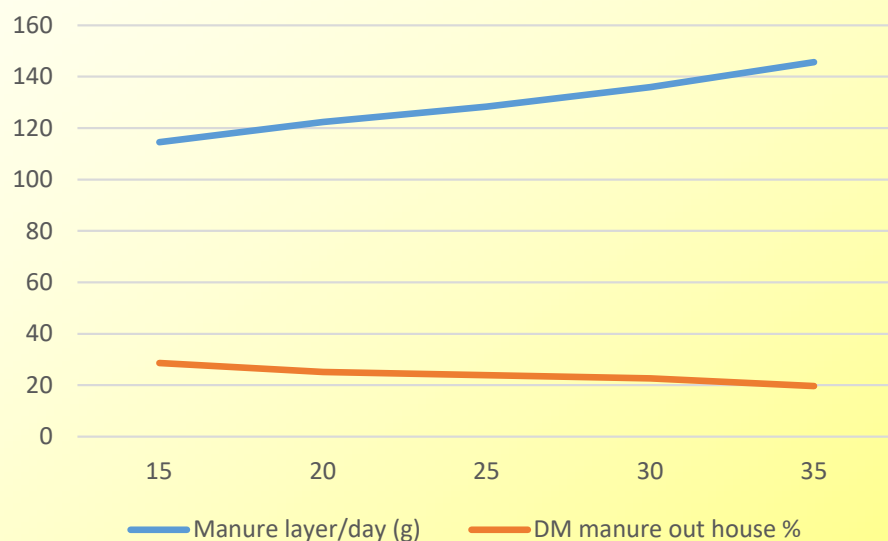


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Required size and configuration

Manure

| Feed day (g) | DM feed % | Kcal intake | Egg production | Egg weight | Feed gram 100% DM | |
|--------------------------|-----------------------|-------------|------------------|---------------------|-----------------------|----------------------|
| 115 | 88 | 292 | 0,8 | 63 | 101,2 | |
| Manure 100% DM from feed | Water drink a day (g) | MP g/h/kg | Bird weight (Kg) | Water add to manure | DM manure out house % | Manure layer/day (g) |
| 30,7 | 260 | 3,1 | 2 | 111,2 | 22% | 142 |



| Dry mater % | Specific weight kg/m3 |
|-------------|-----------------------|
| 18% | 1294 |
| 19% | 1207 |
| 20% | 1146 |
| 21% | 1094 |
| 22% | 1042 |
| 23% | 998 |
| 24% | 955 |
| 25% | 918 |
| 26% | 883 |
| 27% | 850 |
| 28% | 821 |
| 29% | 792 |
| 30% | 765 |
| 31% | 740 |
| 32% | 717 |
| 33% | 697 |
| 34% | 676 |
| 35% | 656 |
| 40% | 574 |
| 70% | 328 |
| 85% | 270 |

