



# **HYCONTROL**

## **SILO PROTECTION SOLUTIONS**



## **SHIELD Lite Silo Protection System Product Presentation**



**PIC Engineering And Services** (002110838-X)

No. 72, Jalan Keluli AN7/AN,  
Pusat Perniagaan Bukit Raja, Seksyen 7 40000  
Shah Alam, Selangor D.E., Malaysia

Tel: +6019 338 8819 Fax: +603 3343 8819

Email: [sales@picengineering.com.my](mailto:sales@picengineering.com.my)

Website: [www.picengineering.com.my](http://www.picengineering.com.my)

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# APPLICATION OVERVIEW



Every year millions of tonnes of powdered product is delivered by road tanker and pneumatically transferred into silos using pressurised systems. During this process there are a number of problems which can occur causing over pressure with potentially fatal consequences.

The **SHIELDLite silo protection system** is designed to provide a failsafe system to control and test the safety devices fitted to silos to prevent the over-pressurisation and over-filling of the silo during this tanker delivery period.



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# PROTECT YOUR SILO FROM ALL THESE RISKS!



**SILO  
RUPTURE**



**BLOCKED  
PRV**



**FILTER  
BLOW-OFF**



**SILO  
OVERFILLING**



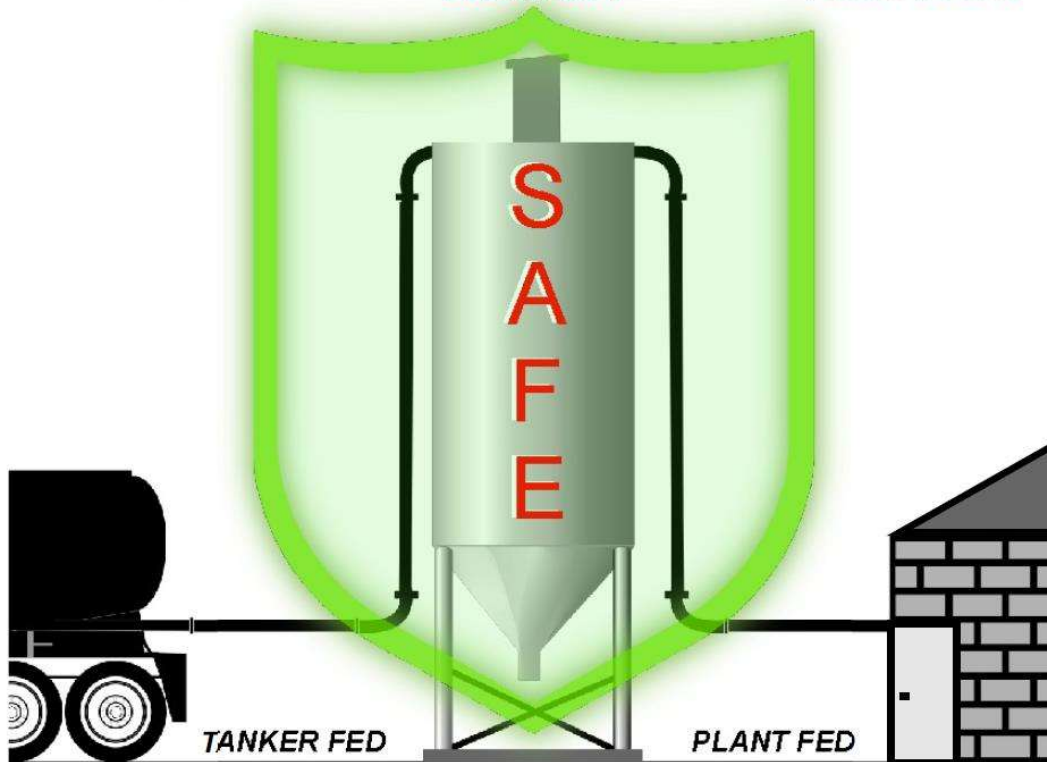
**BLOCKED  
FILTER**



**ENVIRONMENT  
ISSUES**



**DISCHARGE  
TOO HIGH**



**POOR  
MAINTENANCE**



**WORKING  
AT HEIGHT**

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# WORLDWIDE PROBLEM



**CASTLE CEMENT**

**Hanson**  
HEIDELBERGCEMENTGroup

**DS  
Smith**

**Oldcastle**

**SAINT-GOBAIN**



**EUROVIA**

**BREEDON**  
AGGREGATES

**SAICAPACK**

**TARMAC**  
A CRH COMPANY

**Marshalls**

**HITEX**  
Traffic Safety Materials

**MarleyEternit**

**Sika**

**CEMEX**

**AGGREGATE  
INDUSTRIES**

**EVER  
BUILD**

**Polypipe**

**LafargeHolcim**

**siniat**  
Shaping the way people build

**CPI**  
**EuroMix**

**Tamarfoods**  
Fresh from Cornwall

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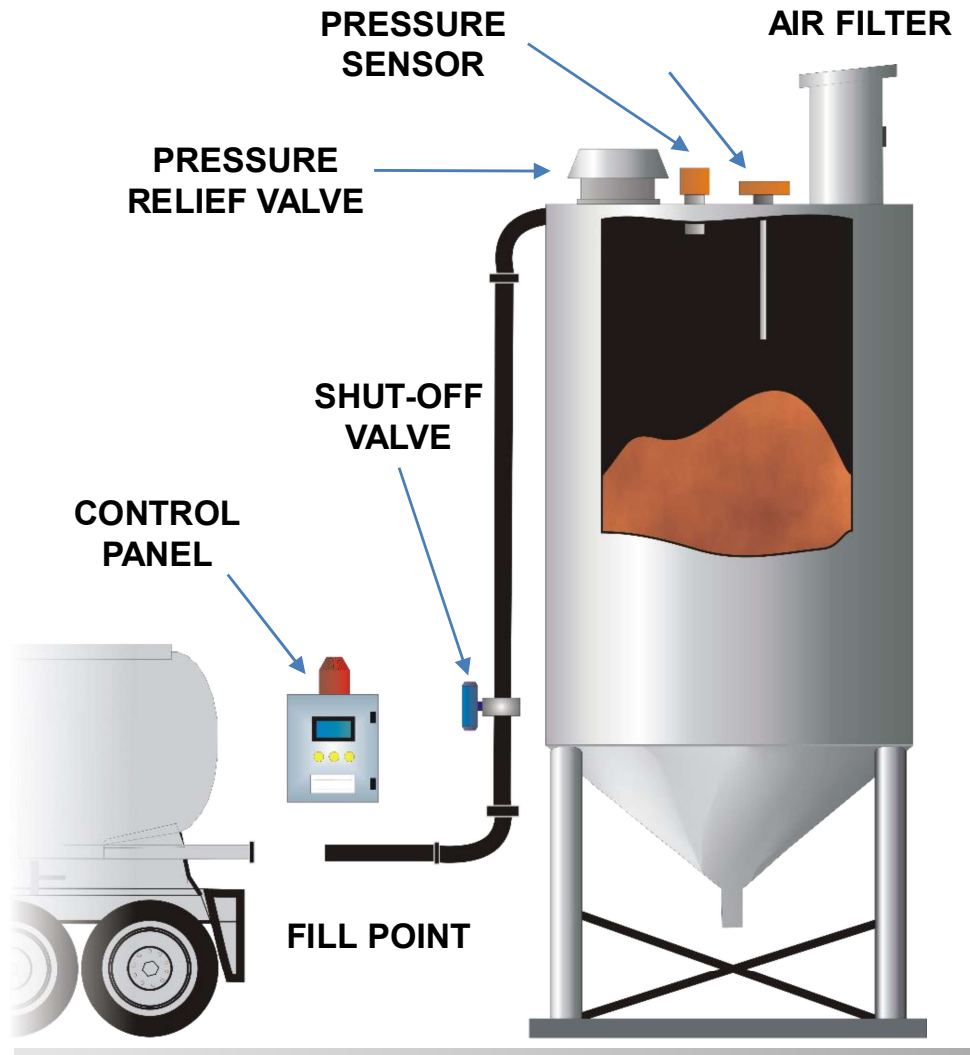


## Any tanker-delivered powder NON ATEX

- Lime
- Cement
- GGBS
- PFA
- Plastic
- Sand
- Silica
- Hydrated Lime
- OPC
- Anhydrate
- **# Plant fed systems  
contact Hycontrol**



# TYPICAL SPS SYSTEM CONFIGURATION



- Correctly-sized filter
- Accurate pressure sensor
- Correctly-sized PRV
- High-level probe
- Auto shut-off control panel
- Fill point shut-off valve

