Oil mill pelletizing line: cakes

With a view to improve the process continuously Desmet Ballestra Group, has been a pioneer by inserting a pellet mill between oil press and solvent extractor.

A higher yield is obtained in the extractor by optimizing the specific weight and improving the percolation.

That equipment can be added in every existing installation.
Oil mill pelletizing line: soybean

Filtered air exhaust

1. Chain conveyor
2. Screw conveyor
3. Hopper
4. Molasser
5. Pellet mill
6. Rotative valve
7. Counter-flow dryer-cooler
8. Air inlets
9. Steam exchange
10. Elevator to storage
11. Stand alone cyclofilters
12. Suction fan
13. Silencer

Variant with cooler, non-dryer, with built-in filters
Pelletizing line: Animal feed

- Clogging screw
- Horizontal conditioner
- Pellet mill
- Counter-flow cooler with built-in filters
- Crumbler
- Reclaiming handling
- Elevator
- Pellets and crumb sifter
- Fines reclaiming screw
- Good product outlet
- Reclaiming of big crumbs
- Suction air fan
- Silencer
Pelletizing line: simple feed

1. Screw conveyor (cakes with 1-2% of rapeseed oil)
2. Weight belt
3. Molasse mixer
4. Pellet mill
5. Urea storing
6. Pneumatic transfer
7. Built-in filters
8. Bin activator
9. Micro dosing
10. Liquid storage hopper
11. Pump
12. Counter-flow cooler
13. Filters
14. Suction air fan
15. Silencer

Filtered air exhaust
Standard conditioner

Features
- Rotor with blades with adjustable step
- Lateral steam inlet
- Temperature sensors

Options
- Liquids incorporation rack (molasse, proteinal, sulfite lye)
- ATEX compliance

Purpose
The conditioner is designed for mixing closely steam with meal, thus heating the product up to the suitable temperature for a proper granulation. Its adjustable blades are designed to set the product progress. It can eventually receive molasse directly with a small percentage.

It is entirely made out of stainless steel.

Depending on the use, the capacity, the specific weight of the product to be compressed, the preparation will be done with one of the STOLZ conditioners. Each conditioner, depending on its design and content allows an incorporation (steam, etc...), a treatment and a residence time adapting best to the product characteristics at dies inlet (temperature, moisture, etc...).

<table>
<thead>
<tr>
<th>Range</th>
<th>Length</th>
<th>Width</th>
<th>Height</th>
<th>Diameter</th>
<th>Useful length</th>
<th>Power</th>
<th>Speed (50 Hz)</th>
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</table>
Long residence time horizontal conditioner

Purpose

The long residence time horizontal conditioner purpose is to increase the residence time of the heated meal and improve the parameters required to obtain a high quality pelleting results.

The processing temperatures range from 60°C to 100°C for a treatment time of 30 seconds up to 6 minutes.

That heat treatment is designed to increase the flow rate on pellet mill and improve pellets durability. It also kills the pathogenic germs, improves digestibility of products resulting from this process, limits wearing, energy consumption and shrinkage.

The regulated feeding of the pellet mill is carried out via a special valve with adjustable speed.

The screw feeding the conditioner is called “clogging” screw.

Features

- Body heating by electrical wire
- Body insulating
- Liquids incorporation
- Temperature sensors
- Made with stainless steel

<table>
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<tr>
<th>Range</th>
<th>Length</th>
<th>Width</th>
<th>Height</th>
<th>Diameter</th>
<th>Useful length</th>
<th>Power</th>
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### Super conditioner

**Purpose**

When installed upstream a pellet mill, the super conditioner increases its capacity, and dramatically improve its P.D.I. (Pellets Durability Index). That heat treatment provides the same benefits as the long residence time horizontal conditioner.

The super conditioner has a slope angle improving again the filling up and the residence time.

**Principle**

The meal is inserted into the body via a clogging screw ensuring at every time a complete filling of the conditioner.

The product is mixed by the blades of the rotor. It is submitted to a shearing effect and a residence time before coming out until the opening order is given according to the temperature and duration of the selected treatment.

<table>
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<tr>
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</table>

That treatment allows direct steam injection and a homogeneous cooking of the product. The long lasting treatment capacity (up to 6 minutes) of this unit ensures a perfect mixing of starch and gluten molecules.

The transverse and horizontal shearing undergone by the product increases water addition possibilities into meal thus improving the quality of pellets produced by the pellet mill and decreasing the energy consumption.

The outlet valve is designed for a regular feeding, and a quick response time of the pellet mill. It is designed to be cleaned easily and to avoid any leak-off steam leak.
Super conditioner upstream a pellet mill

Super conditioner with steam injection

Super conditioner in pellet mill preparation

Rotors detail on CPID 700

Steam unit on CPID 700
LYDER Pellet mill (2 rollers)

Purpose

The pellet mill is designed to process a powdery product into pellets through the combined action of heat, moisture, and compression.

