THE BEGINNING

- Founded in 1964 in Des Moines, Iowa by Ken and Ann Bratney.
- Began business in seed, grain, and food related industries with commitment and respect for the relationship with the customer.
- Focus on equipment sales and design. Quickly grew to include engineering and construction services by the mid 1970’s, and today includes milling and manufacturing services.
- Ken Bratney: “Your word is your bond.”
- We live by this motto even today
Today

• Full service company with more than 145 full time employees with office locations in:
  – Des Moines, Iowa (corporate office)
  – Boise, Idaho
  – Kansas City, Missouri
  – Sacramento, California
  – Colon, Argentina

• Primary Area of Coverage:
  – United States
  – Argentina, Uruguay and Brazil

• Disciplines:
  – Process Equipment Sales
  – Design / Engineering / Construction Services
  – After Sales Service and Support
• Founded in 1966. Over 50 years of milling experience.
• More than 60 milling plants worldwide.
• Manufacturing and innovation is their passion.
• 2 manufacturing facilities in Italy.
• Most innovative milling technologies in the market.
FACILITIES: August 2015

• 11,000 m² (118,000 ft²) total.
• 1,800 m² (19,000 ft²) of new offices and meeting rooms
• New manufacturing facilities
• New test facility inside the factory for testing new technology and new machines
• Quality and testing laboratory, with new instruments
Leonardo
KEY CONCEPTS

OMAS TORQUE MOTORS

- High and steady torque at any speed (in a range from 0 to 550 RPM)

ASYNCHRONOUS MOTORS (CONVENTIONAL)

- Nominal torque only within a very narrow range of speed
# KEY CONCEPTS

## OMAS TORQUE MOTORS

- Have low consumption when not grinding: 0.8-1.0 A
- Are able to generate electrical current, thus energy, if decelerated or used as dynamo since they are permanent magnet synchronous motors
- Can be overloaded over the nominal values, even for an indefinite period, if cooled

## ASYNCHRONOUS MOTORS (CONVENTIONAL)

- Consume 45% of nominal value in empty condition, corresponding to 13.5 A
- Are damaged if used as generators;
- Tolerate only the short-time overloading
## KEY CONCEPTS

<table>
<thead>
<tr>
<th>LEONARDO S ROLLER MILL</th>
<th>BELT DRIVEN ROLLER MILL</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>OMAS</strong></td>
<td><strong>(CONVENTIONAL)</strong></td>
</tr>
<tr>
<td>2 <strong>TORQUE</strong> motors for every milling passage, 1 on each roll.</td>
<td>1 motor for every milling passage with 2 belt transmissions</td>
</tr>
<tr>
<td>Variable speed</td>
<td>Fixed speed</td>
</tr>
<tr>
<td>Vary speed ratio as needed and automatically, with no downtime</td>
<td>Fixed speed ratio, unless pulleys and toothed belts are replaced</td>
</tr>
<tr>
<td>Possible to make the front or back roll the fast roll</td>
<td>Fixed setting: the front roll is always the fast one</td>
</tr>
</tbody>
</table>
During operation in empty condition, every motor uses all the energy provided by the power supply; the two electric currents, passing through every drive unit, are exactly those required by the respective motor and have the same sign. So the total current supplied by the electric box is the sum of the two.

When engaged, during the milling phase, the slow motor generates an electric current toward the drive circuit, where it is directly used by the fast motor; this immediately reduces the electrical network power absorption, obtaining:

ENERGY SAVINGS
ENERGY SAVING

Fig. 02 CURRENT

[Diagram showing current consumption and energy savings]
ENERGY SAVING

**Fig. 03 LEONARDO POWER**

- **Power Required by the Fast Motor**
- **Total Power**
- **Grinding Power**
- **Slow motor power output**
### Kazakhstan Mill 160 Mton/Day

