

# Silo cleaning without confined space entry – safe and efficient



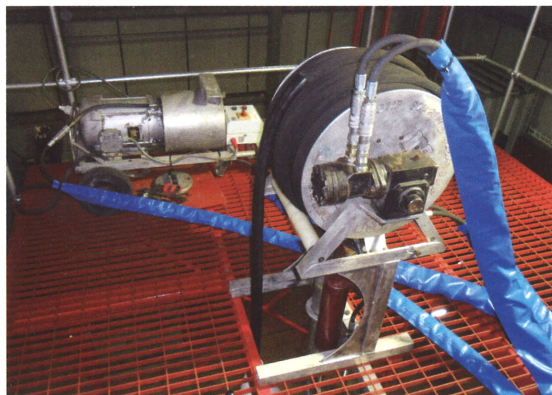
## Continuous extension of our services

The mobile silo cleaning service is a new addition to the BUCHEN-ICS portfolio. This is a highly-specialised service for cleaning hang-ups, blockages and bridging in bulk storage vessels without confined space entry.

## For strict safety standards – antistatic and spark-proof

All types of storage vessels, from coal, fertilisers, gypsum and cement to grain, animal feed, salt, and clay, any material stored in bulk storage vessels can eventually hang up on the walls and reduce capacity or create flow problems.

Power unit and BinWhip®-System, built up of a modular aluminium construction



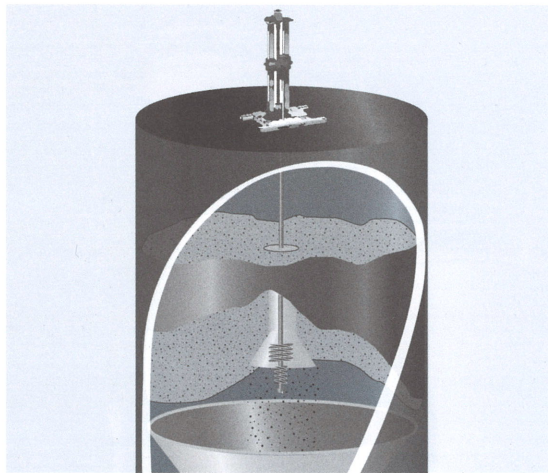
The cleaning equipment use antistatic, spark-proof flails, ATEX zone rated motor and meets the stringent safety standards and hygiene requirements in the chemical and food industries.

The modular design of the equipment means it can be quickly installed on the silo or vessel and adapted to individual vessel sizes. Personnel do not need to enter the vessel at any stage of the work.

# Mobile Silo Cleaning System

With the help of the BinDrill<sup>®</sup>, BinWhip<sup>®</sup> and Cardox<sup>®</sup> mobile cleaning systems, experts from BUCHEN-ICS can remove all types of hang-ups in silos up to 45 metres deep without having to enter the vessel, whilst also avoiding any contamination of the bulk goods.

Bridged material is drilled by the BinDrill<sup>®</sup>-System

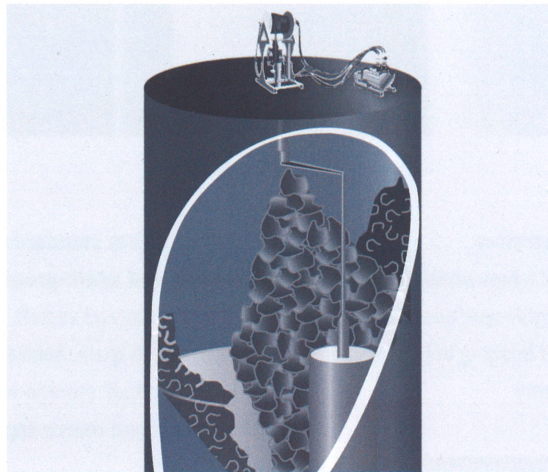


## BinDrill<sup>®</sup> – Bridge-Breaking System

When a silo is bridged leaving a void/cavity at the bottom of the silo, the BinDrill<sup>®</sup> is used to bore a hole through the bridged material.

Industrial hydraulic motors provide smooth power to rotation, powerful and equal drill and produce the necessary downforce. Various drill bits in graduated sizes assure getting through even the toughest materials. Once a flow channel has been created through the material, the BinWhip<sup>®</sup>-System is then used to carefully remove the remaining hung-up material from the vessel walls.

The BinWhip<sup>®</sup>-System removes smooth and efficient hang-up material in the storage vessel

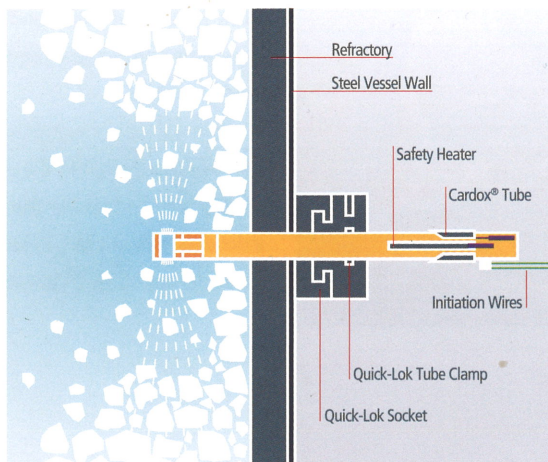


## BinWhip<sup>®</sup> – Bin Cleanout System

Hydraulic powered whips at multi-section high-strength telescoping booms remove smooth and efficient the hang up product in the vessel. The power unit which is placed on top of the silo provides the exact positioning of the cleaning head in the bin.

Depending on material to be cleaned, UHMW knuckle whips, non-sparking bronze chain, or specially configured steel chains are available.

The Cardox<sup>®</sup>-System removes tons of material within seconds



## Cardox<sup>®</sup> – Blockage Clearing System

The Cardox<sup>®</sup>-System breaks clogged material in bulk vessels into smaller particle sizes by means of a rapid release of liquid CO<sub>2</sub>. High-strength reusable steel tubes are filled with liquid carbon dioxide (CO<sub>2</sub>) that is energized with a small electrical charge. The expanding CO<sub>2</sub> is released through a discharge nozzle, creating a powerful pushing force reaching pressures up to 3,000 bar. Tons of blockages can be dislodged by a single blast in seconds.

If there is a permanent installation of the Cardox<sup>®</sup> tubes outside the bin, undesired or recurrent build-ups can be removed even during the ongoing production.