Latest Technologies in Cleaning Grading & Handling of all kinds of Seeds, Pulses, Spices, Fruit & Vegetable Produce

INTERNATIONAL EXHIBITION & CONFERENCE ON PROCESSED FOOD
JAIPUR HAAT, PARSHURAMDWARA, OPP. JALMAHAL, AMER ROAD, JAIPUR,

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FROM

OSAW AGRO INDUSTRIES PVT. LTD.
AMBALA CANTT
HARYANA
AGROSAW POST HARVEST MACHINERY

Seed Pre-cleaner/ Grain cleaner
Seed Grader/ fine cleaner
Indented cylinder graders/length graders
Specific gravity separator
Destoner positive pressure type
Seed Treaters/ Film coaters
Batch Type Dryers
Inclined flight belt conveyor
Bucket Elevator
Dust Aspiration system
Processing Machines
Brief descriptions of the processing machines used in a seed processing plant are given hereunder.

1 Cleaner /Grader
The air screen cleaner is the basic machine in almost all seed processing plants. The air screen cleaner uses three cleaning principles viz aspiration, scalping and grading. A common air screen cleaner for processing seed uses two air blasts and two screens. The first air system removes dust and light chaff before the seed reaches the first screen. The first screen allows the good seed to drop onto the second screen. The large foreign material rides over the first screen and is discarded. The second screen is a grading screen.

2 Specific gravity separator
Seed of same size and general shape can often be separated because they differ in specific gravity. This difference is very useful in removing light immature seed or heavy sand and rocks to improve the purity and germination of crop seed.

3 Indented cylinder
Seed of the same width and thickness can sometimes be separated by taking advantages of difference of length. Indented cylinder can do very precise separation by using length difference. The indented cylinder separator is a rotating almost horizontal cylinder with a movable horizontal separating trough mounted inside it. Thousand of half round indents line the inside surface of cylinder.
4 Elevator

Single leg bucket elevator consisting of receiving hopper, boot, bucket, belt, boot pulley, leg, head pulley, motor, drive and discharge spout will be used for conveying seed from one machine to another machine. It will lift the seed from the ground vertically upward and discharge it from top to the different machines. This type of elevating machines requires less power and floor area.

Layout and Process Flow Operations

Process flow operation enables processing of seed through suitable machines. Elevators are provided with bypassing arrangements to bypass certain machines, if use of any machine is not needed in subsequent operation in particular seed lot. For example, all the lots may not need use of indented cylinder grader or specific gravity separator and hence in such case the elevator direct the seed to the next process by bypassing these units. Layout of the plant will be made in a way to ensure minimum travel both vertical and horizontal to avoid injury to seed. Layout plan and process flow chart are given in Figs 4 and 5.
Layout of seed processing machines

Raw seed

Pre-cleaner

Grader

Indented cylinder

E1, E2, E3, E4 are elevators

Specific Gravity Separator

Weighing, bagging and packing

E1

E2

E3

E4
AIR SCREEN GRAIN CLEANER/ SEED CLEANER MODEL-PC-5

Suitable for cleaning of almost all types of cereals, Pulses, Spices, Oil Seeds, Vegetable Seeds, Coffee Beans etc

No. of Screen : 2
Size of each screen : 122 x 180 cms (W x L)
Screen Inclination
Top : Variable
Middle & Bottom : Fixed
Screen Perforation Cleaning Device : Nylon Brush
No. of Aspiration : One
Fan Capacity : 3500 CFM at 75 mm WGSP
Fan Speed : 1400 RPM
Electric Motor Blower : 4 HP, 3 Phase, 380-440 V
Feed & Nylon Brush Drum : 1.5 HP, 3 Phase, 380-440 V
O.A. Size (LxWxH) : 225 x 180 x 235 cms

AIR REMOVAL
1st Screen Oversize 2nd Screen Undersize
Dust Particles Cleaned Seed

LINK
SEED GRADER / FINE CLEANER MODEL-DELUX

Suitable for cleaning and grading of almost all types of cereals, Pulses, Spices, Oil Seeds, Vegetable Seeds, Coffee Beans etc.