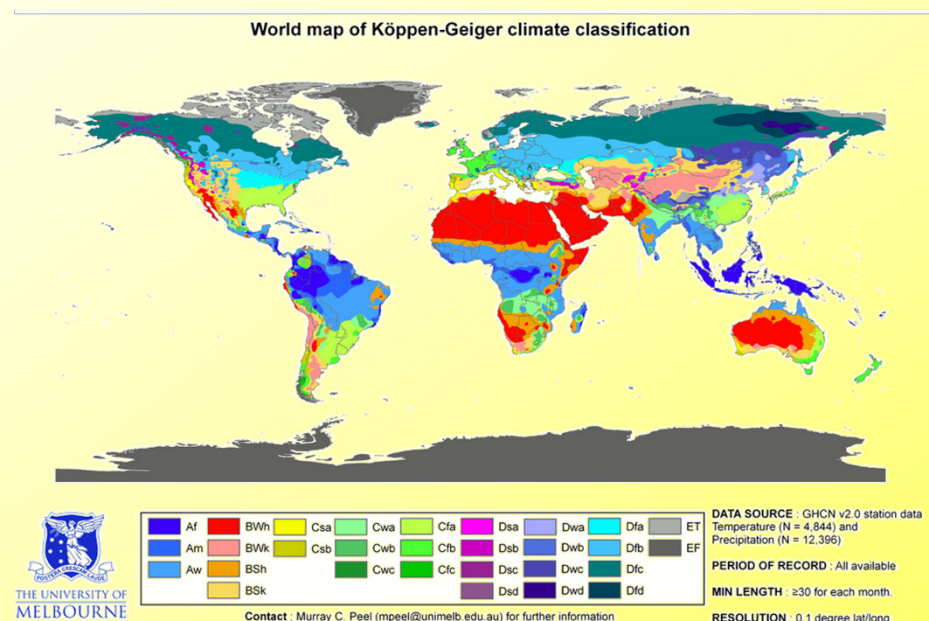


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Required size and configuration

Climate

Energy available → How to Dry



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Drying possibilities

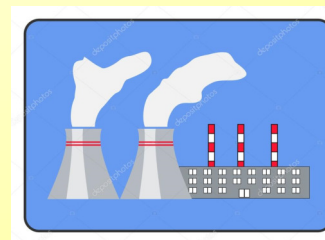


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Drying possibilities

Central system

- Electricity production
- Industrial processes
- External heat Burning of fuels



Ambient sources

- Bird house
- Outside air

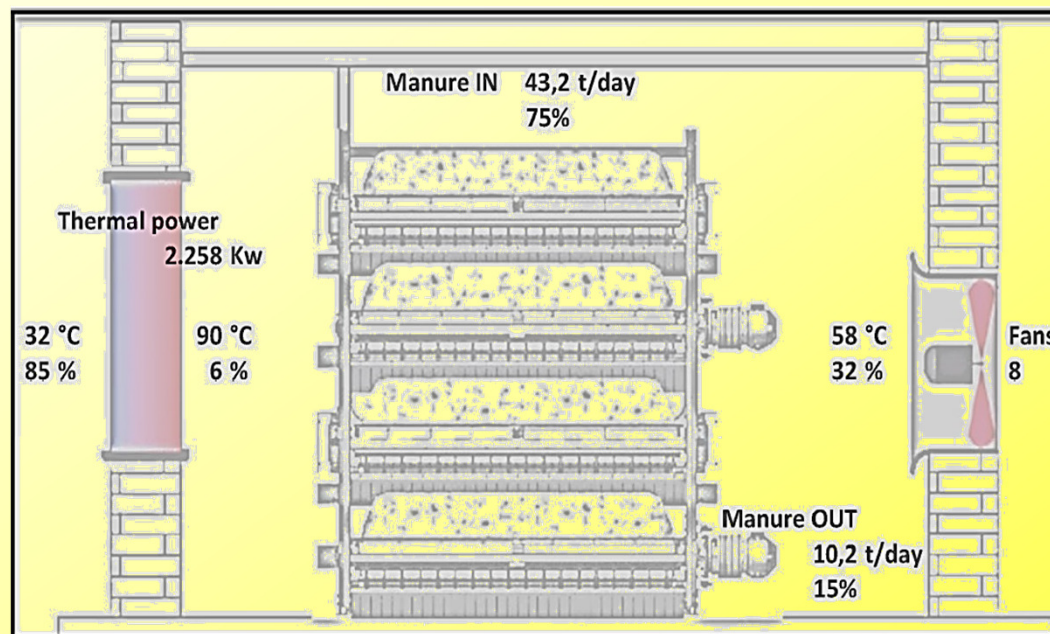


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Drying possibilities

Central system

- Investment
 - Lowerhigh temperature for drying smaller and less machines
- Operating cost
 - Higherheating costs
- Lay-out
 - Depending on quantity to process and requirements



