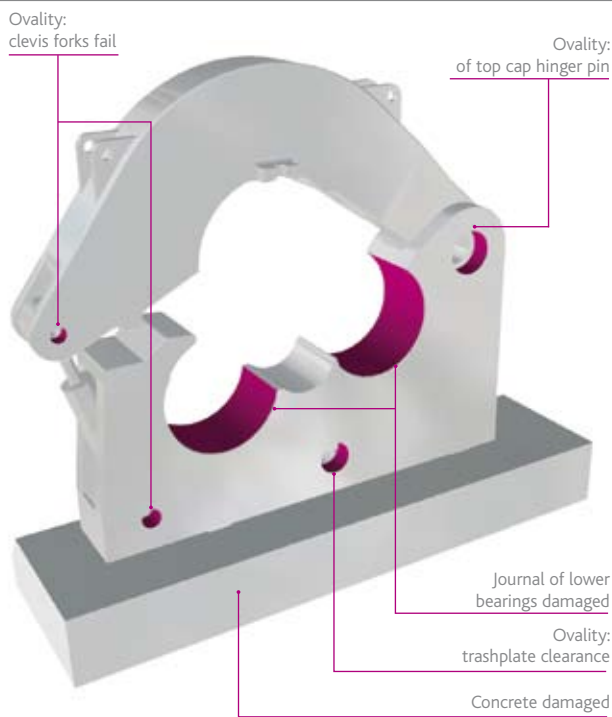


Mills refurbishment on site



■ Typical wear and corrosion of self settings mills

→ 7 weeks
to refurbish your mills*

*According to the number and type of (conventional or auto-setting) mills to be refurbished on completion of surveys and procurement

Secure / competitive services

- Use of tools designed by Fives Cail
- Use and training of your own staff by Fives Cail technicians
- Safe and timely on-site refurbishment

Restored reliability

- Enhanced life span of equipment: restoration of full mechanical potential for at least 20 more years
- Improvement of mechanical availability

Improved performances

- Improvement of mill efficiency and ease of operation
- Performance enhancement: capacity, extraction, bagasse moisture

Simplified maintenance

- Easier mounting / dismantling of bearings: 50 % of time saved
- No premature failure of components during campaign
- Use of stainless materials
- Long term sealing of the hydraulic jacks

After 20 years of service, several factors such as operating wear and tear and corrosion begin to affect the mill tandem.

Fives Cail has developed an on-site refurbishment process which restores the performance and reliability of the mills, whether self-setting or conventional, by returning them to an "as new" condition.

With more than 20 self-setting mill refurbishments since 2000, the spares and services department of Fives Cail has acquired a worldwide reputation in terms of service quality and of results.



Mill being refurbished, resurfacing by automatic welding of a headstock

Refurbishment of single mill or complete mill tandem



Procedure in 6 steps from self setting mills

1 Prior technical survey and report

- Preferably performed while mill is in operation

2 Preparation

- Mill dismantling
- Preparation of base
- Headstock preparation, dimensional and non destructive testing (magnetic-particle inspection, ultrasonic)
- Pre-machining

3 Resurfacing by automatic welding

4 Finish machining to original dimensions

5 Installation

- Headstock installation and alignment
- Concrete repairs with grouting

6 Mill re-assembly and adjustment



Magnetic-particle inspection before pre-machining and welding



Finished machined bore

Recent customer service at a glance*

Kenana Sugar Company	Sudan	14 mills 1,070 x 2,300
Somdiaa - Sosucam	Cameroon	1 mill 810 x 1,500 (M'Bandjock) 2 mills 970 x 2,100 (N'Koteng)
CSS Richard Toll	Senegal	1 mill 1,070 x 2,134
Somdiaa – CST Banda	Chad	2 mills 760 x 1,530
Ingenio Azucarero Guabirá	Bolivia	3 mills 1,070 x 2,300
Kwilu N'Gongo	Democratic Republic of the Congo	5 mills 810 x 1,700 2 conventional mills

*Non exhaustive list

Innovative designs

- Bronze self aligning spherical bearings
- Improved sealing of the hydraulic jacks
- Enhancement of the self aligning bearing design
- New foundations belt design with full contact between headstock and foundation
- Fixed flange and juice dam

On-site refurbishment: restore original reliability and performance with confidence

Refurbishment

- 🔧🔧 Renovation durability
- 👷👷 Operation performed by the mill personnel, trained in the use of the Fives Cail unique tooling

Maintenance

- 🕒 Preventive, simplified
- 🕒 Curative: no risk of breakage or stoppage during campaign
- 🧼🧼 Use of stainless materials
- 💰 Reduction of operating costs

Result

- 🕒🕒 No premature wear and tear of parts, and enhanced life span
- 🕒🕒 Maximum operation time of mill
- 👉👉 Reduction of sugar losses and/or increase of capacity
- 🕒👉 Easy operation without disturbance of boiler operations

🕒 Low operating cost
🕒 Ease of use

🧼 Cleanliness / Hygiene
👉 Yield / Productivity

👷 Safety