# SHIELD LITE SYSTEM CONFIGURATION



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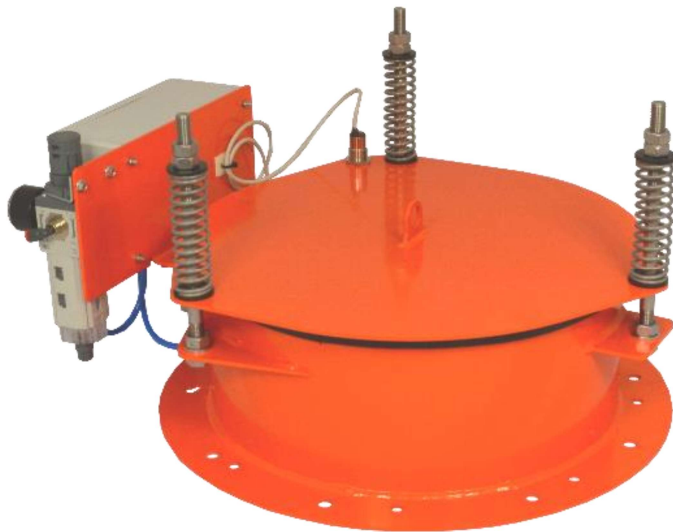
# SHIELD LITE IS A SIMPLE **ONE BOX** SOLUTION



Shield is a simple solution from the start

1. All the major parts are enclosed in one box
2. One manual for the complete system including level probes, pressure sensor, PRV, inlet valve and display panel.
3. One company to call if you require assistance
4. One company for all spares

# BASIC SYSTEM CONFIGURATION



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# MODULAR CONCEPT



**PANEL  
WEATHER COVER**



**CONTROL PANEL**



**3 x HAND KNOBS  
3 x RUBBER  
WASHERS**

**WEATHER COVER**

**PRV**

**GASKET**

**WELD-ON  
UPSTAND**

**WELD TO SILO- TOP**

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# SINGLE OR DUAL POD MOUNTING OPTION



Reduce Installation time  
Reduce modification of silo tops  
Simplify wiring  
Tidy silo top reduce clutter  
Eliminate trip hazards



STANDARD WELD  
ON RING



POD FITS  
INBETWEEN PRV  
AND RING



SINGLE OR  
DOUBLE LEVEL  
PROBE OPTIONS

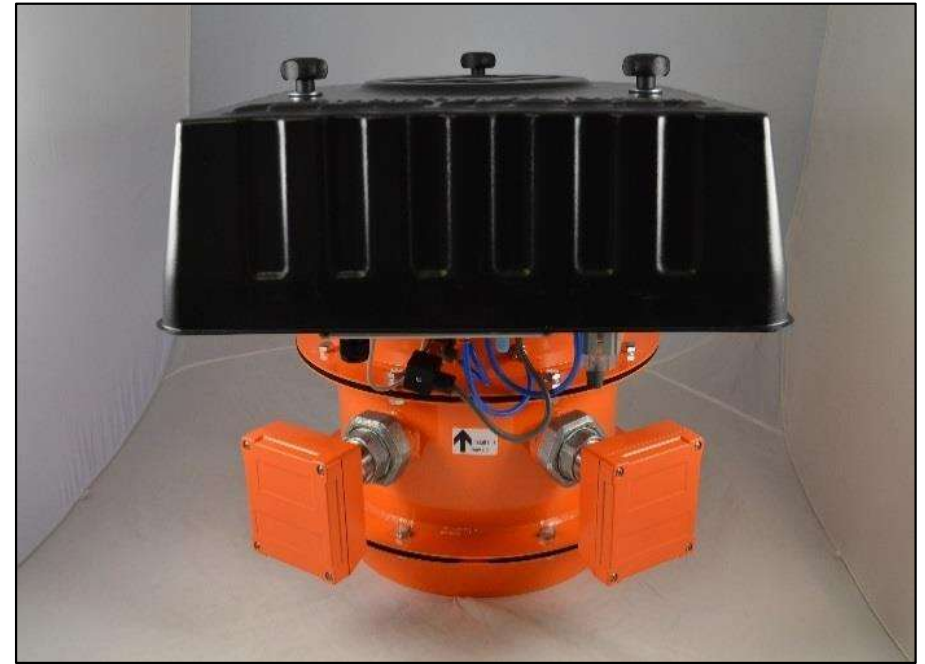


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Basic silo-top assembly



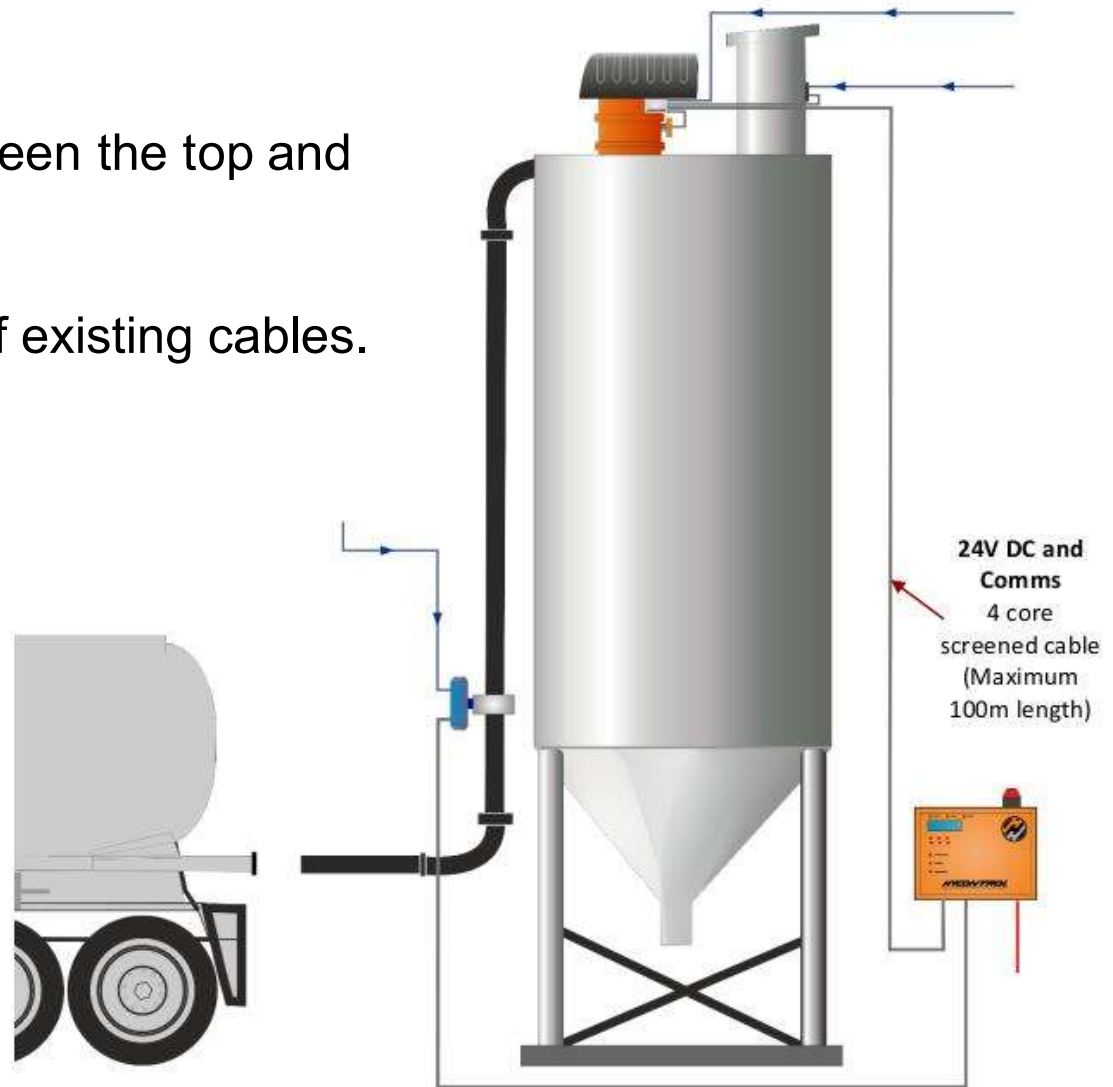
Assembly with mounting pod  
and extra HHLA

# SIMPLE RETROFIT USING EXISTING CABLING



Only 4 wires required between the top and bottom of the silo.

This may enable the use of existing cables.