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Drying possibilities

Air from bird house

- Investment

-Higher

More machines

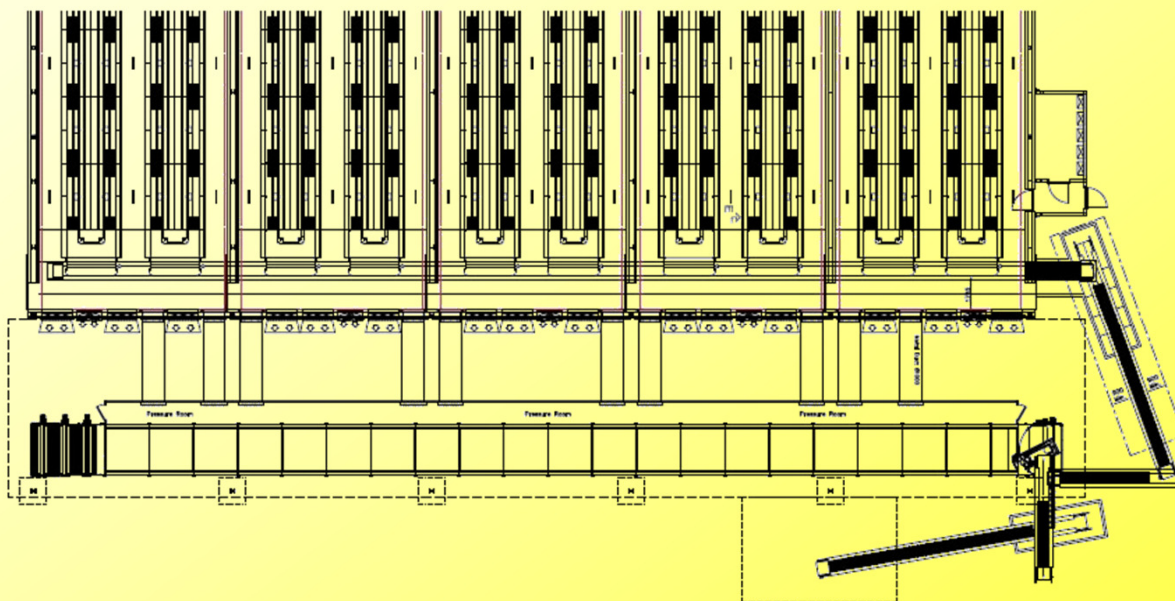
- Operating cost

-Low

Free energy from the house

- Lay-out

5/7 meter



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Drying possibilities

Bird house air / outside air

- Investment

-Higher

More machines

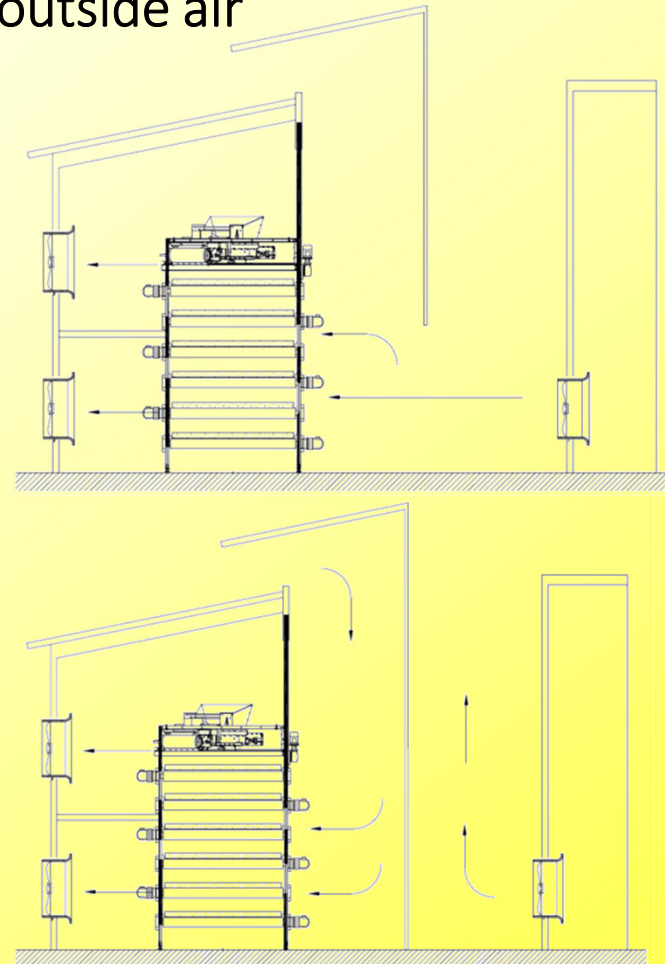
- Operational cost

-Low

Free energy from the house or outside air

- Lay-out

8~10 meter behind the chicken house



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EOLO Dryer

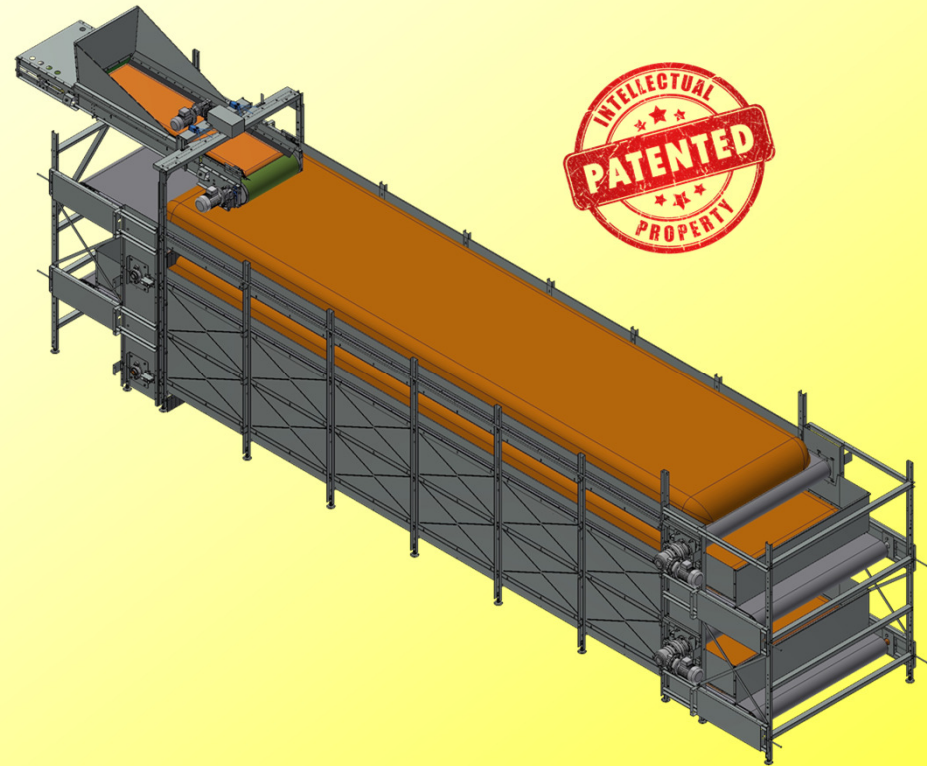


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EOLO Dryer

Max configuration

- 8 tiers
- Belt 2m width
- Max belt length 40m



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EOLO Dryer

- -Elevated capacity per square meter of surface
- -Efficient belt traction and no adjustment needed
- -Efficient belt guide prevent from deviating
- -No metal chain involved, plastic thick belt
- -Perforated plastic belt allow 20cm height of layer fresh manure
- -Rotating filing belt station, evenly distributed fresh manure
- -Free oily needed
- -Easy installation and settings



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Dryer



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End point



Advantage:
Sticky and wet manure does not
stay attached to the belt



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Dosing belt



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Dosing belt



Self-dosing on the belt.

Thanks to the level dispositive the speed of the belt is automatically adjusted to have uniform thick of manure

