



*Solutions for*  
**SUGAR CANE  
MILL PLANTS**

 **Bonfiglioli**



# BONFIGLIOLI SOLUTIONS FOR SUGAR CANE MILL PLANTS

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Sugar cane is becoming more and more important and the industry attracting ever greater interest as a result of increased global demand for food grade sugar and the growing use of ethanol as an alternative to fossil fuels.

Sugar producers will soon find themselves obliged to improve the productivity and energy efficiency of their processes in order to satisfy rising demand and survive in a more competitive market.

Power transmission is destined to play a key role in the renewal of production processes.

Bonfiglioli offers customers a vast amount of experience acquired from sugar cane processing plants around the world. This makes us the perfect partner for investments aimed at boosting production capacity and optimising energy efficiency, whether through modernisation projects or new installations.

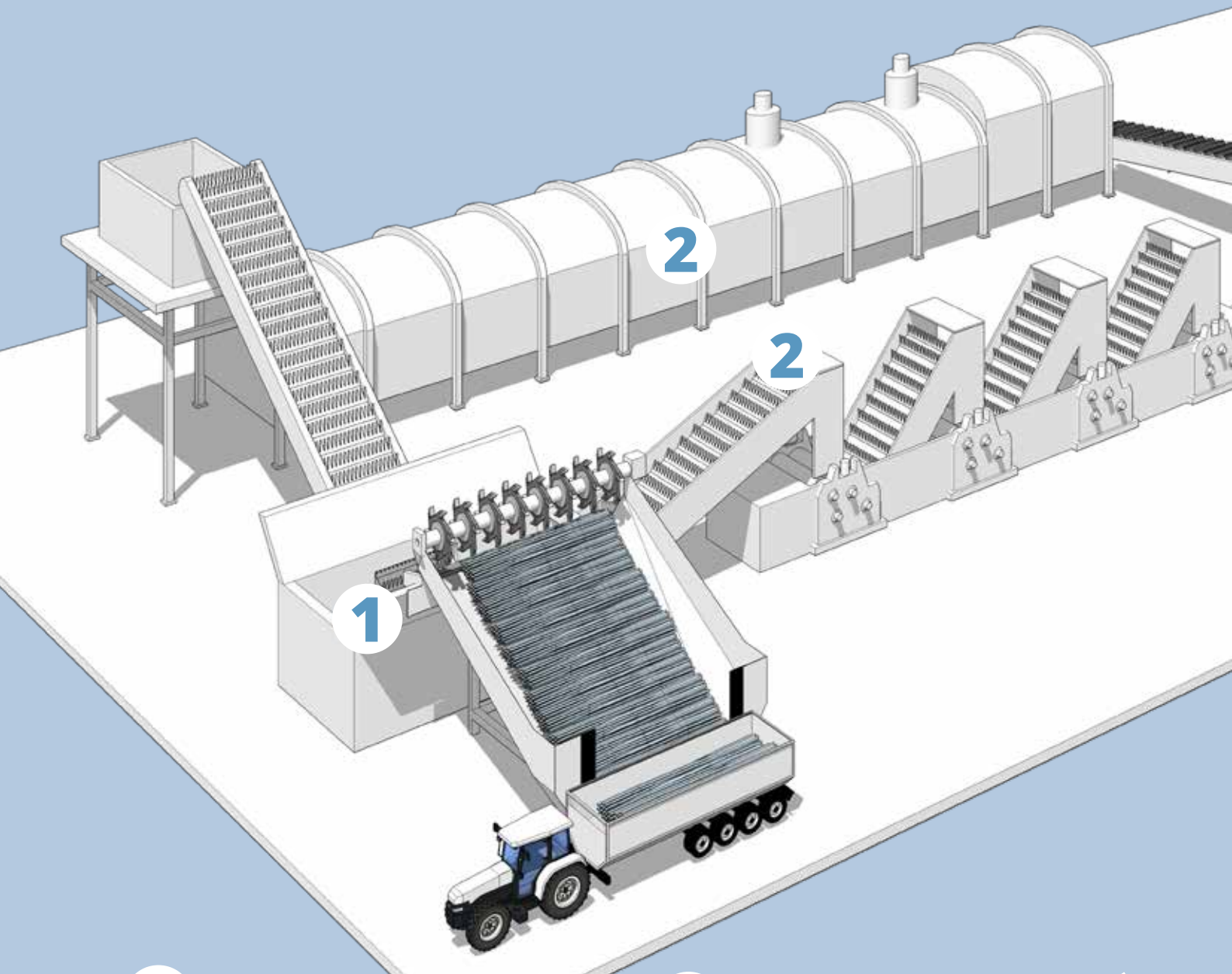
Our extensive catalogue of mechanical gearboxes is complemented by a complete range of inverters for optimised power transmission and control. Our specific solutions for sugar cane processing include high power, compact gearmotors, planetary and combined gearboxes, and multi-drive solutions complete with inverters for speed control and synchronisation.

