 Bulk density is measured with the help of an inline sampler (model MAS™ or BDS™) using patented loss-on-weight technology. The unique bulk density measuring accuracy for all type of pellets ensures superior control over essential key process equipment such as the extruder, for example.

By frequent bulk density analyses, quality problems such as over- or underfilled bags, poor mouth feel, low starch gelatinization level, floating (aquatic feed) and poor fat & oil absorption are eliminated or considerably reduced.

ADVANTAGES

- Eliminates manual resources for sampling and measuring
- Easy to calibrate
- Plug-and-play technology
- High measuring repeatability
- Heavy duty design
**ADVANTAGES**

- Eliminates the need for resources for manual sampling and measuring
- Measures the actual bulk density every 30 seconds
- Reduces the rework costs by up to 10%
- Reduces the packing costs
- Extends the lifetime of the extruder wear parts
- Reduces floating (aquatic feed)
WHERE TO MEASURE?

AFTER EXTRUSION

AFTER DRYING

AFTER COOLING
### WHICH PRODUCTS CAN BE ANALYZED INLINE?

<table>
<thead>
<tr>
<th>Products</th>
<th>Moisture content</th>
<th>Fat content</th>
<th>Temperature</th>
<th>Particle diameter</th>
<th>Density Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extruded Pet Food</td>
<td>5-30%</td>
<td>&lt;40%</td>
<td>15-90°C 60-195°F</td>
<td>&lt;25 mm &lt;1&quot;</td>
<td>150-900 g/l 9.4-56.0 lbs/ft³</td>
</tr>
<tr>
<td>Wet Pet Food</td>
<td>45-65%</td>
<td>&lt;15%</td>
<td>15-90°C 60-195°F</td>
<td>&lt;25 mm &lt;1&quot;</td>
<td>400-900 g/l 25-56.0 lbs/ft³</td>
</tr>
<tr>
<td>Extruded Aquatic Feed</td>
<td>5-30%</td>
<td>&lt;40%</td>
<td>15-90°C 60-195°F</td>
<td>&lt;25 mm &lt;1&quot;</td>
<td>150-900 g/l 9.4-56.0 lbs/ft³</td>
</tr>
<tr>
<td>Powders</td>
<td>1-10%</td>
<td>&lt;15%</td>
<td>15-50°C 60-125°F</td>
<td>&lt;25 mm &lt;1&quot;</td>
<td>150-900 g/l 9.4-56.0 lbs/ft³</td>
</tr>
<tr>
<td>Agglomerates</td>
<td>1-10%</td>
<td>&lt;15%</td>
<td>15-50°C 60-125°F</td>
<td>&lt;25 mm &lt;1&quot;</td>
<td>150-900 g/l 9.4-56.0 lbs/ft³</td>
</tr>
<tr>
<td>Breakfast Cereal</td>
<td>5-30%</td>
<td>&lt;40%</td>
<td>15-90°C 60-195°F</td>
<td>&lt;25 mm &lt;1&quot;</td>
<td>150-900 g/l 9.4-56.0 lbs/ft³</td>
</tr>
<tr>
<td>Biomass</td>
<td>2-15%</td>
<td>&lt;5%</td>
<td>15-90°C 60-195°F</td>
<td>&lt;25 mm &lt;1&quot;</td>
<td>400-900 g/l 25-56.0 lbs/ft³</td>
</tr>
<tr>
<td>Pelletized Feed</td>
<td>2-15%</td>
<td>&lt;15%</td>
<td>15-90°C 60-195°F</td>
<td>&lt;25 mm &lt;1&quot;</td>
<td>400-900 g/l 25-56.0 lbs/ft³</td>
</tr>
</tbody>
</table>
**WHAT SAMPLER TO SELECT?**

**ADVANTAGES**

- Accurate analytical results
- Improved product quality
- Payback <3-15 months
- High level of sanitation
- Heavy duty equipment

