HEATING & COOLING WITH CONVECTIVE MIXING TECHNOLOGY

CONE MIXER - CUM - DRYER (NAUTA TYPE)
PRINCIPLE:
The working principle of the cone mixer is three dimensional originated from rotating elements in combination with a conical vessel.
- The mixing screw conveys the product from bottom of the vessel to the products surface.
- The orbital arm orbits the mixing screw along the inner vessel wall causing convective mixing of particles and shear.
- The speed of particles in the downward mass flow when re-circulated by gravity in a conical vessel increases as the vessel diameter decreases. The result of these simultaneous actions is a fast and intensive mixing with low consumption of power together with high mixing accuracy.

APPLICATIONS:
- Mixing and homogenization of powders, pastes and slurries.
- Vacuum drying of pastes and slurries.
- Addition or injection of liquids to dry solids.
- Granulation or agglomeration of powders by the addition of binder liquid.
- Reaction under vacuum or pressure conditions.
- Crystalization or de-aeration.
- Densifying.
- Storage and discharge of products with difficult flow properties.
- Homogenization of colours and particle sizes.
- Cooling.
- Heating.

Another important feature is the possibility to combine several processes in one machine giving huge savings in investment, labor and space.

ADVANTAGES:
- Gentle action on product through low power consumption.
- Fast mixing times with a high degree of mixing accuracy.
- Minimum heat generation.
- Self emptying with almost no product retention.
- De-mixing effects impossible when emptying vessel.
- Being closed unit, no contaminations, no pollution possible and machine can be combined with containment system.
- Vacuum can be employed hence drying is fast and is also accelerated due to stirring of material.
- It is used as mixer-cum-dryer. So a considerable saving in labor, handling, power and space.

SPECIALITIES:
- Available in design without bottom pinle bearing up to working capacity of 6500 Lts.
- Chopper/De-lumper can be employed for lump breaking.
- Complete automation with PLC-HMI based operation can also be provided.
- Single or Double Helix design can be provided for pilot/lab scale equipments.
- Special all drain design of screw provided for Pharma applications.
- Double screw arrangement can also be provided for accelerated mixing.
- Speed Variation of screw can be provided to suit process parameters.

Variants
1. Isolater Compatible
CMD's are available in variants compatible with barrier isolation systems at the discharge. This allows handling of Cytotoxic/ Potent products with operator safety. Additionally, these can be combined with automatic packing systems further downline. Also lab scale CMD models are available for R&D purposes.

2. Sterile Construction
Sterile application CMD models with completely automated SIP/CIP & operation cycles, sintered cartridge filter media, metal to metal seating are also available.

3. Special Quick detachable designs for top dish
   a) Super ‘C’ Bayonet
   This design is similar to a TC clamp design but hydraulic operated. This facilitates quick top dish detachment for easy & fast maintenance. This design is good for vacuum and very low pressure applications.
   b) Teethed Bayonet
   This design has teethed body flanges, which are hydraulic operated and this is a ‘Positive Locking’ design. This facilitates quick top dish detachment for easy & fast maintenance. This design is good for vacuum as well as high pressure applications.

Technical Data for CMD

<table>
<thead>
<tr>
<th>Type</th>
<th>A (mm)</th>
<th>H (mm)</th>
<th>Motor (H.P.)</th>
<th>RPM Capacity</th>
<th>Total Capacity (Lts)</th>
<th>Working Capacity (Lts)</th>
<th>Empty Weight of Machine (Kgs)</th>
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<td>1850</td>
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NOTE: Design & Dimensions of above are subject to change without notice.

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