Over 60 years of experience in managing and serving key accounts and global partners in a wide range of heavy duty sectors represent a real guarantee of competence, reliability and service.

Our team of application engineers is at your service to examine the requirements of your own plant and propose modern and innovative solutions for improving the productivity, reliability and energy efficiency of your production processes.

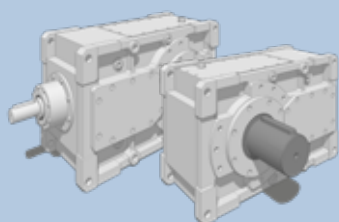


## SOLUTIONS FOR SUGAR CANE MILL PLANTS



1

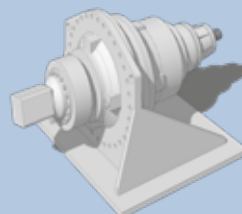
Cane Carrier



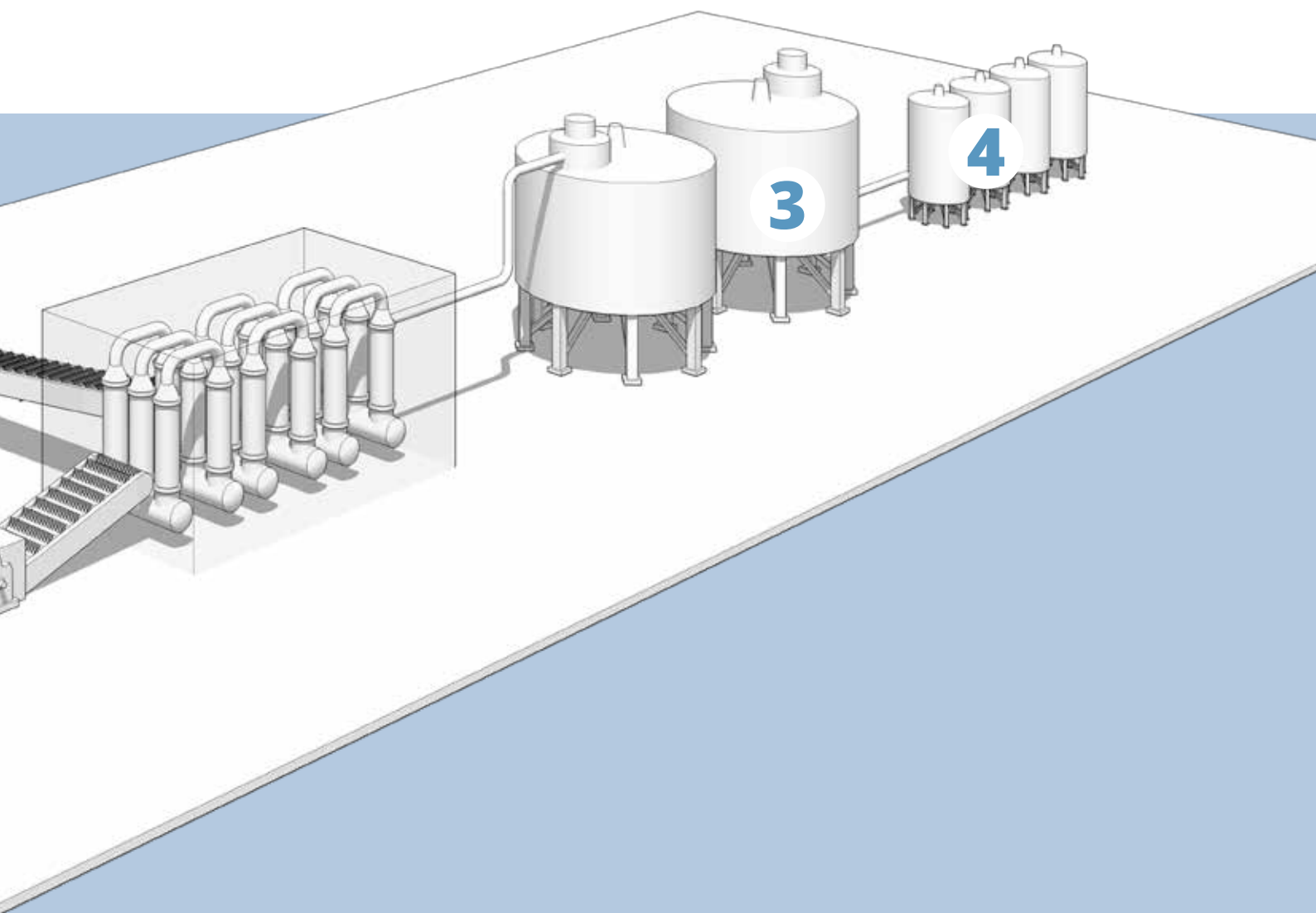
2

Mills

Diffuser



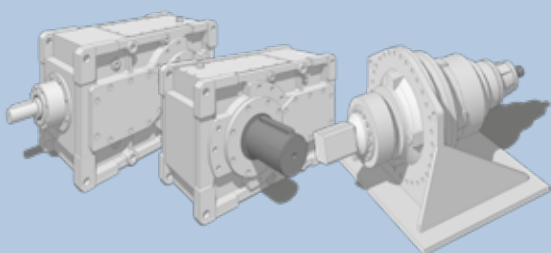




**3** Decanter / Clarification



**4** Crystallizer



## BONFIGLIOLI HEAVY DUTY SOLUTIONS

### 300M series

Planetary gearmotors



### 3/H combined series

Planetary / Bevel gearboxes



| Size | Nominal torque [Nm] |
|------|---------------------|
| 316M | 134 390             |
| 317M | 207 490             |
| 318M | 297 550             |
| 319  | 471 190             |
| 321  | 655 740             |
| 323  | 890 310             |
| 325  | 1 286 000           |
| 327  | 1 800 000           |
| 329  | 2 500 000           |

| Size    | Nominal torque [Nm] |
|---------|---------------------|
| 3/HDO16 | 134 390             |
| 3/HDO17 | 207 490             |
| 3/HDO18 | 297 550             |
| 3/HDO19 | 471 190             |
| 3/HDO21 | 655 740             |
| 3/HDO23 | 890 310             |