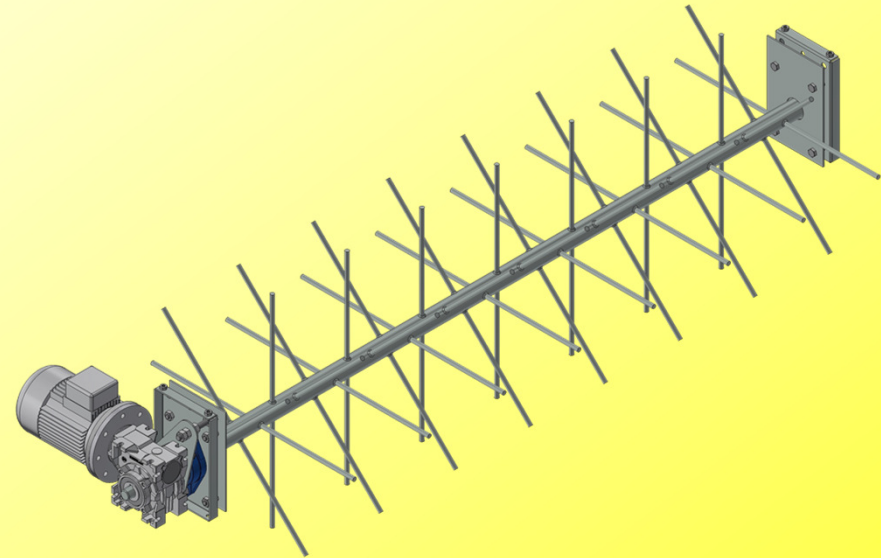
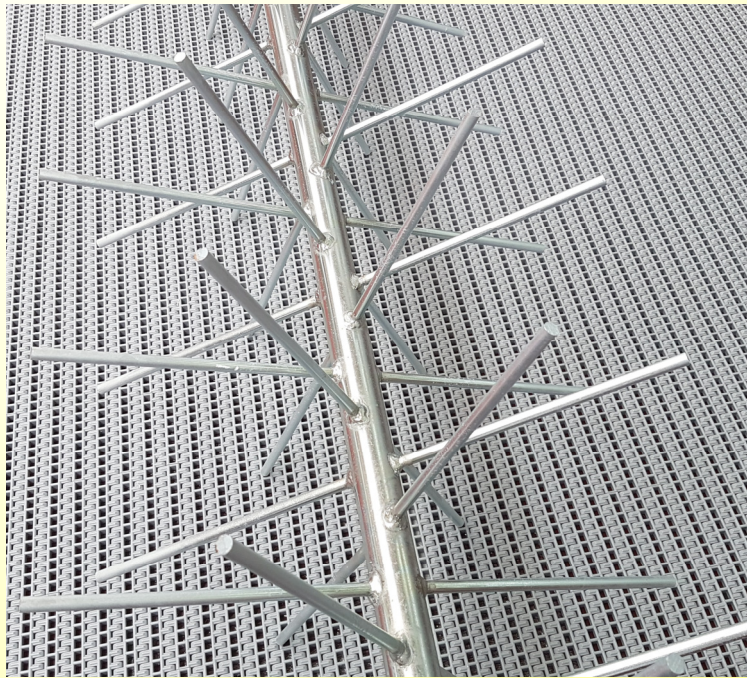


