

Case Study: Strategic Automation of Multi-Format Packing Lines

Client: Eendag Meule (Pty) Ltd

Location: Bothaville, Free State, RSA

Project Dates: March 2020 (Design & Manufacture) – Palletizing Line March 2021 (Commissioning) – Autoloaders (November 2021: Line 3, March 2022: Line 2 & June 2022: Line 4)

Industry: Industrial Maize Milling & Extrusion

1. Project Context & Baseline

Eendag Meule is a high-capacity milling facility processing 500,000 tons of maize per annum. Prior to this intervention, the facility operated a combination of two semi-automated lines and four manual packing lines. Despite high efficiency in milling, the end-of-line palletizing remained a critical bottleneck, vulnerable to external labour disruptions and manual handling limitations.

2. Technical Challenge (The Strategic Risk)

- **Capacity Goal:** Doubling milling capacity necessitated a consistent, year-round palletizing rate of up to 90 tons per hour.
- **Operational Risk:** The volatility of regional labour strikes posed a risk of total plant shutdown during peak demand.
- **Vendor Requirements:** The client required a single-point-of-contact (Turnkey) for accountability across the entire packing floor, from bag-placing to wrapped pallets.
- **Technical Constraint:** Existing "Eurocentric" machines were dismissed due to the difficulty of sourcing specialized overseas technicians and parts during the global lockdown, alongside a requirement to handle a diverse range of 5kg to 80kg bags on a single platform.

3. The Mechaneer Solution (Design & Implementation)

Building on a successful 2018 palletizer installation, Mechaneer leveraged the 2020 lockdown to develop a proprietary, "Non-Eurocentric" Automatic Bag Placer.

- **Design Criteria:** The system was engineered to be "analogue-first," utilizing robust components that can be serviced by local site technicians without proprietary diagnostic software or imported expertise
- **Universal Handlers:** A unique mechanical embodiment was developed to handle the full range of product weights (5kg to 80kg) within one machine footprint.
- **Implementation:** The final turnkey installation integrated three fully automated bag placing machines and four automated palletizing lines, successfully maximizing utilization of the existing floor space without requiring structural expansion.

4. Operational Results & Archive Data

- **Production Buffer:** The transition from high-volume manual storage to direct-to-truck palletizing significantly reduced onsite inventory overhead.
- **Uptime:** The #2 model installations (since evolved to #4 CNC standards) have maintained 24/7 operation for 4+ years with Minimal training requirements for floor staff.
- **Resilience:** The facility successfully remained operational through subsequent labour strikes, validating the strategic move to automation.

5. Institutional Lessons Learned (For Internal Records)

- **The "Baseball vs. Cricket" Rule:** Reconfirming the necessity of pre-project audits for varying regulatory standards (e.g., Factory vs. Mining safety protocols).
- **The Serviceability Loop:** Phone-based technical support is only effective when the machine logic is simplified for the end-user. The success of this project confirms the value of the "Mechaneer'd" analogue-first design principle.

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