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# GROUND LEVEL TESTING REDUCES RISK



## REDUCES:

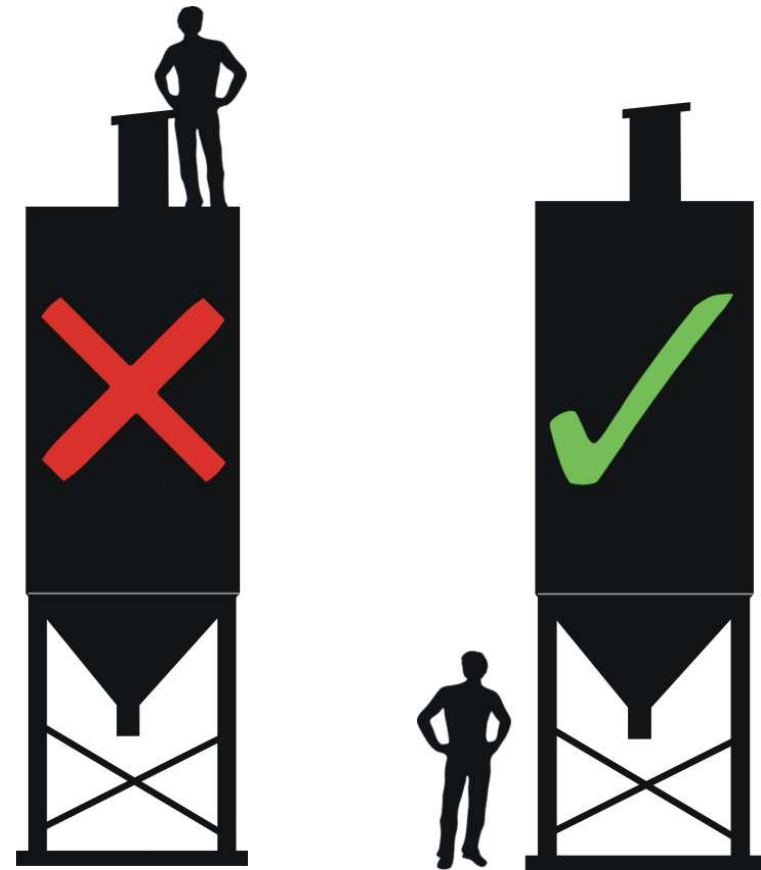
- Overspills
- Filter and silo damage
- Product loss
- Maintenance costs
- Working at height

## AVOIDS:

- Staff injuries
- Costly repairs
- Expensive clean-ups
- Dangerous situations

## PROVIDES:

- A safer working environment
- Peace of mind
- Lower cost of ownership

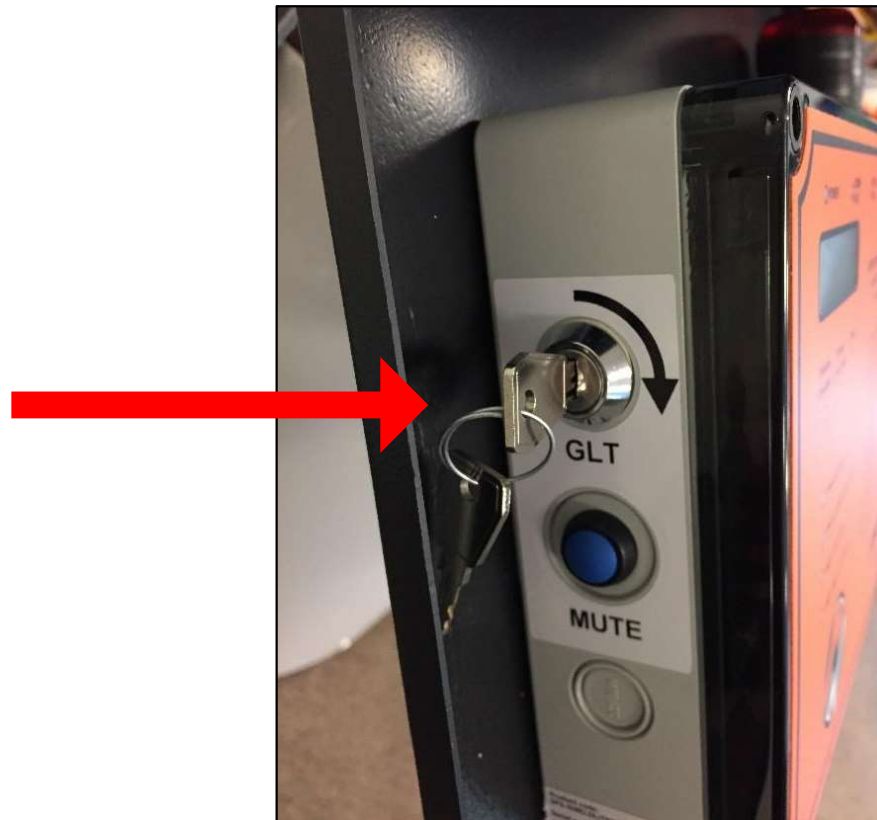


# PRINCIPLE OF OPERATION



The SHIELD Lite silo protection system is a safety system built on the principle of **Ground Level Testing (GLT)**.

GLT tests all the safety components on the silo at the turn of a key.



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**GROUND LEVEL TEST INITIATED  
INCLUDES THE FOLLOWING:-  
PRESSURE SENSOR  
PRESSURE RELIEF VALVE  
HIGH LEVEL PROBE  
INLET CONTROL VALVE**

**ALL TESTS PASS OK**

Signal OK and valve will  
open for a safe delivery  
to start

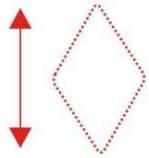
**ANY TESTS FAIL**

Display the problem and  
keep valve closed until  
resolved

# GLT ON HIGH LEVEL PROBE



Diamond design  
provides high strength  
for vertical loading



High sensitivity  
for fine powders

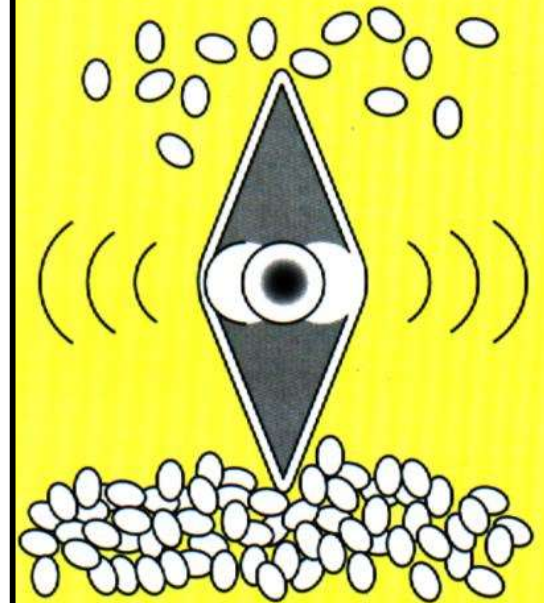


TYPICAL HIGH  
LEVEL PROBE

## SYSTEM POWERED ON:-

1. Vibration starts at nominal frequency.
2. GLT operated by key
3. Electronics stop the vibration of the probe
4. If probe is functional it will detect frequency shift and an alarm output is sent back to the control panel
5. If probe is faulty alarm is triggered

*Diamond profile prevents  
build-up of falling solids...*



*...while horizontal movement  
senses the rising surface.*



## GLT INITIATED

1. Main site compressed air for the filter is used to carry out the test



Air is required to operate a typical reverse jet filter which is the most common type of filter on cement / powder silos. Typically 5-6bar (72-87psi). Hycontrol Tee off this line to test on the pressure sensor.

2. If the air has failed to the filter it ***fails the test***
3. If the air to the filter is too low it ***fails the test***



If its blocked it ***fails the test***  
If its damaged it ***fails the test***  
If its broken it ***fails the test***

## GLT INITIATED

1. Air checked at the filters
2. Air is passed into the test chamber creating a back pressure and bleeds out through a sintered membrane.

This has three actions

- I. Cleans the front face
- II. Checks for damage or blocked filter from cement or powder.
- III. Test's the pressure sensor mechanically and electrically to ensure it is fully operational to a calibrated preset pressure.

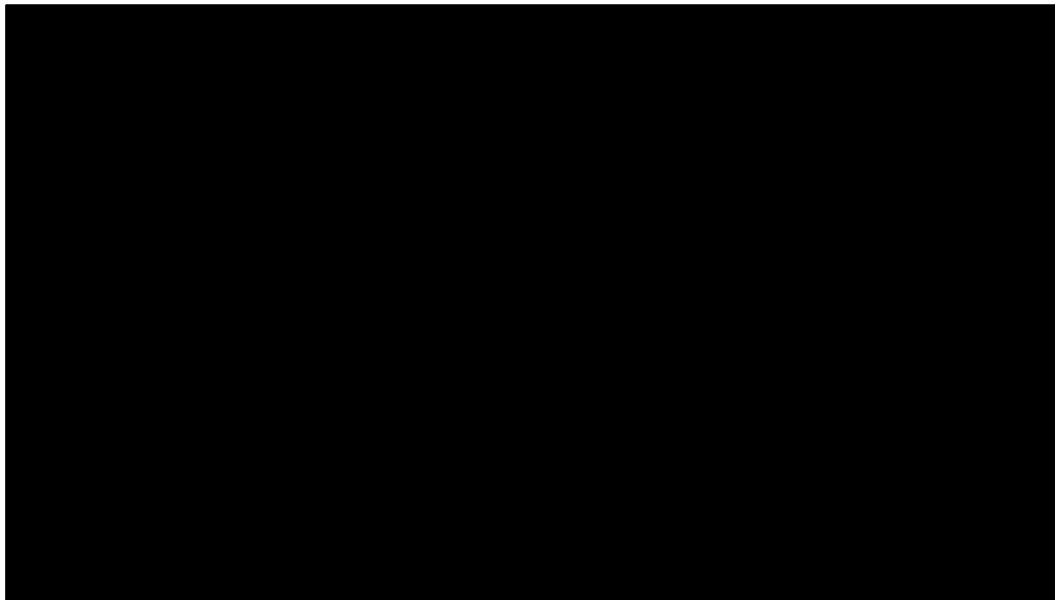


# GLT ON THE PRESSURE RELIEF VALVE



## GLT INITIATED

An internal ram is driven by the main air supply to lift the pressure plate. The proximity switch detects the lift and then detects when it is re-seated back down, ensuring it is not coil bound, blocked or restricted in any way. This ensures the pressure relief valve is ready to vent excess pressure if required.