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Dryer options

AGGIGATOR

Turn and break the product



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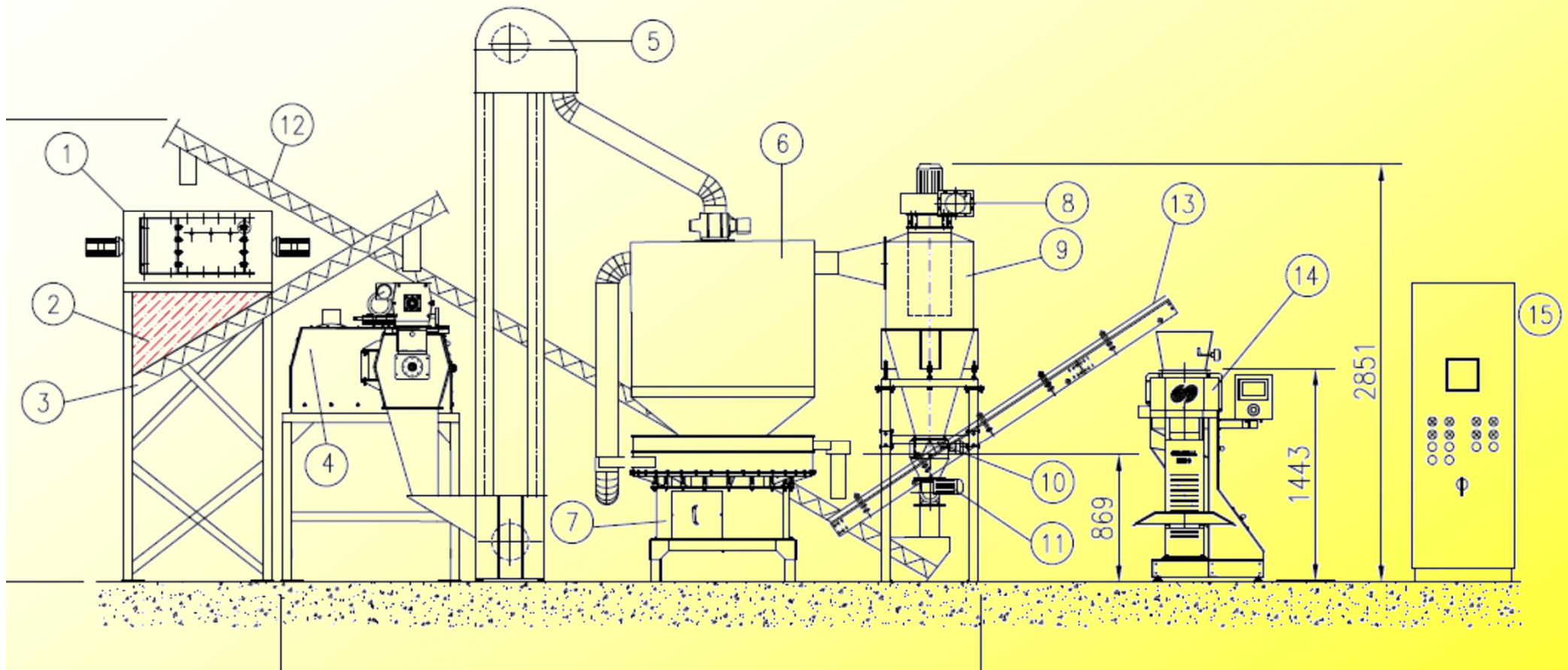
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Pelletizing of dried manure



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Pelettizing plant



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Reasons to process manure

Produce organic fertilizer

- Sanitation
- Size reduction
- Export



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Pelletizing of dried manure

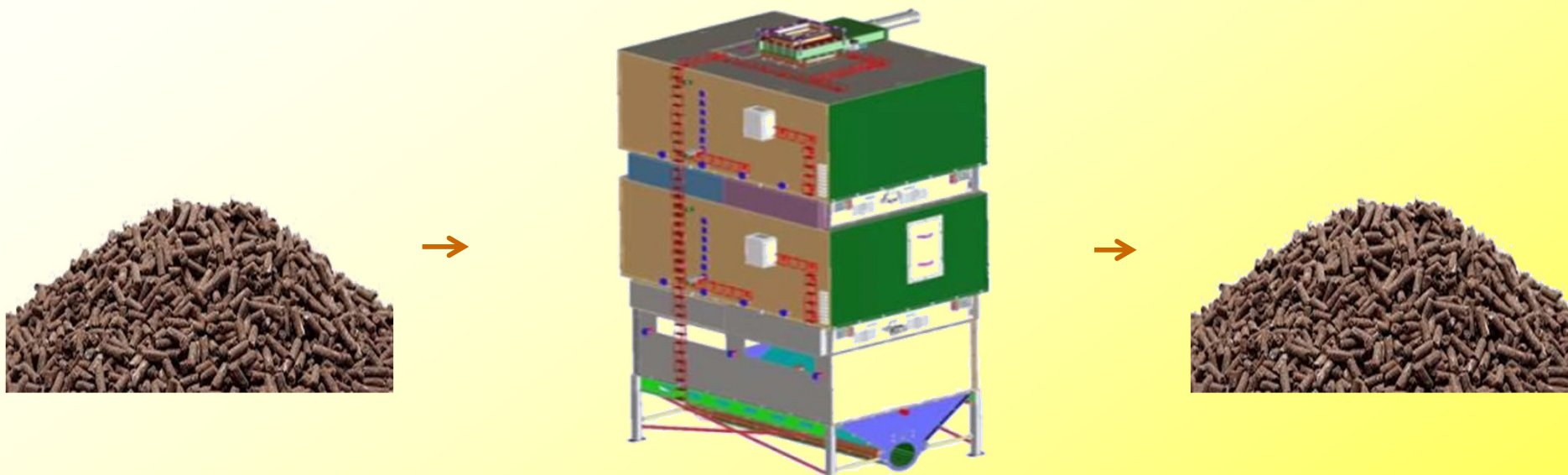


85% dry matter
15% water



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Pelletizing of dried manure



Dried poultry manure which has been pelletized can go through a sanitation process. In the sanitation unit the pellets are kept at 70°C for at least one hour. By doing this, harmful bacteria and pathogens will be killed.