Features

- Driven by belt
- Single or dual transmission
- Robust and reliable
- High capacities
- Very good value for money
- Low maintenance costs
- Options flexibility

Options

- Product chute with by-pass flap
- Dual transmission (DT)
- Special unclogging ring on hollow shaft
- Flap box under outlet

Safety devices

- Micro contacts on doors
- Shearing pin
- Static magnet
- Belt slipping control on transmission belts
- Clogging detection

<table>
<thead>
<tr>
<th>Range</th>
<th>Die Ø</th>
<th>Die width / useful width</th>
<th>Motor power</th>
<th>Motor speed</th>
<th>Die speed</th>
<th>Linear speed</th>
<th>Working area</th>
<th>Approx. capacity</th>
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<tbody>
<tr>
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<td>175/99</td>
<td>55/75</td>
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<td>5.8</td>
<td>12.4</td>
<td>4 to 5</td>
</tr>
<tr>
<td>Lyder 40.13</td>
<td>400</td>
<td>220/129</td>
<td>90/110</td>
<td>1000</td>
<td>281</td>
<td>5.8</td>
<td>16.2</td>
<td>5 to 6</td>
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<td>182/138</td>
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<td>1000</td>
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<td>22.5</td>
<td>7 to 9</td>
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<tr>
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<td>222/178</td>
<td>160</td>
<td>1000</td>
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<td>Lyder 66.23</td>
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<td>142/214</td>
<td>4.9/7.4</td>
<td>47.7</td>
<td>13 to 18</td>
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</table>

*DT = Dual Transmission
STOLZ offers a system guaranteeing automation, supervision, and control of the pelleting lines components.

That system is provided with the following capabilities:

- Formula control,
- Load and temperature monitoring,
- Self-adapting variations intensity,
- Additives injection control,
- Dies control,
- Accessibles parameters with password,
- Loading shapes and regulation can be linked to formulas.
- Remote maintenance
Purpose

Pellet mill specifically designed for the production of pellets with «heavy» density (minerals, shrimp feed). This robust and long-lasting machine has a reduced maintenance thanks to its slow speed (4.2 m/s) and its 3 rollers. The main raw materials that can be used are: wheat, broken rice, wheat bran or rice bran, soya meal, lime, fish meals and scale meals, minerals, fish oils, premix, etc... Oils and molasses can also be used.

Options

- Product chute with by-pass flap
- Flap box under outlet

Safety devices

- Micro contacts on doors
- Shearing pin
- Static magnet
- Belt slipping control on transmission belts
- Clogging detection

<table>
<thead>
<tr>
<th>Range</th>
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<td>rpm</td>
<td>rpm</td>
<td>m/s</td>
<td>dm²</td>
<td>t/h</td>
<td>rpm</td>
<td>m/s</td>
<td>dm²</td>
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</table>

*DT = Dual Transmission
The RC 500 pellet mill is not a standard machine for every use, but it is designed for production of feed with small diameter holes dies for aquaculture specific formulas (with super fine grinding on STOLZ RMPF line and turbo sifter, without specific microniser).

The feeding of the RC 500 pellet mill with a CPIS super conditioner meets the current conditioning requirements.

Downstream the RC 500, STOLZ has designed a post-conditioner, a specific machine, which improves the quality of the final products before final drying and cooling.
Alliance pellet mill

Purpose

Pellet mill range designed for the compression of powdery products for animal nutrition meeting health, safety and normative requirements, or for the compression of any product.

Features

- Transmission using a double set of belts designed for a modulation of the die speed according to the type of product (3,8 to 6,7 m/s)
- Restricted vibration level: guarantees a long life of the pellet mill
- Height compact construction making the replacement of an existing pellet mill easier
- Absorption of shocks in case of a sudden overload
- Low noise level
- Limited risk of contamination

Options

The Alliance pellet mill can include several options to optimize and secure operation while limiting the operating and maintenance costs. All options can be added up and set up in the future:
- Rollers temperature control
- Ultra slow two-way die speed
- Forced feeding by screw
- Limited contamination by draining the used grease
- Automatic distance between rollers and die
- Motorized pellet knives
- Heated door
- Regulation of meals and steam feeding

Alliance pellet mill

<table>
<thead>
<tr>
<th>Range</th>
<th>Die Ø</th>
<th>Die width / useful width</th>
<th>Motor power</th>
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<tr>
<td></td>
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<td>rpm</td>
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<td>m/s</td>
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<td>315</td>
<td>1500</td>
<td>81/138</td>
<td>3,8/6,5</td>
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<td>3,8/6,5</td>
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<td>81/138</td>
<td>3,8/6,5</td>
<td>87</td>
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</table>
**Ultra slow die speed**

Slow disengageable motorized rotation. Two-way die rotation. Ultra low speed (1 rpm) and strong available torque.