<table>
<thead>
<tr>
<th>Feature</th>
<th>MAS™</th>
<th>BDS™</th>
<th>PSS™</th>
<th>SPS™</th>
<th>DTS™</th>
<th>SAS™</th>
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</thead>
<tbody>
<tr>
<td>External sampling</td>
<td>●</td>
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<tr>
<td>Bulk density</td>
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<tr>
<td>Moisture (resonance)</td>
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<tr>
<td>NIR &amp; Crushing</td>
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<tr>
<td>Surface fat</td>
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<tr>
<td>Screen detection</td>
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<tr>
<td>Product sizing</td>
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<tr>
<td>Water activity</td>
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<td>●</td>
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<tr>
<td>Temperature</td>
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<tr>
<td>Dust</td>
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<tr>
<td>Visual product control</td>
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<tr>
<td>Durability</td>
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<td>●</td>
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<tr>
<td>Floating</td>
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<td>●</td>
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<tr>
<td>Tapped density</td>
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<td></td>
<td>●</td>
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<tr>
<td>Dark spot</td>
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<td></td>
<td>●</td>
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<tr>
<td>Color</td>
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<td></td>
<td>●</td>
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</tbody>
</table>
MANUAL VS. AUTOMATED BULK DENSITY MEASURING

ADVANTAGES

• Eliminates manual resources for sampling and measuring
• Easy to calibrate
• Plug-and-play technology
• High measuring repeatability
MEASURING ACCURACY

EXTRUDED PET FOOD

EXTRUDED AQUATIC FEED

AFTER EXTRUSION
Bulk Density:
±150-900 g/l
±9.4-56 lbs./ft³
ACCURACY
±1-9 g/l
±0.06-0.56 lbs./ft³

AFTER DRYING
Bulk Density:
150-900 g/l
±9.4-56 lbs./ft³
ACCURACY
±1-9 g/l
±0.06-0.56 lbs./ft³

AFTER COOLING
Bulk Density:
150-900 g/l
±9.4-56 lbs./ft³
ACCURACY
±1-9 g/l
±0.06-0.56 lbs./ft³

Bulk Density:
±9.4-56 lbs./ft³
AUTOMATIC BULK DENSITY REGULATION

APM OR CUSTOMER CONTROL SYSTEM
Operator Density Set-point 435 g/l

INLINE BULK DENSITY MEASUREMENT
Actual Bulk Density 473 g/l

INCREASE EXTRUDER SME

INCREASE EXTRUDER STE

INLINE BULK DENSITY MEASUREMENT
Actual Bulk Density 435 g/l
INTERFACE BETWEEN THE INLINE ANALYSIS SAMPLER AND CUSTOMER CONTROL SYSTEM

INLINE SAMPLER CONTROL SYSTEM

Analogue (4-20 mA)
Digital (24 V)
Ethernet
CSV file
Bus (option)

CUSTOMER CONTROL SYSTEM

REDUCE GIVE-AWAY

IMPROVE START-UP PROCEDURE

ALARM WHEN OUT OF SPECIFICATIONS
SUPPORTING YOUR SUCCESS

PREVENTIVE MAINTENANCE
We offer our customer an annual preventive maintenance visit to ensure continuous operation of the machines. During the preventive maintenance visit we offer free software upgrades as well as general training of the operation staff.

PATENTED TECHNOLOGY
The Source Technology inline sampling technology is unique. Multiple patents filed globally protect our technology and ensures our customers exclusivity to the products offered.

CALIBRATION
We offer onsite and offsite calibration support in order to optimize the performance of the inline sampling equipment. We either conduct the calibration on-site within the operation, or support our customer by transferring data remotely.

SERVICE
Should a machine break down occur we do offer service support from both Europe and USA. Typically, our service is able to be conducted remotely due to the non-complex design.

SOURCE TECHNOLOGY

TEST CENTER
We offer our customers to test the inline sampling equipment in our two test facilities located in Denmark, Europe and Sabetha, Kansas, USA. This enables our customers to experience the measuring accuracy prior to a purchase.

TRAINING
Training during commissioning of the samplers, is conducted by our experienced process engineers. The training enables our customers optimal outcome of the samplers to ensure optimal measuring accuracy.

GUARANTEED PERFORMANCE
All products are supplied with a performance guarantee in order to ensure our customers that what they buy is according to expectations. Should the results not be in accordance with the agreed terms, a credit representing the purchase value of the equipment will be issued.

INSTALLATION
The inline samplers are plug-and-play machines, which typically do not require installation support. Typically, an inline sampler is installed in less than 3 hours. In the event installation support is required, we offer this service to our customers.