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Packing equipment

Big bag station



Bagging station



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Drying versus Composting

Dried



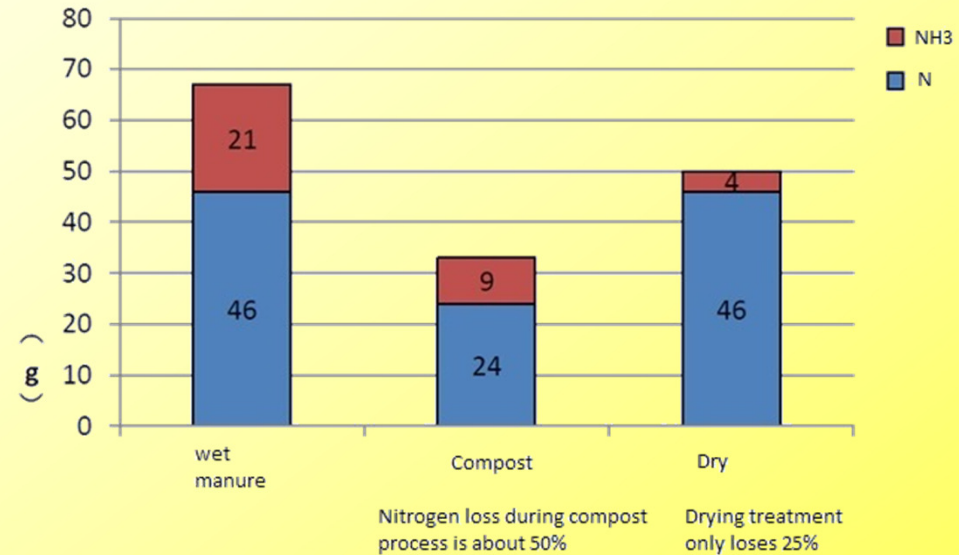
Nitrogen (N): 40 – 45 kg / ton

Compost



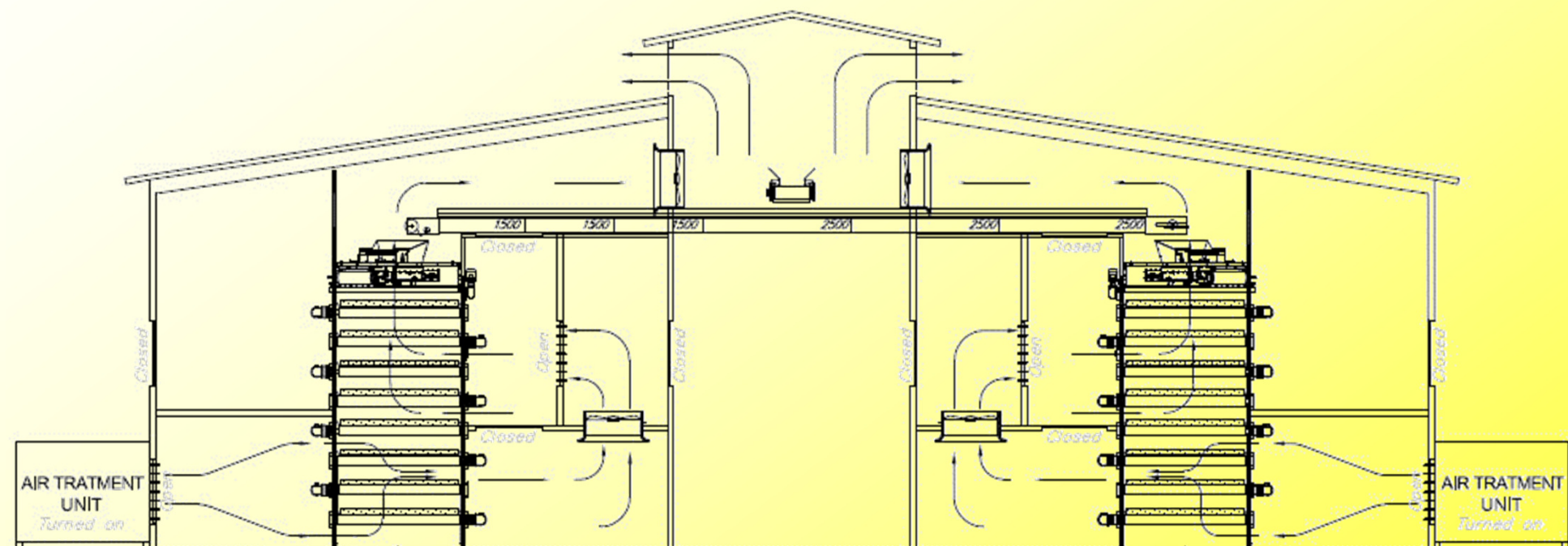
Nitrogen (N): 20 kg / ton