# GLT ON THE INLET VALVE



## GLT INITIATED

1. After a successful GLT of the sensors, the valve will get a signal to open. The feedback box via microswitches, knows the valve position and whether the valve is open or closed.
2. If the air has been cut off from the valve (typical tanker driver override tactic!) it will not open and the system will alarm.
3. If the actuator fails the ***system will alarm***
4. If the valve sticks the ***system will alarm***
5. If somebody **tampers with the valve** before a delivery the ***system will alarm***



# CONTROL PANEL OPERATION



The GLT is for testing all of the sensors and safety devices



The MUTE is for muting the alarms and if you continue to hold down will scroll through the logs of data

IP65 weatherproof enclosure

Beacon and siren



Cable glands supplied Pre-installed

Instructions for operation clear on front cover

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# BASIC PANEL FUNCTIONALITY



1. A successful Ground level test (GLT) test opens the inlet fill point valve to allow filling for 90 minutes. After 90 mins the valve will close.
2. Auto shut-off valve will close during a fill operation if:
  - I. High pressure activated, this will close immediately and activate alarm and siren
  - II. High level activated, this will close the inlet valve after 30 seconds (time to stop the delivery safely and effectively) and activate alarm and siren.
  - III. PRV lift, this will close immediately and activate alarm and siren
3. Vacuum detection (not during a fill), opens the PRV and the inlet valve to relieve vacuum
4. Filter run hours alarm will require filter check and reset
5. Ratio alarm for high pressures against number of deliveries will shut the inlet valve and require reset at silo top (Needs to instigate a filter / driver check!)

# SIMPLE GLT OPERATION



1. TURN GLT KEY to test all sensors and safety devices



2. GLT will display test in progress and test all the level sensors



3. GLT will display test in progress and test the pressure sensor & PRV

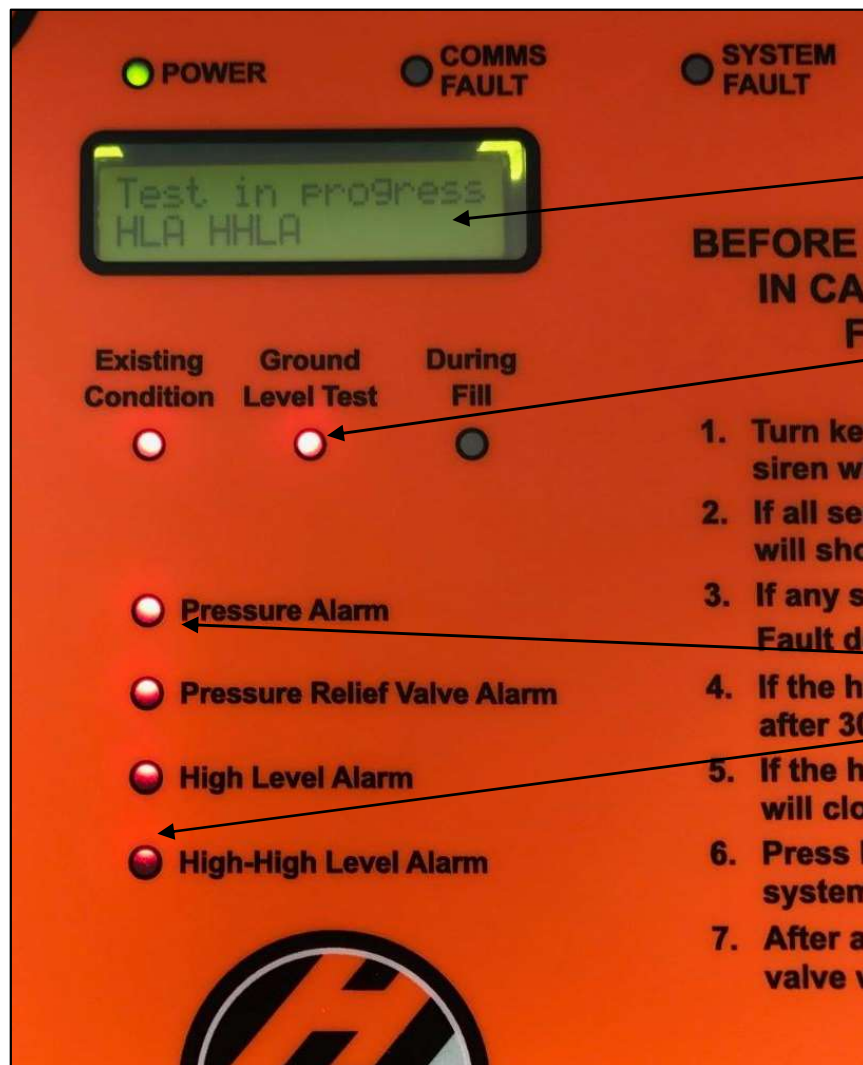


4. After a successful GLT (all sensors working) it will display SAFE TO FILL





# GLT TEST DISPLAY



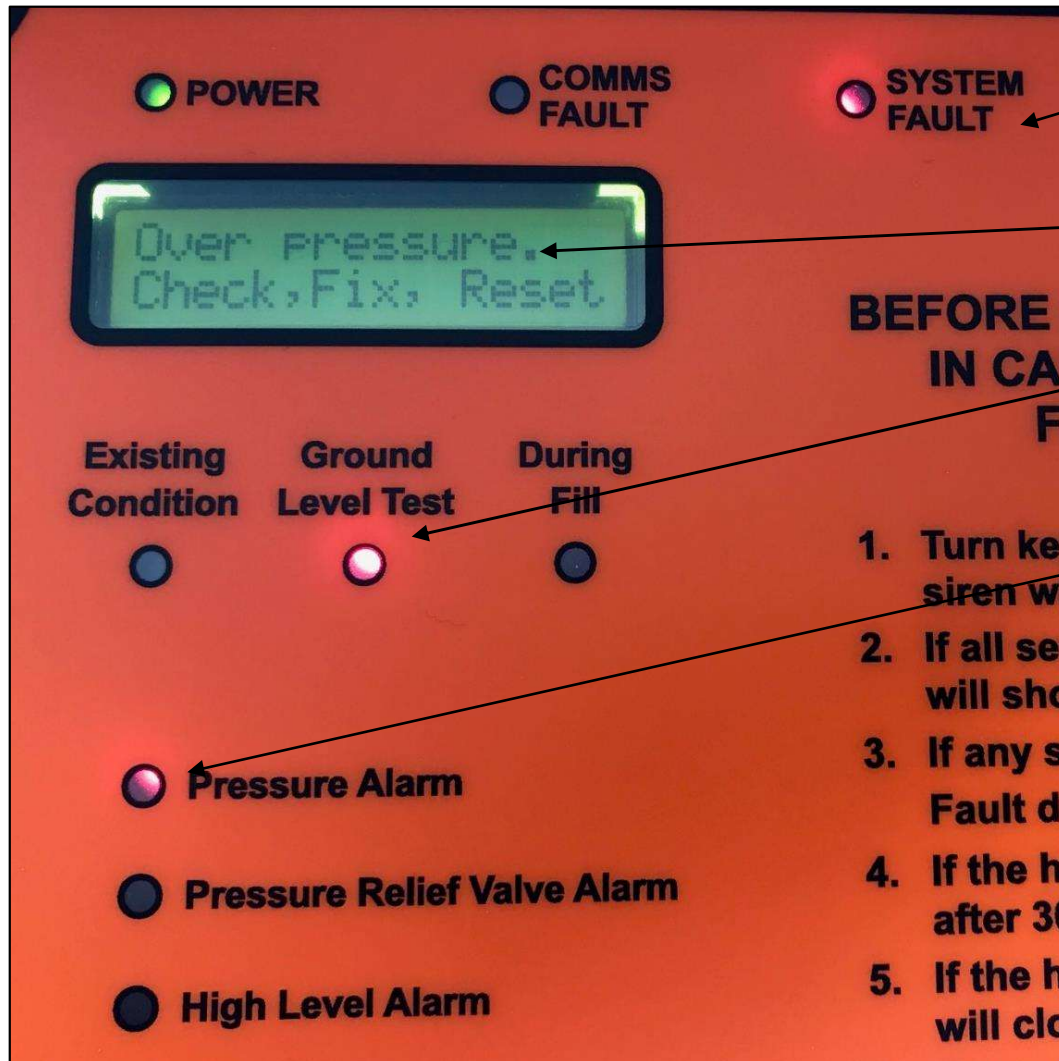
During GLT the display changes

The LED's for Existing condition and GLT will illuminate

During a GLT the respective LED's will change state as they are each tested.

