BUILD-UP & BLOCKAGE CLEARING SYSTEM
for silos, bins, hoppers, & most storage vessels
KEEP YOUR PRODUCT FREE & FLOWING...

THE CARDOX SYSTEM

Before: Plug is removed to reveal build up of product
Cardox tube is placed in the tube holder, inserted and then secured in the socket. The tube is then activated.
After: The tube is removed to reveal build-up has been cleared and product is aerated and once again free flowing.

EFFICIENT, EFFECTIVE & RELIABLE...

OVER 50 YEARS OF KEEPING PRODUCTS FREE & FLOWING!

Cardox is widely recognised as the most efficient way and reliable means of clearing build ups and blockages...... whether grain, flour, maize, soya, salt, sugar, cement, gypsum, coal, fertilizer, catalyst, ores, powders etc. The powerful Cardox System provides the ultimate solution to clear even the most difficult of build ups.

WHY?

Each and every time you use a Cardox Tube you instantly release a cold heaving mass of CO2 that expands 600 times its original volume!..... At pressures which can be regulated from 1,200 bar (18,000 psi) to 3,000 bar (40,000 psi).

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Force Vector, Inc.
Tel: (708) 974-2586
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MAXIMISE YOUR PRODUCTION

In cement production, there are plenty of places in your processing lines that are prone to rings, chokes and build-ups. Why jeopardise your bottom line every time you have to shut down to clear the blockage? CARDOX is the fastest, safest and most efficient way to keep your production flowing... day, after day, after day.

FAST & EFFICIENT

Cardox can quickly remove blockages and build-ups and restore plant production to optimum levels... with no need to sit through an extended shut down while the equipment cools. Cardox can be used in ALL areas of the processing lines at operating temperatures.

Unlike airblasters where cement plants complain of ineffectiveness and report losses of efficiency of up to 75%, using Cardox there is NO loss in efficiency! Each time you use a Cardox Tube you are guaranteed maximum pressure to remove the build-up and with tubes having a working life of over 15 years, maximum efficiency is achieved over that period.

With a safe and powerful carbon dioxide blast, one quick Cardox Tube can remove tons of build up. Three or four Tubes and you're back up to running at full capacity, with little, or no down time, no added cost and no time to come back up to full temperature.

Before: Opening inspection

holes reveals build-up of cement.

During: Cardox Tube is inserted into the build-up through special sockets.

After: In seconds the Cardox Tube is activated and removed to reveal the kiln running at full production.

Soya build up viewed from above

View of soya build up from down inside silo just prior to activation of one Cardox Tube.

Cardox Tube is activated, releasing within a second a powerful heaving mass of cold CO2 that expands 600 times its original volume.

Cardox clears the build-up and aerates the product to produce a free flowing product.

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ACCESS

ACCESS TO BUILD-UP
Through sockets
Mounted onto silo wall

Before: 15m high build up on walls of grain silo

After: One Cardox Tube clears the build-up

A
The 'Sealing Plug' is removed from the 'Socket' and a hole made in the product. The Cardox Tube is inserted through the Socket into the product and activated.

B
Cardox Tube is removed and Sealing Plug replaced in Socket, returning the vessel to normal operation until the next time Cardox is needed.

ACCESS TO BUILD-UP
Through inspection hatches

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SAFE OPERATION

Cardox can be applied either through small Sockets mounted onto the vessel wall or through inspection hatches around the silo. Either way nobody need enter the vessel and Cardox Tubes can discharged away from the vessel area.

COST EFFECTIVE

Compared to other methods of aerating product and clearing build-up Cardox usually proves more cost effective in terms of:

Capital costs – Many of our customers report that Cardox has paid for itself after just a single application.

Hire costs – Extremely reasonable rates available!

Running or operational costs – There are no continuous running costs with Cardox, the System need only be used when build-up accumulates.

Maintenance costs – Virtually no maintenance costs!

AVAILABILITY

Cardox is available in the following options:

Purchase a complete Cardox System
Hire a Cardox System
Hire a Cardox Service Team to undertake the works
HOW IT WORKS...

Cardox consists of a high strength reusable steel tube filled with liquid carbon dioxide, a chemical heater and a rupture disc.

**Cardox Tube Cut-away**

When energised by the application of a small electrical charge, the chemical heater instantly converts the liquid carbon dioxide to a gas. This conversion expands the CO2 volume and builds up pressure inside the tube until it causes the rupture disc at the end of the tube to burst. This releases the CO2 - now 600 times the original volume - through a special discharge nozzle to create a powerful heaving force, at pressures up to 40,000psi (3,000bar). This all takes place in milliseconds.

Carbon dioxide gas is an inert gas that is commonly used in fire extinguishers, so it is safe to use without fear of generating secondary reaction with gases in the vessel/silo. In addition the quick release of the gas refrigerates the discharge, bringing it to a temperature low enough to avoid ignition of any air-gas mixtures inside the blocked vessel.

Simple, secure coupling devices are mounted on the equipment in areas of known build up, which allows you to set the Cardox Tube to a predetermined depth and discharge direction.