### Technical Specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capacity</td>
<td>1 TPH (Based on wheat)</td>
</tr>
<tr>
<td>No. of Screen</td>
<td>Two</td>
</tr>
<tr>
<td>Size of each Screen</td>
<td></td>
</tr>
<tr>
<td>Top</td>
<td>66 x 74.5 cms (W x L)</td>
</tr>
<tr>
<td>Bottom</td>
<td>66 x 130 cms (W x L)</td>
</tr>
<tr>
<td>Screen Inclination</td>
<td>Fixed</td>
</tr>
<tr>
<td>Screen Perforation</td>
<td></td>
</tr>
<tr>
<td>Cleaning Device</td>
<td></td>
</tr>
<tr>
<td>Top</td>
<td>Beaters</td>
</tr>
<tr>
<td>Bottom</td>
<td>Nylon Brushes</td>
</tr>
<tr>
<td>No. of Aspiration</td>
<td>Two</td>
</tr>
<tr>
<td>Fan Capacity</td>
<td>4500 CFM at 75 mm WGSP</td>
</tr>
<tr>
<td>Fan Speed</td>
<td>980 RPM</td>
</tr>
<tr>
<td>Electric Motor</td>
<td>5 HP, 3 Phase, 440 V</td>
</tr>
<tr>
<td>Q.A. Size (L x W x H)</td>
<td>316 x 146 x 256 cms</td>
</tr>
</tbody>
</table>
Seed Grader / Fine Cleaner –Coral NB

**Technical Specifications**

- **Capacity**: 2 TPH (Based on wheat)
- **No. of Screen**: Three
- **No. of Scalping**: One
- **No. of Grading**: Two
- **Size of each screen**
  - Top: 112 x 130 cms (W x L)
  - Middle & Bottom: 112 x 143 cms (W x L)
- **Screen Inclination**: Fixed
- **Total Screening Area**: 4.65 M²
- **Screen Perforation Cleaning Device**
  - Top: Beaters
  - Middle & Bottom: Nylon Brush
- **No. of Aspiration**: Two
- **Fan Capacity**: 6500 CFM at 75 mm WGSP
- **Fan Speed**: 980 RPM
- **Electric Motor**: 7.5 HP, 3 Phase, 440 V
- **O.A. Size (L x W x H)**: 343 x 210 x 272 cms
Designed for Grader / Fine Cleaning of Spices

Specifications

- **Capacity**: 1-1.2 TPH (Based on wheat)
- **No. of Screen**: Three
- **Size of each screen**
  - Top: 90 x 100 cms (W x L)
  - Bottom: 89 x 180 cms (W x L)
- **Screen Inclination**: Fixed
- **Screen Perforation Cleaning Device**
  - Top: Beatures
  - Bottom: Nylon Brush
- **No. of Aspiration**: Two
- **Fan Capacity**: 4500 CFM at 75 mm WGSP
- **Fan Speed**: 900 RPM
- **Electric Motor**: 7.5 HP, 3 Phase, 440 V
Indented cylinder seed graders are used for additional separation or upgradation of seeds, grains of various crops on length basis after size or sieve cleaning. They are also used for removing weed seeds, broken or cut, round grains, materials longer than the desired crop seeds.
SPECIFIC GRAVITY SPERATORS

Application
The Machine is specifically meant for removing impurities and achieving very high grading quality in any free flowing granular material, grains all types of seeds, spices, etc. It removes the impurities and upgrades the material on the principal of specific weight.

Technical Specifications

<table>
<thead>
<tr>
<th></th>
<th>G2</th>
<th>G4</th>
<th>G6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cap. (based on Wheat)</td>
<td>1.5 to 2 TPH</td>
<td>3 to 4 TPH</td>
<td>5 to 6 TPH</td>
</tr>
<tr>
<td>No. of Fans</td>
<td>3</td>
<td>5</td>
<td>7</td>
</tr>
<tr>
<td>Size of Deck (mm) W x L</td>
<td>800 x 1590</td>
<td>1040 x 2340</td>
<td>1150 x 3100</td>
</tr>
<tr>
<td>Type of Deck</td>
<td>Rectangular Type</td>
<td>Rectangular Type</td>
<td>Rectangular Type</td>
</tr>
<tr>
<td>Electric Drive</td>
<td>Fan</td>
<td>4</td>
<td>7.5</td>
</tr>
<tr>
<td>HP</td>
<td>Deck</td>
<td>1.5</td>
<td>2</td>
</tr>
</tbody>
</table>
Destoner

**Application**

The Machine is used for removal of heavy foreign contaminants like stones, metallic and glass pieces, etc. from grains and seeds of all crops. It works on the principle of weight/gravity separations with stratification by positive pressure fan.