<table>
<thead>
<tr>
<th></th>
<th>MOTORS A</th>
<th>KERS A</th>
<th>NETWORK A</th>
<th>MOTORS kW</th>
<th>KERS kW</th>
<th>NETWORK kW</th>
<th>TRADITIONAL A</th>
<th>BELT kW</th>
</tr>
</thead>
<tbody>
<tr>
<td>B1</td>
<td>29,3</td>
<td>17,0</td>
<td>16,8</td>
<td>19,28</td>
<td>11,19</td>
<td>11,06</td>
<td>44,0</td>
<td>28,96</td>
</tr>
<tr>
<td>B2</td>
<td>20,1</td>
<td>14,9</td>
<td>16,7</td>
<td>13,23</td>
<td>9,81</td>
<td>10,99</td>
<td>42,0</td>
<td>27,64</td>
</tr>
<tr>
<td>R1G</td>
<td>16,7</td>
<td>11,3</td>
<td>9,7</td>
<td>10,99</td>
<td>7,44</td>
<td>6,38</td>
<td>32,0</td>
<td>21,06</td>
</tr>
<tr>
<td>R1GA</td>
<td>26,7</td>
<td>19,6</td>
<td>8,5</td>
<td>17,57</td>
<td>12,90</td>
<td>5,59</td>
<td>30,0</td>
<td>19,75</td>
</tr>
<tr>
<td>R2</td>
<td>18,2</td>
<td>12,8</td>
<td>9,5</td>
<td>11,98</td>
<td>8,42</td>
<td>6,25</td>
<td>17,0</td>
<td>11,19</td>
</tr>
<tr>
<td>R3</td>
<td>13,2</td>
<td>9,7</td>
<td>7,0</td>
<td>8,69</td>
<td>6,38</td>
<td>4,61</td>
<td>19,0</td>
<td>12,51</td>
</tr>
<tr>
<td>R4</td>
<td>17,6</td>
<td>13,0</td>
<td>6,9</td>
<td>11,58</td>
<td>8,56</td>
<td>4,54</td>
<td>20,0</td>
<td>13,16</td>
</tr>
<tr>
<td>C1</td>
<td>27,1</td>
<td>21,2</td>
<td>7,7</td>
<td>17,84</td>
<td>13,95</td>
<td>5,07</td>
<td>21,0</td>
<td>13,82</td>
</tr>
<tr>
<td>C2</td>
<td>8,5</td>
<td>5,3</td>
<td>5,5</td>
<td>5,59</td>
<td>3,49</td>
<td>3,62</td>
<td>19,0</td>
<td>12,51</td>
</tr>
<tr>
<td>C3</td>
<td>11,0</td>
<td>7,4</td>
<td>6,3</td>
<td>7,24</td>
<td>4,87</td>
<td>4,15</td>
<td>15,0</td>
<td>9,87</td>
</tr>
<tr>
<td>C4</td>
<td>13,9</td>
<td>10,4</td>
<td>7,0</td>
<td>9,15</td>
<td>6,85</td>
<td>4,61</td>
<td>15,0</td>
<td>9,87</td>
</tr>
<tr>
<td>C5</td>
<td>13,9</td>
<td>10,4</td>
<td>7,2</td>
<td>9,15</td>
<td>6,85</td>
<td>4,74</td>
<td>15,0</td>
<td>9,87</td>
</tr>
<tr>
<td>C6</td>
<td>13,6</td>
<td>10,2</td>
<td>7,0</td>
<td>8,95</td>
<td>6,71</td>
<td>4,61</td>
<td>15,0</td>
<td>9,87</td>
</tr>
<tr>
<td>TOTAL</td>
<td>229,8</td>
<td>163,2</td>
<td>115,8</td>
<td>151,25</td>
<td>107,41</td>
<td>76,22</td>
<td>304,0</td>
<td>200,09</td>
</tr>
</tbody>
</table>

**Difference:** -61,91%
PLANSIFTER PL “Galileo”
PLANSIFTER “Galileo”

• More efficient due to torque motor efficiency.