| 3/HDO25 | 1 286 000           |
| 3/HDO27 | 1 800 000           |
| 3/HDO29 | 2 500 000           |

## ACCESSORIES



OUTPUT SQUARED SHAFT



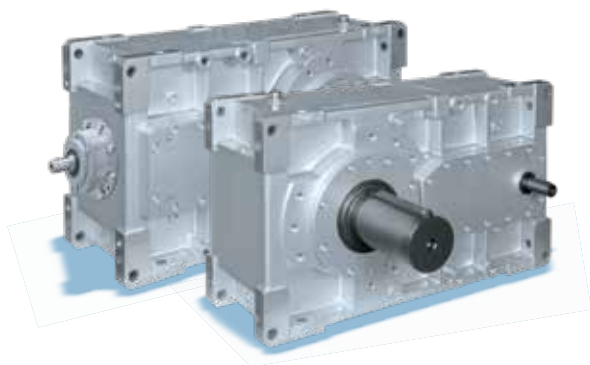
FLANGE COUPLING



MOUNTING FEET

## HD series

Parallel & Bevel gearboxes



| Size | Nominal torque [Nm] |
|------|---------------------|
| 100  | 28 210              |
| 110  | 31 790              |
| 120  | 41 250              |
| 125  | 49 240              |
| 130  | 69 570              |
| 140  | 87 060              |
| 150  | 117 200             |
| 160  | 147 070             |
| 170  | 190 190             |
| 180  | 209 900             |

## Active Cube series

Our solution for Sugar Cane application speed control

### Additional benefits:

- Energy saving functions embedded into control algorithm
- Highest power density in the market



| Size        | Power kW (Rated voltage 400V) |
|-------------|-------------------------------|
| ACU401-51   | 160                           |
| ACU401-53   | 200                           |
| ACU401-55   | 250                           |
| ACU401-57   | 315                           |
| ACU401-59   | 355                           |
| ACU401-61   | 400                           |
| 2xACU401-61 | 800                           |
| 3xACU401-61 | 1 200                         |

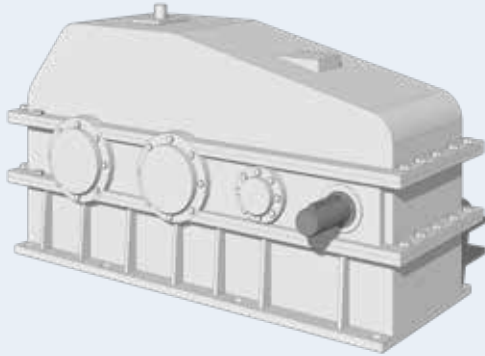


**SPECIAL COOLING UNIT ON BOARD**



Bonfiglioli inverters are produced at the Bonfiglioli Vectron centre of excellence, located in Krefeld, Germany.