**Salient Features**

- All steel welded construction.
- Compact & rugged design.
- Very low power consumption.
- Rectangular Vibrating Deck.
- Silent and smooth operation.
- Dynamically Balanced Fan.

Total recovery of grains/Seeds without wastage during destoning operation.

The machine is pre-wired from electric motor to panel.

The unit is supplied complete with electric motor and panel.

Made on CNC machine and powder coated paint.

Electronic timer with solenoid valve provided for discharge of stones depending on the commodity to be de-stoned.

### Technical Specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model</td>
<td>D 2 PEX</td>
</tr>
<tr>
<td>Capacity (based on Wheat)</td>
<td>1.5 - 2 TPH</td>
</tr>
<tr>
<td>Size of Deck (mm)</td>
<td>890 x 480</td>
</tr>
<tr>
<td>Electric Power</td>
<td>0.5 HP</td>
</tr>
<tr>
<td>Overall Size (mm) L x W x H</td>
<td>1060 x 782 x 1360</td>
</tr>
</tbody>
</table>
Disinfection is one of the most important measures for the Protection of seeds against attacks by fungi pests etc. Fungicides and pesticides are available in Powder or Liquid form.
BUCKET ELEVATORS

SALIENT FEATURES
Designed for long service life and gentle handling of the material.
Designed and built for rugged duty.
Canvas/Rubberised pulleys.
Heavy duty regreaseable pillow block head shaft bearing.
Heavy duty regreaseable flange type boot take up bearing.
Die Pressed M.S. Buckets/other types optional.
Self cleaning type V-shaped boot.
Inspection doors located on up leg for bucket service.
Capacities calculated at water level cup fill rating for realistic capacities.
Self cleaning type V-shaped boot.
Inspection doors located on up leg for bucket service.
Capacities calculated at water level cup fill rating for realistic capacities.
Split bonnet/head cover for ease of maintenance of head section.
Optimum belt speeds calculated to ensure long term wear, proper discharge and minimum material damage.
Inclined flanged discharge transition.
Feed inlet hopper with grating. Adjustable discharge deflector plate for maximum discharge.
Chances of seed damage between bottom Pulley and belt are minimised.
INCLINED FLAT BELT CONVEYOR (PVC)

Capacities: 2 to 15 TPH (Based on wheat)
Discharge Height: Upto 6 meters

• Damage to the seeds/grains occur mostly at the discharge point in centrifugal type Vertical bucket elevators. Some seeds also get crushed/damaged at various points.
BATCH TYPE DRYER

The Dryer is suitable for drying of all type of grains/seeds, cereals, pulses, oil seeds, fodder seeds, grass seeds, spices.....
Small impurities like chaff, dust

Raw seed

Pre-cleaner

Seed Grader

Large impurities

Small impurities like chaff, dust

Specific gravity separator

Indented cylinder

Broken grain

Packaging and Storage of graded seed

Fig. 5 Process flow chart of seed processing
Process Flow For Spice Cleaning Plant

- Reception
- Cleaning & Size Grading
- Destoning
- Density Up Grading
- Bagging + Storage

Magnetic Separation
Process Flow For Grain Cleaning Plant

- Reception
- Cleaning & Size Grading
- Broken Separation
- Destoning
- Density Up Grading
- Bagging + Storage

Barley/Oat/Wheat Glumes Separation
VARIOUS PLANTS DESIGNED & MANUFACTURED BY AGROSAW

- Washing, Sorting & Grading Plant for round fruits and vegetables like tomato, apple, oranges, kinnows, sweet lime etc.
- Sorting and grading line for potatoes, onions.
- Sorting and waxing line for bananas.
- Mango sorting, washing and grading plant.
- Multi purpose fruit and vegetable grading line.
- Fruit Juice Preparation Plant.
- Tomato Puree Preparation Plant.
- Aromatic Oil Distillation Plant.
WASHING, SORTING & GRADING PLANT FOR ROUND FRUITS AND VEGETABLES LIKE TOMATO, APPLE, ORANGES, KINNOWS, SWEET LIME ETC.