1. Turn key siren wi
2. If all ser will sho
3. If any s Fault de
4. If the hi after 30
5. If the hi will clo
6. Press I system
7. After a valve v

# WHAT HAPPENS ON A FAILED GLT TEST



1. SYSTEM FAULT LED ON
2. The DISPLAY also indicates pressure problem check the sensor, fix it and then do a retest
3. GROUND LEVEL TEST LED ON showing it failed during a GLT
4. PRESSURE ALARM LED ON showing which sensor has failed (this test was a failed pressure sensor)

1. Turn key siren wi
2. If all ser will sho
3. If any s Fault d
4. If the hi after 30
5. If the h will clo



ALL SENSOR ACTIVATIONS ARE LOGGED AND TOTALISED FOR MAINTENANCE DIAGNOSTICS  
AND PREVENTIVE MAINTENANCE WARNINGS



To access the logs just hold the blue mute button for 6 seconds they will then start to scroll. If you release the button it will hold the last log until either you press again to move forward to the next log event or it times out with no activity after 30 seconds. It can also be reset by the GLT key.



Number of high  
pressure events

Totalised number  
of high pressure  
events

# WHAT DOES THE SYSTEM LOG



## **High pressure statistic – Contains 2 values**

- *Number of high pressure events since last counter reset – Resettable.*
- *Totalised count = Running total of high pressure events since installation – Cannot be reset.*

An increasing number of high pressure events week on week indicates that there is a serious problem which requires investigation. It suggests a serious safety risk resulting from either uncontrolled tanker discharge or poor filtration. These issues need to be investigated urgently.

## **PRV lift statistic – Contains 2 values**

- *Number of times the PRV has lifted since last counter reset – Resettable.*
- *Totalised count = Running total of PRV lift events since installation – Cannot be reset.*

PRV lifts are evidence of over pressurisation which indicates an over pressure rupture can happen when the PRV is used continuously and eventually gets coated in product.

## **HLA & HHLA statistic – Contains 2 values**

- *Number of high-high level events that have occurred since the last counter reset – Resettable.*
- *Totalised count = Running total of high-high level events since installation – Cannot be reset.*

## **GLT activations statistic**

- *Number of times a successful GLT has taken place – Cannot be reset*

This is an indication of silo usage.



# WHAT DOES THE SYSTEM LOG



## **Pressure O/Rs (overrides) statistic**

- *Number of times the GLT of the Pressure sensor has been overridden – Cannot be reset.*

A high number indicates that a sensor is repeatedly being overridden. This is extremely dangerous – the reason for overriding the sensor should be determined as a matter of urgency.

## **HLA & HHLA overrides statistic**

- *Number of times the GLT of the HHLA has been overridden in the controller - Cannot be reset.*

A high number indicates that sensor is repeatedly being overridden. This is dangerous – the reason for overriding the sensor should be determined and addressed.

## **PRV overrides statistic**

- *Number of times the GLT of the PRV has been overridden in the controller – Cannot be reset.*

A high number indicates that sensor is repeatedly being overridden. This is extremely dangerous – the reason for overriding the sensor should be determined and addressed as a matter of urgency.

## **Valve Faults statistic**

- *Valve faults ;Number of times the valve has been over ridden before a fill plus totalised counts*
- *Valve Err the number of times its failed during a fill. Plus totalised counts*

# WHAT DOES THE SYSTEM LOG



## **Filter on time statistic**

- *Number of hours the filter has been in use – Resettable.*

This value is used to record how long the filter has been in use and will generate a warning on the display when 2000 hours has been exceeded. This is to indicate that the average filter cartridge life span has expired and needs changing. Refer to filter manufacturer maintenance instructions

## **Vacuum count statistic**

- *Number of vacuum events – Cannot be reset*

Repeated vacuum counts shows serious filter blockage issue.

## **Low temp count statistic**

- *Number of times the PRV control box has detected a temperature lower than -15°C (5°F).*

## **Comms faults statistic**

- *Number of communication errors detected – Cannot be reset.*

A high number could indicate a communication problem between the display panel and the control box on the PRV. Check communications cable is not close to a very noisy mains cable, check cable specification make sure the cable is screened, correctly grounded and wired correctly.

## **Version-date-time**

- *Indicates the software version with date and time of creation.*

# KEY LOG INFORMATION FOR DIAGNOSTICS



## Ratio alarm statistic

- *Number of High Pressure events detected whilst performing the last 10 GLTs – Resettable.*

A high number of high pressure events detected in 10 GLTs indicates that there is a serious problem which requires investigation. It suggests a serious safety risk resulting from either uncontrolled tanker discharge or poor filtration. These issues need to be investigated urgently.



DRIVER OR FILTER  
ISSUE?



## Ratio alarm resets statistic

- *No of times the above ratio alarm counter has been reset – Cannot be reset.*

# SHIELD SPS – SYSTEM FEATURES



Precision-calibrated **Pressure Relief Valve** to vent pressure in the silo when it exceeds 50 mb (0.72psi). Finished in corrosion-resistant epoxy paint with integrated PRV lift point to allow essential maintenance tests. The PRV is fully Ground Level Test-enabled using a proximity switch to detect valve openings.

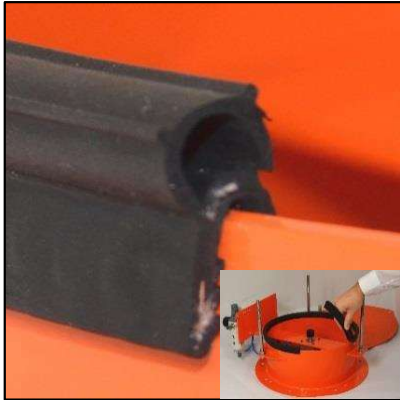
**Weather shield** made from durable, moulded polypropylene, the UV-stabilised weather shield cover protects the Pressure Relief Valve and electronics from the elements. The mild flexibility of the cover material means that any product ejected from the PRV should drop off the inside after it has dried, providing self-cleaning characteristics.



**The auxiliary outputs** provide the input feed back for the inlet control valve to confirm when open or closed or if anybody has been tampering with it to over ride.

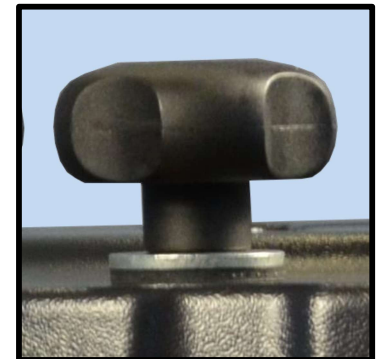


# SHIELD SPS – SYSTEM FEATURES



**VIPER seals** - twin seal air spring pocket eliminates air and product leakage and water ingress. Easy to remove and replace, saving both time and money.

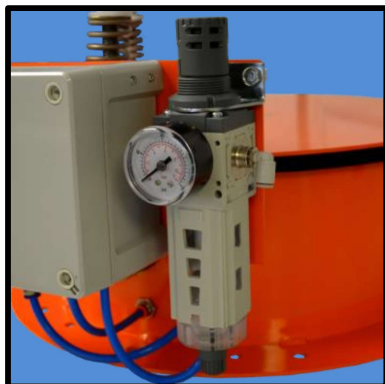
**Easy-grip, quick-release cover retainers** - no special tools required for lid removal, enabling easy inspection and cleaning on the silo-top.



**Local Pressure Relief Valve (PRV) inspection facility**  
A single button lifting mechanism to open the valve for cleaning and seal inspection on the silo-top. This prevents lifting a load equivalent to 50-55kgs to look at seals etc!

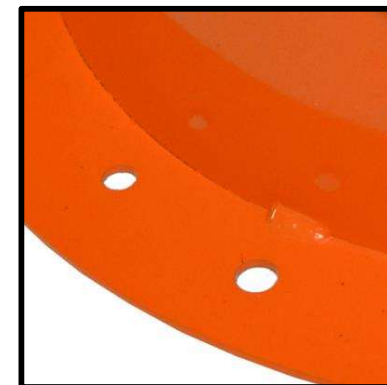
**HYCONTROL**

# SHIELD SPS – SYSTEM FEATURES



**High-specification pneumatic filter regulator** with semi auto-drain feature to reduce moisture being blown into the system. Provides accurate compressed air control and provides an indication of water in the filter airlines which cause premature filter blockage.

