Grab Technology

Precision and Efficiency in Grain Handling: Solution for the Port of Bremen

Grain handling at the Port of Bremen presented high demands for precision, cleanliness, and operational safety. A long-standing METZEN partner regularly faced material losses, contamination on the quay, and rapid wear of handling equipment. This led to rising maintenance and cleaning costs, as well as increased risks for the port infrastructure – particularly for sensitive rail systems. Additionally, dust emissions had to be minimised while improving efficiency. METZEN developed a tailored solution: a specialised grab with innovative sealing technology.

Highlights

- **Maximum Sealing:** Novel combination of cutting edge and foam rubber seal for complete closure.
- **Highest Efficiency:** Reduces quay contamination and protects sensitive rail systems.
- **Durability:** Low-wear design with easily replaceable components.
- **Customised Solution:** Precisely engineered to meet the specific requirements of grain handling.
- **Cost Efficiency:** Lower maintenance costs compared with cleaning and repair expenses.

Challenge

When handling bulk materials such as grain, every detail matters: avoid losses, reduce dust emissions, and protect infrastructure – all as efficiently as possible. This project demonstrates how these requirements can be combined in a robust, low-maintenance solution.

- **Infrastructure Protection:** Prevents stress on the quay and rail systems from spilled material.
- **Durability:** Robust design resists wear in daily operations.
- **Cost-Effectiveness:** Reduces follow-up and maintenance costs.
- **Compatibility:** Seamless integration into existing handling processes.

Solution

METZEN developed a customised grab with innovative sealing technology. The key feature: a combination of a high-strength cutting edge and a U-profile with foam rubber seal. This design ensures complete closure with every lift, preventing both dirt and grain from escaping.

Technical Highlights:

- **Sealing Grab Design:** Precise interaction between cutting edge and foam seal.
- **Modular Construction:** Quick replacement of wear-prone components.
- **Maintenance-Friendly:** Minimal downtime thanks to easy seal replacement.
- **Robust Materials:** Long-term durability for heavy-duty use.

Result

The focus of this project was to develop a customised grab that ideally combines cost-effectiveness, operational safety, and sustainability. The solution impresses with well-thought-out engineering, significantly reduces operating costs, and meets the highest standards of environmental and equipment protection – for long-term efficiency and maximum customer satisfaction.

- **Cleanliness & Environmental Protection:** No bulk material loss; no contamination on quay or rails.
- **Cost Efficiency:** Significantly reduced maintenance and cleaning costs.
- **Operational Safety:** Protects infrastructure from mechanical and corrosive stress.
- **Durability:** Long component service life with minimal maintenance.
- **Customer Satisfaction:** A bespoke grab that is both economically efficient and sets sustainable standards.

Project Conclusion

With this solution, METZEN has made a significant contribution to the efficiency and environmental sustainability of grain handling at the Port of Bremen. The innovative grab combines technology and sustainability at the highest level – demonstrating that well-engineered handling technology is essential for the future-proofing of modern port logistics.