*High ammonia
emission*



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Centralized manure drying

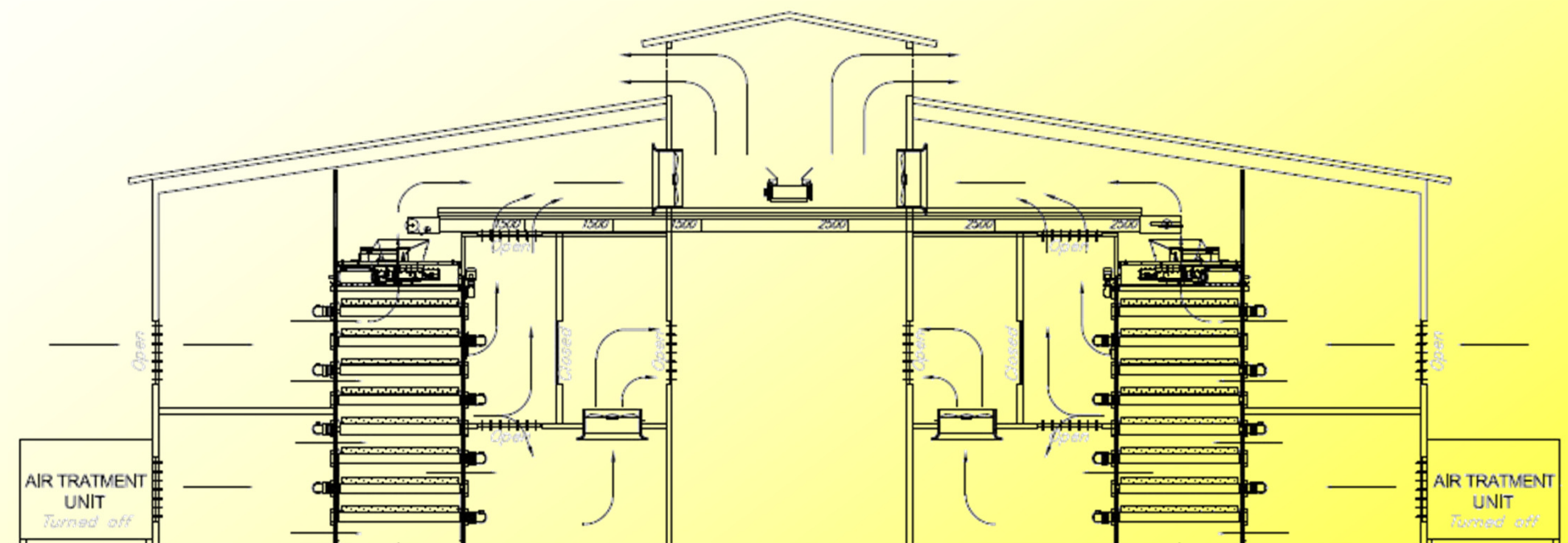


Heating mode ON



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Centralized manure drying



Heating mode OFF



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