**Multi-point mounting holes** for easy retrofitting. Fits most popular process connections and will retrofit a WAM 375 PRV. Optional high level sensor upstand accessory unit will connect to this for new installations.



**Low-friction spring** guides reduce wear during testing and improve spring longevity. High specification springs calibrated to lift at 50-60mb to prevent premature lifts. Competitors units are set at 50mb +/-10mb so could activate at 40mb the same as the high pressure alarm!

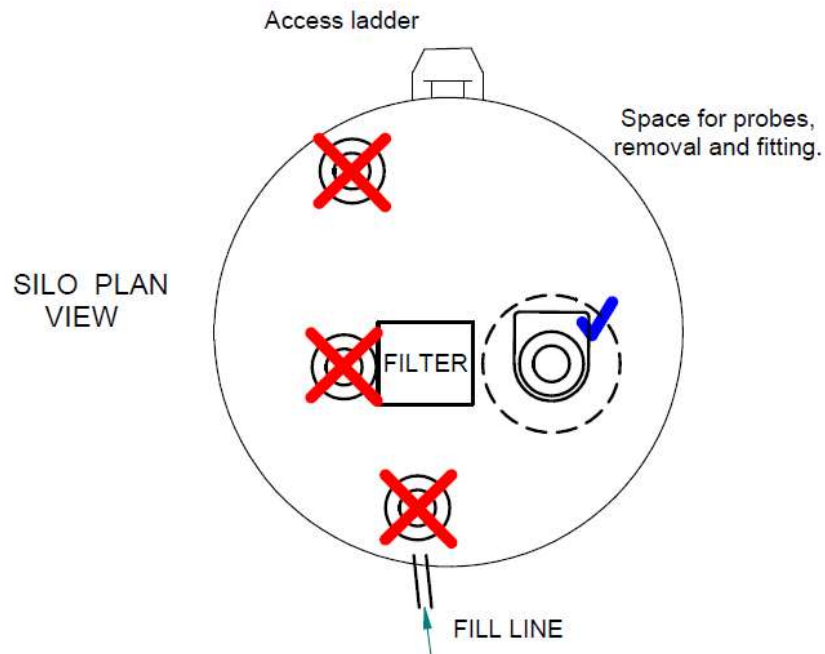
# COST SAVING UTILISING EXISTING LEVEL SENSORS



If site already has existing level sensors then these can be integrated into the Hycontrol system but please consider the following :

1. The power supply must be 24VDC or separately powered (which is likely if already existing) as their power cannot come from the Shield system.
2. The switch must have volt free changeover relay output so that shield can loop the internal 24vdc to detect when on or off.
3. There will be **no test facility and will require additional maintenance and testing procedures**

# MECHANICAL INSTALLATION CONSIDERATIONS



*When positioning the spigot allow for a 40" (1.0m) diameter footprint free of any obstructions for correct positioning, wiring and removal of covers.*







- **DO NOT** mount probes in the fill path of the material as this will cause premature wear and failure.
- Ensure there is sufficient space to remove and install probes for maintenance.
- **DO NOT** install in front of ladder access.
- We recommend removal of old PRVs to prevent false venting.
- Beware of internal fill pipes, ladders, split silos etc.
- The ideal mounting of probes is  $\frac{1}{3}$  x silo radius.

# SENSOR DISABLE OPTION

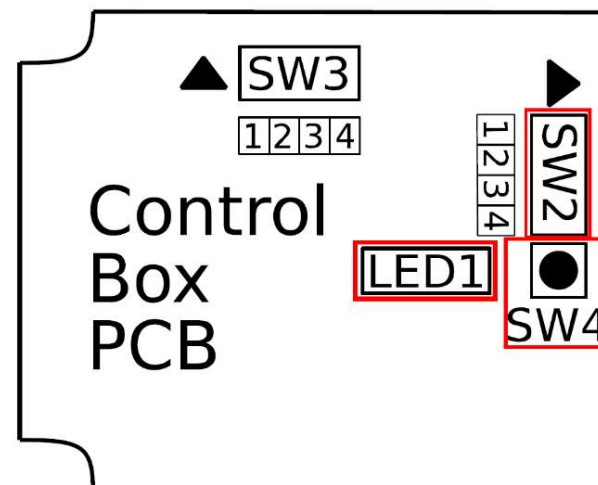


***Extreme caution should be taken while completing the delivery with a sensor disabled.***

Setting SW2 DIP switches allows you to bypass a faulty sensor to open the fill valve and start the silo filter to complete an urgent delivery. It should be used with care and only with the permission of qualified site personnel. Every effort should be made to identify and if possible repair or replace the faulty sensor. Without all sensors enabled, the safety system will not correctly operate to protect the silo.

Any disabled sensor will automatically be re-enabled after the fill has completed or a fill alarm has been detected and the fill valve closed

	SW2
Default Setting	▲
HHLA Sensor	▲
HLA Sensor	▲
PRV Lift test	▲
Pressure Sensor	▲

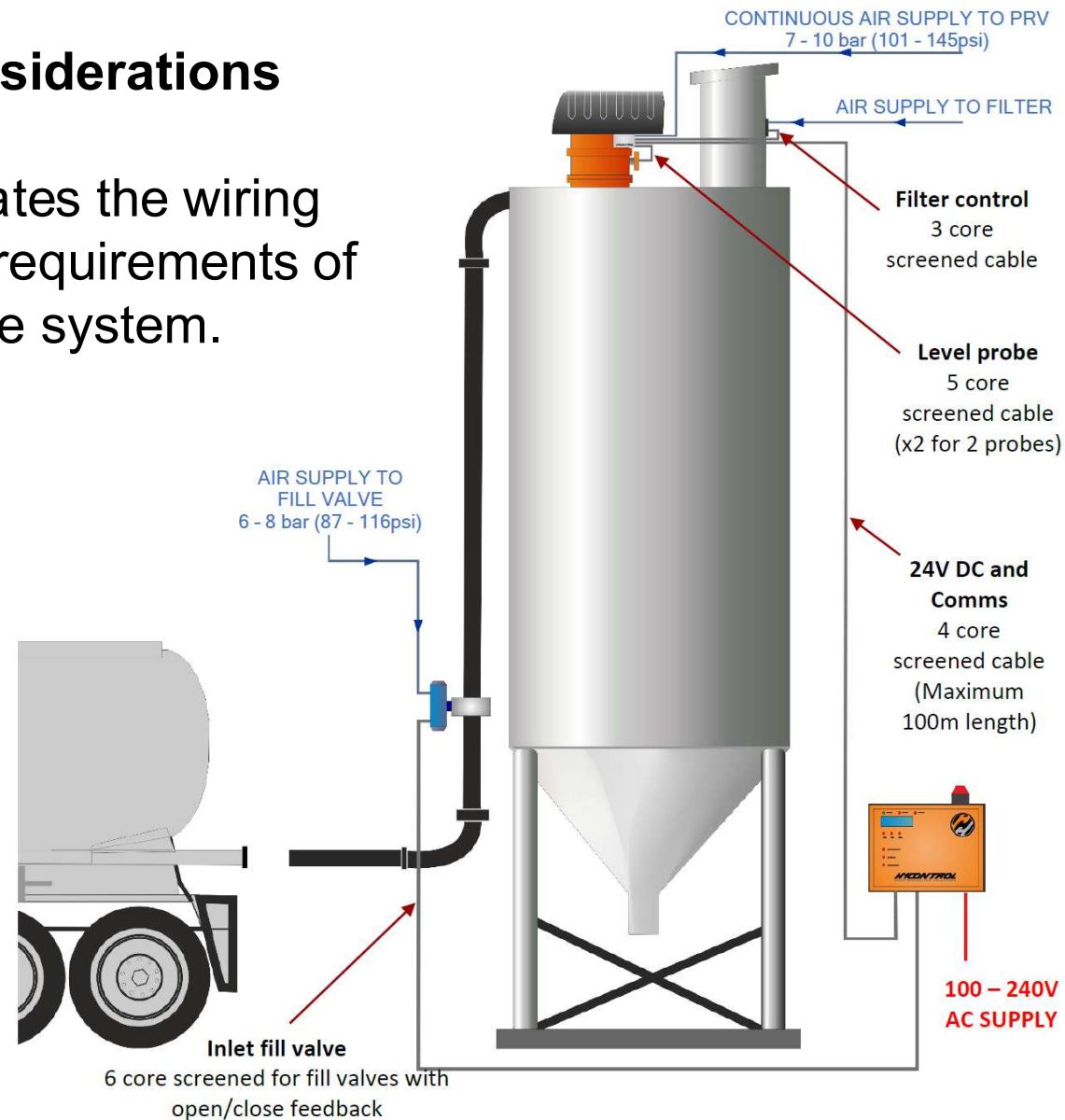


# INSTALLATION CONSIDERATIONS



## Electrical Considerations

This demonstrates the wiring and air supply requirements of the SHIELD Lite system.