• No loss of energy through mechanical transmission.

• No maintenance required on drive mechanism.

• Motor mounted directly to the top of the sifter.
PLANSIFTER “Galileo”
New Patented Sieves

• Sieves and sieve supports made entirely of Nylon PA 66.

• Safe material, suitable for product contact in food applications.

• Light, durable, and holds up to mechanical stress.
WHEAT STERILIZER “Giotto”:
WHEAT STERILIZER “Giotto”

- Equipped with 150 adjustable paddles.
- Removes superficial bacteria, mold and mycotoxins.
- Reduces tempering time.
- Reduces ash content in flour.
WHEAT STERILIZER “Giotto”
New Plants under construction
2018/2019

• 300 Mton/Day Angola Soft Wheat
• 160 Mton/Day Soft and Hard Wheat Uganda
• 2 x 300 Mton/Day Soft Wheat Benin
• 450 Mton/Day Soft and Hard Wheat Ghana
• 160 Mton/Day Soft and Hard Wheat Pennsylvania
• 160 Mton/Day Maize Argentina
• 160 Mton/Day Soft Wheat United Kingdom
• 110 Mton/Day Durum Italy
BoMill – NIR Seed/Kernel Sorting for Protein, Vomitoxin, and Vitreous Qualities

**Model IQ Lab Unit**
- 5 Pounds/Hour
- 6 Quality Fractions

**Model Tri-Q Production Unit**
- Approx. 3 Metric Tons/Hour
- 3 Quality Fractions
SORTING PRINCIPLES

KERNEL SINGULATION

NEAR INFRARED LIGHT

DETECTION (Near Infrared Transmittance)

EJECTION

Compressed air

Analyze & Sort by Internal Structure

Sort Barley, Oats, Wheat or Durum by Internal Properties:

- Relative Protein Content
- Kernel Hardness (vitreous qualities)
- Vomitoxin (DON / Fusarium / Other Mycotoxins)
# BOMILL MODEL IQ SORTING REPORT

**Date:** 7/6/2018

**SAMPLE DETAILS**
- **Grain:** Hard Red Winter Wheat
- **Customer:**
- **Sorting Parameter:** Protein
- **Protein Reference:** 12.5%
- **DON in Reference:** 3.0ppm

**Summary of Results:***
- **Incoming Grain (lbs):** 7.54
- **Control Sample (lbs):** 0
- **Sorted Sample (lbs):** 7.54
- **Cleaning < 5.5/64 slot; > 12 Rd (lbs):** 0.21
- **Cleaned Sample (lbs):** 7.33

### SORTED FRACTIONS

<table>
<thead>
<tr>
<th>F1</th>
<th>F2</th>
<th>F3</th>
<th>F4</th>
<th>F5</th>
<th>F6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight (lbs)</td>
<td>1.48</td>
<td>1.24</td>
<td>1.17</td>
<td>1.20</td>
<td>1.20</td>
</tr>
<tr>
<td>Yield (%)</td>
<td>20.2</td>
<td>16.9</td>
<td>16.0</td>
<td>16.4</td>
<td>16.4</td>
</tr>
<tr>
<td>Protein (%)</td>
<td>11.2</td>
<td>11.9</td>
<td>12.4</td>
<td>12.7</td>
<td>13.2</td>
</tr>
<tr>
<td>DON (ppm)</td>
<td>17.5</td>
<td>1.6</td>
<td>0.7</td>
<td>0.4</td>
<td>0.3</td>
</tr>
<tr>
<td>Germination (%)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

---

*Images and graphs related to the sorting process are included.*
CIMBRIA CLEANING EQUIPMENT

- DRUM SCALPERS
- MEGA CLEANERS
- OPTICAL SORTERS
Concetti Packaging Systems

Complete Packaging Systems for Soft and Hard Packed Goods Including:

• Bagging Scales
• Bag Hangers
• Hybrid and Robotic Palletizing Systems
THANK YOU