DETAILS OF THE PLANT
THE PLANT IS COMPOSED OF:

- FEEDING CUM SORTING CONVEYOR
- WASHER & SPONGER
- SIZE GRADER
- WAX APPLICATION MACHINE
- HOT AIR DRYER
- PACKAGING MACHINE
FEEDING CUM SORTING TABLE (BELT TYPE)
SIZE GRADER
WAX APPLICATION MACHINE
INFRA RED DRYER
SHRINK WRAPPING MACHINE
GRADING PLANT INSTALLED AT MALDA
OTHER PLANTS DESIGNED & MANUFACTURED
BY AGROSAW

- SORTING AND GRADING LINE FOR POTATOES, ONIONS.
- SORTING AND WAXING LINE FOR BANANAS.
- MANGO SORTING, WASHING AND GRADING PLANT.
- MULTI PURPOSE FRUIT AND VEGETABLE GRADING LINE.
- FRUIT JUICE PREPARATION PLANT.
- TOMATO PUREE PREPARATION PLANT.
- AROMATIC OIL DISTILLATION PLANT.
<table>
<thead>
<tr>
<th>OUR CUSTOMERS</th>
<th></th>
</tr>
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<tbody>
<tr>
<td>CIPHET, ABOHAR</td>
<td>KINNOW GRADING PLANT</td>
</tr>
<tr>
<td></td>
<td>FRUIT JUICE PLANT</td>
</tr>
<tr>
<td>PAU, LUDHIANA</td>
<td>FROZEN CARROT &amp; CAULIFLOWER PLANT</td>
</tr>
<tr>
<td>TNAU, TAMILNADU</td>
<td>TOMATO GRADING PLANT</td>
</tr>
<tr>
<td>C.G,RAJYA BEEJ NIGAM</td>
<td>POTATO GRADING PLANT</td>
</tr>
<tr>
<td></td>
<td>TOMATO GRADING PLANT</td>
</tr>
<tr>
<td></td>
<td>BANANA WAXING PLANT</td>
</tr>
<tr>
<td>UDAIPUR AGRIL UNIVERCity</td>
<td>ORANGE GRADING PLANT</td>
</tr>
<tr>
<td>W.B.S.F.P.&amp; H.D.C.L</td>
<td>MANGO GRADING PLANT</td>
</tr>
<tr>
<td>K.V.K, JHALAWAR</td>
<td>ORANGE GRADING PLANT</td>
</tr>
<tr>
<td>COLLEGE OF HORT</td>
<td>FRUIT JUICE PLANT</td>
</tr>
<tr>
<td>FRL, DRDO</td>
<td>SEABUCKTHORN HARVESTER</td>
</tr>
<tr>
<td>RELINACE INDUSTRIES LTD</td>
<td>POTATO/ONION GRADING PLANT</td>
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<tr>
<td></td>
<td>FRUIT JUICE PLANT</td>
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<tr>
<td>ANAND AGRICULTURAL UNI</td>
<td>ALOE VERA GEL PROCESING PLANT</td>
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<tr>
<td></td>
<td>AROMATIC OIL DISTILLATION PLANT</td>
</tr>
<tr>
<td>INNOVA AGRI BIO PARK</td>
<td>MULTIPLE VEGETABLE GRADING PLANT</td>
</tr>
</tbody>
</table>
OSAW AGRO INDUSTRIES PVT. LTD.
(ISO 9001 : 2000 CERTIFIED COMPANY)

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Deals In : Handling, Design, Development, Manufacturing
And Supply of Seeds, Grains, Spices, Fruits And
Vegetable Processing Plants & machineries on Turnkey Basis
THANK YOU

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