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## **PRESSURE RELIEF VALVE**

- Clean thoroughly
- Visually check PRV operation by operating the local 'Inspection Lift' button to check open and close action.
- Visually check seals and outlets for residue build-up and leakage, if any evidence of leakage and damaged seals then carry out a 12-month check.
- Replace any items damaged.
- Test that lift pressure is in the acceptable range 50 to 60mB (0.73 to 0.87psi) using calibrated portable test unit.
- Check the proximity switch mounting height is between 0 - 4mm (0" - 5/32") when the valve is closed.

## **PRESSURE SENSOR**

- Check the pressure sensor for any build-up, remove and clean.

# SERVICE RECOMMENDATIONS FOR 12 MONTHS



## **PRESSURE RELIEF VALVE**

### **Every 12 months (in addition to every 6 months check):**

- Disassemble PRV, reassemble with replacement gasket(s) and thoroughly clean all items
- Replace any items damaged.
- Test lift pressure using Hycontrol calibrated portable test unit.

### **Every two years (In addition to the above):**

- Replace the seals, springs and spring carriers, reset the spring compression settings, and test.
- Test lift pressure using Hycontrol calibrated portable test unit.

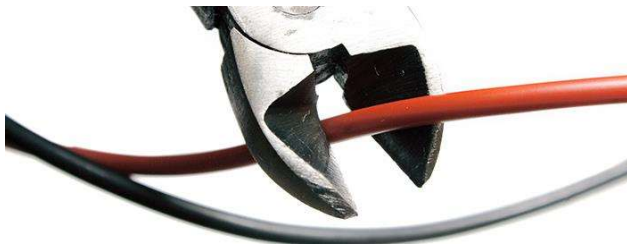
# SEE MANUAL FOR DETAILED EXPLANATIONS



# BEST PRACTICE ADVISES FAILSAFE



WHERE SAFETY EQUIPMENT IS TO BE INSTALLED  
IT IS CONSIDERED STANDARD PRACTICE TO IMPLEMENT A  
FAILSAFE DESIGN.  
**A PRODUCT THAT FAILS IN A CONTROLLED MANNER OR  
FAILS SAFELY!**



**ALL HYCONTROL SHIELD COMPONENTS INCLUDING  
THE CONTROL PANELS, PRESSURE SENSOR, LEVEL  
PROBE, PRV AND INLET VALVE ARE FAILSAFE**

**HYCONTROL**



Hycontrol has a number of white papers, editorials etc.  
Marketing support contact: **Mark Stevenson – mstevenson@hycontrol.com**

**GLOBAL CEMENT: SILOS**

Mark Stevenson, Hycontrol Ltd

## Avoiding over-pressurisation risks in silos

Silo protection systems are essential to avoiding the dangers of silo over-pressurisation.

**Below - Figure 1:** There are three possible states a silo may be in when being pneumatically filled.

a) Balanced.  
b) Elevated pressure due to blockage.  
c) Elevated pressure due to excess air entering.

**1. Balanced:** The airflow into the silo is the same as that leaving (Figure 1a);

**2. Elevated pressure due to limited air flow through the filter:** This may be due to inadequate maintenance of safety equipment, or by filter blinding due to over-filling. An increase in air pressure above 1psi inside a silo can cause severe damage. Risks include rupturing the silo or blowing the filter off the silo roof (Figure 1b);

**3. Elevated pressure due to excessive air entering the silo:** This is the most dangerous scenario and even a new filter will not cope. This most commonly happens at the end of a delivery when the silo is nearly full and there is limited ullage within the vessel. Recent evidence suggests that this problem is far more common than previously thought (Figure 1c).

**Tell-tale signs**  
Common silo over-pressure indicators include: Powder in and around the pressure relief valve; Blocked air filters; Dust emission upon filling; damage to safety equipment and, in extreme cases, buckling of the silo. Investigations must be carried out for any of these symptoms, as they are a warning that there is a fault in the silo system. Over-pressurisation poses three main risks:

**Silo failure:** It may take only a small pressure increase to buckle and weaken the silo and cause it to rupture, or even blow the filter unit off the roof. A 100kg filter unit falling from the silo-top onto personnel could cause serious injury or death;

**Dust pollution:** Over-pressurisation often leads to the ejection of cement to the air. Such blow-outs are a common sight, indicative of pressure problems;

**Working at heights:** All silos fed from a road tanker should have safety equipment at the top, making working at height a significant concern. If this equipment can only be tested *in situ*, this means that silos must be climbed before every delivery to perform a functionality test. Even with correct safety equipment, working at height is very dangerous.

**What about overfilling?**  
There is a common misconception that silos are at the highest risk from overfilling. While this can be problematic, the risks of over-pressurisation are much higher. However, overfilling requires consideration because it contributes to filter blinding, increasing the likelihood of pressure becoming trapped in the vessel.

**Preventing over-pressurisation**  
The complex nature of this application, coupled with the speed at which pressure levels can change, dictate that it is unsafe for a human to control the silo's pressurisation. A silo protection system (SPS) is necessary. These comprise:

**Pressure sensor:** The most critical component, the pressure sensor should be mounted at the top of the silo. It is designed to actuate, and give a signal to close the inlet valve immediately upon reaching the maximum safe internal pressure. The signal should also trigger an alarm to alert site staff. The sensor should be calibrated so that the pressure alarm is triggered before the pressure release valve opens. With the fill valve closed, the driver should also stop the tanker discharge. When the pressure has reduced, the fill can resume in a controlled manner.

**High-level sensor:** This detects the maximum safe level and instructs the operator to cease filling. It protects the silo against overfilling and filter blinding, which will lead to over-pressurisation. Positioning must take into account the filling of the silo and the location of the fill pipe, to avoid damage from powder as it is propelled into the container.

**Figure 1: Silo states during pneumatic filling**

**ENGINEER**

## Silo protection made easy

**UPGRADED SYSTEM IS THE NEXT STEP IN SILO PRESSURE SAFETY**

Redditch, UK: Two years after introducing the ground-breaking SHIELD silo protection system, silo pressure safety experts Hycontrol Ltd are proud to announce the launch of the SHIELD Lite SPS, which protects powder storage silos from the dangers caused by excessive pressure during tanker deliveries. Utilizing purpose-designed, state-of-the-art pressure monitoring and control equipment, SHIELD Lite meets and exceeds best engineering practice and current guidance from the Mineral Products Association (The UK's trade association for the aggregates, asphalt, cement, concrete, dimension stone, lime, mortar and silica sand industries). The new, compact panel is designed for simple operation and to be easily understood, giving users a range of new monitoring and diagnostic tools and indicating when the system is suffering from blocked filtration or is being endangered by poor delivery driver behaviour.

Powder storage silos are commonplace in many industries but are at risk of over-pressurisation during tanker deliveries. The root causes of this are invariably either driver error resulting in uncontrolled air pressure being discharged during the fill procedure, or a failure of the filter venting unit. Pressures from as little as 1 or 2 psi are enough to rupture a silo or blow its filter unit off the top. This poses serious risks, which is why a comprehensive, fail-safe safety and control system is vital.

SHIELD Lite incorporates essential high-accuracy pressure safety components into a modular design that can be adjusted to suit site requirements. Maintenance is simplified and the long-term cost of ownership is significantly lower than any other system on the market. Along with many new features, SHIELD Lite incorporates Hycontrol's pioneering Ground Level Testing, in which a single key-turn enacts a full-function test of all the crucial safety components, dramatically reducing the need for working at height. Importantly the system is also completely fail-safe, a vital feature that's often overlooked.

"Building on the success of the first SHIELD system has allowed us to develop new tools for site personnel to improve safety," said Hycontrol Managing Director, Nigel Allen. "We have insisted for many years that simplicity is the key to safety, and now with developments like ratio alarms, filter blockage warnings and tanker driver delivery behaviour diagnostics, we can effectively remove the risk of human error completely. Hycontrol has led the silo protection field for more than a decade through both innovation and product performance. The purpose of developing SHIELD Lite is to make sure that every single pressurized powder delivery into every single silo is completely safe. We anticipate that customers in the ready-mix and concrete sectors will be impressed by both what this new system can do and the price we are able to offer it at."

He adds: "We are determined that safety for staff, contractors and drivers should be the number one priority across all industries. With SHIELD Lite, Hycontrol is showing that true, fail-safe silo safety is not only achievable, but with the right equipment it's easy too. We understand that human errors in maintenance and testing are inevitable. Our philosophy is to accept this, and to provide a system that monitors and safely alerts you when these errors occur. As we say – safe silos are tested every time."