**Advantages**

- Helps to release the product.
- Easy repositioning of the safety pin.
- Adjustment control of clearance between die and rollers.

**Automatic greasing**

Design allowing the recovery of used grease. Automatic distribution on:
- the roller bearings
- the main shaft bearings with discharge of the used grease at the rear of the pellet mill.

**Advantages**

- Limits the pellet contamination with grease.
- Lower costs: food grade grease use is not required.

**Alliance pellet mill**

Slow rotation powered by a gear motor.

Strong and high precision mechanic

Door and casing

Belt transmission reducing maintenance costs.

Easier maintenance

Die fixing system by hot hooping

Optimum automation

Alliance pellet mill
Vertical counter-flow cooler

**Purpose**

The cooler is designed to lower the temperature and moisture of the products to values close to ambient temperature. This operation improves the durability and preservation of the pellets.

**Features**

The RCCS is a machine with a simple and compact design. It is designed to lower the maintenance costs, to limit the remaining particles that can contaminate the product or increase the amount of bacteria and mould. The limited power cost results from an optimization of the internal air flow. Several types and variants can meet any application with or without built-in filters.

<table>
<thead>
<tr>
<th>Range</th>
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<th>Pellets Ø8 mm</th>
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<td>1,2</td>
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<td>44</td>
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<tr>
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<td>RCCS 29x170</td>
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<td>17</td>
<td>68</td>
<td>56</td>
<td>43,7</td>
<td>36</td>
<td>30,6</td>
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</table>
Advantages
- First In First Out
- Optimized filling rate
- Output evenness
- Reliability and simplicity
- Control of the residence times and temperatures
- Dynamic optimization of the exchange areas

Options
- Possibility of several levels to lower time waste between 2 batches
- Thermal insulation
- Built-in filters
- Driven mechanically
- Drying level
- Extracting system by rotating flaps
- Inerting by gas injection
- Product layer levelling system

Working principle (version without built-in filters)
**Purpose**

The cooler is designed to lower the temperature and moisture of the product to values close to ambient temperature. That operation improves the durability and preservation of the pellets.

**Principle**

The warm products produced by the pellet mill are placed into the horizontal cooler via a swivelling valve distributing them uniformly all over the machine width.

The pellets to be cooled down are thus laid down onto a metal belt made of bored components conveying them and preventing them from moving, thus not breaking them, for a preset time and speed to reach a temperature between 5 to 10°C maximum above the ambient temperature.

<table>
<thead>
<tr>
<th>Range</th>
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<td>1275</td>
<td>1775</td>
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<td>RHS 15</td>
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<td>1740</td>
<td>2000</td>
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<td>RHS 17</td>
<td>3</td>
<td>12</td>
<td>1990</td>
<td>3160</td>
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<td>RHS 20</td>
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<td>12</td>
<td>2240</td>
<td>3410</td>
</tr>
</tbody>
</table>
Non-contractual drawings and pictures

Crumbler beneath cooler

Purpose
To crush the pellets (usually a 4 mm diameter is easier to pellet than a 2.5 mm diameter) for poultry, game, fish, and piglets thus improving ingestion by small animals and digestion.

Features
• Speed variator of feeder fitted with a pneumatic valve for a precise adjustment of the capacity.
• Every type of spline on cylinders.
• Space adjustment between cylinders with remote control with analog position detection.
• Integrated system for product sampling.
• Flexibility of V-belts and dual toothing belt.
• Automatic spacing of cylinders when foreign bodies going through

Sifter

Purpose
The sifter is designed to extract the fines from the pellets to improve the quality of the final product. These fines are then recycled back to the pellet mill, thus reducing product wastes.

Features
• Specific self-swivelling system designed to optimize the products distribution while reducing the dynamic stress.
• Convenient for every size distribution from huge diameter pellets to mealy products.
• Final products outlet by single or multidirectional valve with flexible circular component.
• Possibility to be placed in depression.
• Variant with a built-in crumbler.

Components
1. A swivelling valve ensure a uniform and regular feeding all over the belt width.
2. Conveying belt designed with bored components assembled on traction chains. The sliding paths of the chains are isolated from the product avoiding any crushing risks of the pellets
3. Automatic device for pellets cooling level change ensuring the layer height uniformity. A permanent cleaning device is installed at the end of each level.
4. Guide flaps forcing the air to pass through the pellets layer.
5. Complete cleaning of the cooler with a silent bottom scraping brushes device.
6. Flap for layer height control.
7. Warm air suction.

PTAG-2 216 sifter
Handling equipment & Dedusting
Grinding
Thermal conditionning & Cooling
Pelletizing
Mixing & Coating
Sifting & Cleaning
Services

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