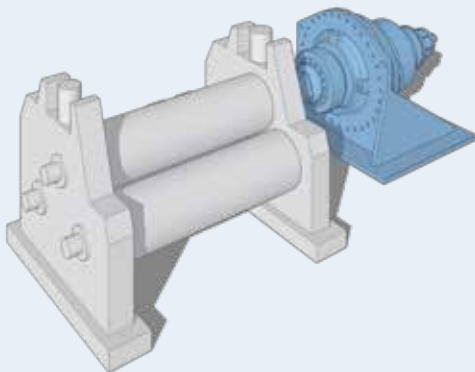
## ROLLING MILLS CURRENT OPERATING SOLUTION



- A big single parallel shaft gearbox
- Wide footprint
- Significant maintenance activities required

## OUR SOLUTIONS

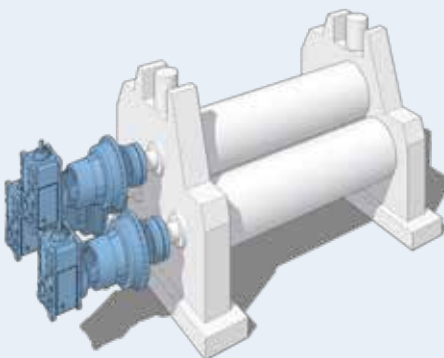
**Solution A:** Single drive system with planetary gearbox and inverter speed control



### Advantages over conventional solutions:

- Reduced footprint
- Reduced maintenance
- Low installation costs
- From 12% to 15% greater efficiency
- Reduced plant downtimes
- Variable speed control by inverters up to 1200 kW (parallel inverter connections)

**Solution B:** Multi-drive system with planetary or combined planetary/bevel gearboxes and inverter speed and synchronisation control



### Advantages over conventional solutions:

- Zero footprint
- Reduced maintenance
- Dramatically low installation costs
- Not more external transmission through open gears for rollers connection
- From 20% to 22% greater efficiency
- Modular design based on standard components that guarantee:
  - Dramatically reduced plant downtimes
  - Reduced spare parts stock
  - Greater autonomy in replacement of the transmission components
- Variable speed control by inverters up to 400 kW (single inverter)
- Individual roller mills speed control and synchronisation with other rollers for an improved milling action.



# ROLLING MILLS AVERAGE OPERATING EFFICIENCY

Gear boxes average efficiency comparison of the three operating systems

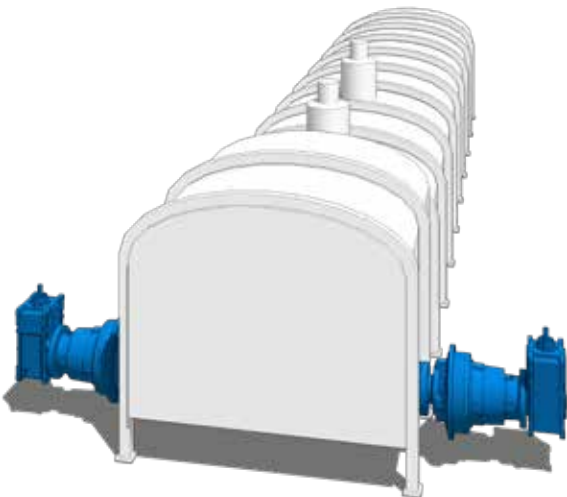
|                                        | Conventional Solution | Our Solution (A) | Our Solution (B) |
|----------------------------------------|-----------------------|------------------|------------------|
| 3-phase motor                          | 98%                   | 98%              | 98%              |
| Gearbox                                | 85%                   | 90%              | 90%              |
| Coupling                               | Rope type 95%         | Squared type 98% | Direct 0%        |
| Coupling                               | Squared type 98%      | Squared type 98% | Direct 0%        |
| Crown pinion                           | 90%                   | 90%              | 0                |
| Total efficiency with rope coupling    | 71%                   | 78%              | 88%              |
| Total efficiency with squared coupling | 73%                   | 78%              | 88%              |

Comparison based on installed power of 1000 kW.

- **Conventional Solution:** power actually available to the plant: **710 - 730 kW**
- **Solution A:** power actually available to the plant: **780 kW**
- **Solution B:** power actually available to the plant: **880 kW**

## DIFFUSER PLANT

**Solution:** Double motorised drive shaft with electronic control of torque distribution.



- Greater efficiency than in conventional systems with single, parallel shaft gearbox.
- Significantly smaller footprint and installation costs.
- Shorter repair times in the event of failure.
- Possibility of continuous cycle operation at reduced load using only one gearbox.
- Variable speed control by inverters up to 1200 kW (parallel inverter connections).

### 300M series

Planetary gearmotors

| Size  | Nominal torque [Nm] |
|-------|---------------------|
| 323   | 890 310             |
| 325   | 1 286 000           |
| 327   | 1 800 000           |
| 329   | 2 500 000           |
| 2x323 | 1 780 620           |
| 2x325 | 2 572 000           |
| 2x327 | 3 600 000           |
| 2x329 | 5 000 000           |



LIFTING SCREW DRIVES

## SUGAR CANE APPLICATIONS





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We have a relentless commitment to excellence, innovation & sustainability. Our team creates, distributes and services world-class power transmission & drive solutions to keep the world in motion.

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