**ABOUT HYCONTROL**  
Hycontrol has been at the forefront of level control and silo protection technology for over thirty-five years. Hycontrol is acknowledged as a global knowledge leader in silo pressure safety. The company creates systems that it believes are safer by design, in order to reduce risk, create a safer working environment and provide the best-engineered solution – without compromise.

**SHIELD Lite unit and panel.**

www.hycontrolmag.com

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**HYCONTROL**  
SILO PROTECTION SOLUTIONS

CONTACT: 01527 406800  
sales@hycontrol.com

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Is Your Silo in DANGER? Hycontrol SHIELD Lite Silo Protection Sy...

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**HYCONTROL**  
SILO SAFETY TRAINING  
**mpqc**


**CERTIFIED SILO PRESSURE SAFETY TRAINING**

MPQC-approved training from Hycontrol helps site staff, managers, drivers and other key stakeholders grasp the dangers and causes of silo over-pressurisation, and take practical steps to avoid them. **\*NEW DATES FOR 2021\***



ONLINE SYSTEM DEMONSTRATIONS

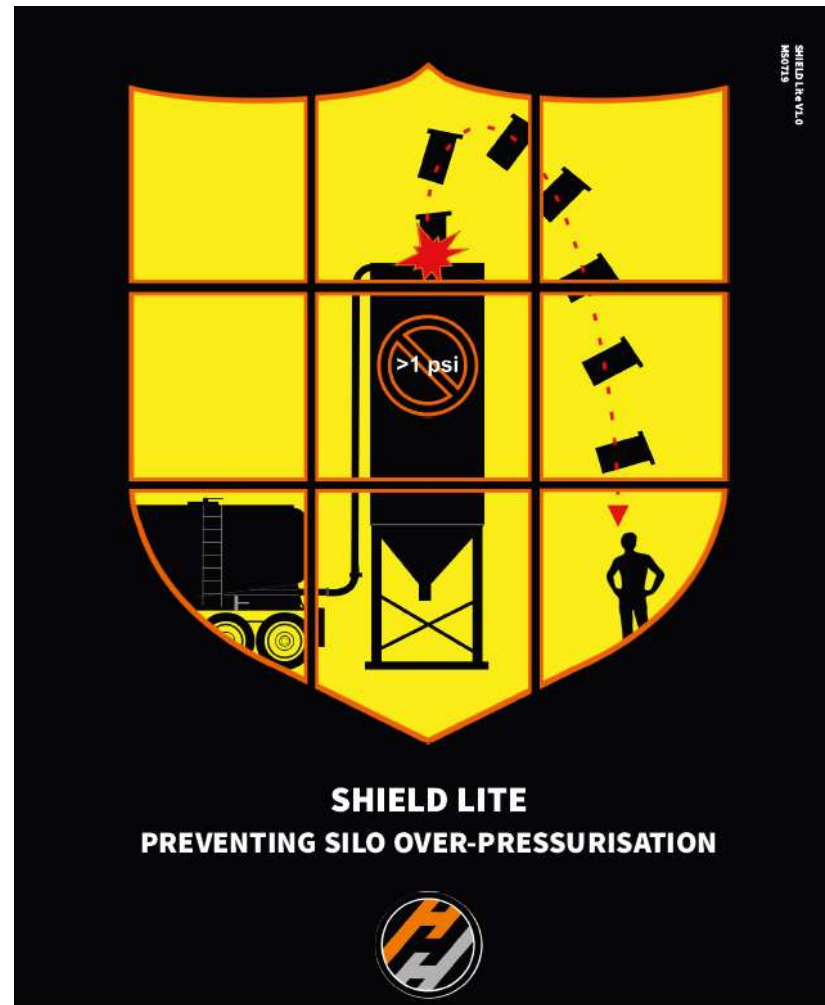
We are now fully equipped for video presentations and support sessions. Silo pressure safety is a major issue and Hycontrol is the world's leading silo protection expert. Contact us to book a call!



Keep Your Silo SAFE D...  
**KEEP YOUR SILO SAFE**  
DURING DELIVERIES

**SHIELD LITE**

Hycontrol's SHIELD Lite is the world's most advanced silo protection system. This new video highlights the unique features and benefits of this extraordinary pressure safety system.



**HYCONTROL**  
SILO PROTECTION SOLUTIONS



# SHIELD SPS – KEY BENEFITS



- **Increased site safety** using Ground level Testing to test all critical sensors and reduce working at height risks
- **Comprehensive event logging** allows for preventative maintenance – allowing service engineers to tackle system issues before they become problems
- **Monitor driver behaviour** and performance with advanced diagnostics. Site managers will be alerted to dangerous filling practices or failed filters before they block
- **Reduce maintenance** and service costs with Ground Level Testing - test the whole system in just six seconds
- **Improve environmental** conditions through large scale reduction of product emissions
- **Easy-to-use** with one-key Ground Level Test system which guarantees complete silo protection safety and will not allow filling unless all essential components are proven fully functional



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# SUMMARY



**SILO  
RUPTURE**



**BLOCKED  
PRV**



**FILTER  
BLOW-OFF**



**SILO  
OVERFILLING**



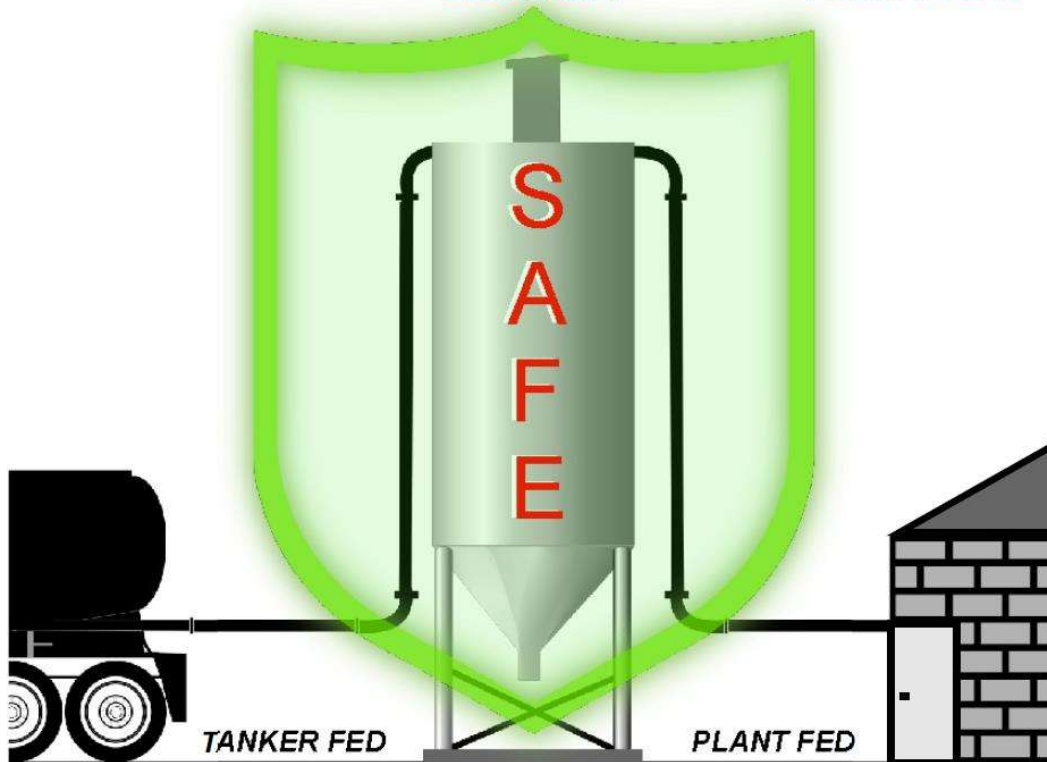
**BLOCKED  
FILTER**



**ENVIRONMENT  
ISSUES**



**DISCHARGE  
TOO HIGH**



**POOR  
MAINTENANCE**



**WORKING  
AT HEIGHT**

# APPLICATIONS



- **Industry:** Construction  
Tile adhesives and grouts
- **Medium:** Cement, Soda Ash, Hydrated Lime, Calcium Carbonate
- **System:** SHIELD LITE  
HLA POD 2 DP150



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# APPLICATIONS



**Cargill**<sup>TM</sup>

- **Industry:** Animal Feeds
- **Medium:** Wheat Silos
- **System:** SHIELD LITE SPS  
HLA POD 1 DP150



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# APPLICATIONS



- **Industry:** Construction  
Concrete Plant for HS2 Rail Project
- **Medium:** Cement & GGBS
- **System:** SHIELD LITE SPS  
HLA POD 2 DP150  
TDR VF04 Level measurement

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TDR VF04 Level measurement



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# APPLICATIONS



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Concrete Plant London Underground
- **Medium:** Cement & GGBS
- **System:** SHIELD LITE SPS  
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