

CMC TECHNOLOGIES

PTY LIMITED • ENGINEERING AND INDUSTRIAL INSTRUMENTATION

Explosion Protection

Explosion Prevention

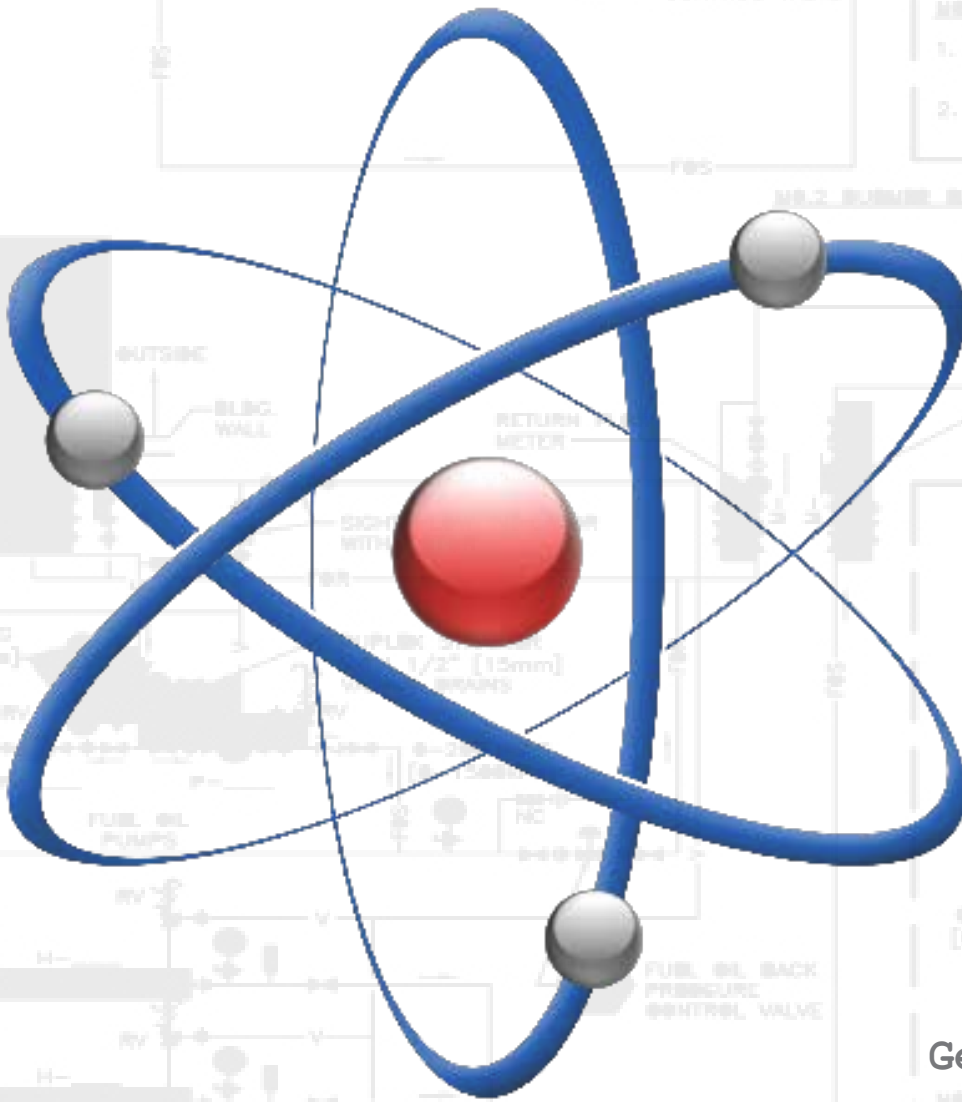
Fire Protection

Pressure Relief

Flow Measurement

Vision in the Process

Process Instrumentation



2024

General Catalogue

CELEBRATING 25 YEARS IN BUSINESS

1. PIPING SIZES BY BURNER MFG. TO MEET FLOW REQUIREMENTS & AVAILABLE PRESSURE
2. STEAM PRESS. AVAILABLE AT MAX. FLOW RATE = _____ PSIG [MPa]

2024-03-20 V1.1 DM

CONNECT TO OUTSIDE OF BUILDING FOR EMERGENCY

Company Profile



Since its establishment on January 25, 1999 CMC Technologies (CMC) has developed into a successful distributor of specialised industrial instrumentation by providing technical solutions to its customers in many industries.



CMC is based in the Sydney Metropolitan area only a few minutes from Sydney Airport and the CBD. CMC markets its products throughout Australia, New Zealand and Asia. The close proximity to its freight forwarders enables CMC to provide reliable, dependable, and efficient customer service. The company has in-house quality procedures in accordance to ISO 9001.

CMC has always been self financed and employs experienced staff with tertiary qualifications in Chemical, Mechanical and Mechatronic Engineering (as well as other fields) and provides technical sales support, commissioning, and service to its customers. It invests in its staff via specific training both locally and at manufacturer's plants in Europe, Asia and USA.

CMC has innovative instrumentation products that are sold as single components or as systems. They are manufactured by reputable companies who have excellent reputations for quality, reliability and dependable support. CMC has strong relationships with its manufacturers and provides its customers with cost effective and reliable solutions.

Con Carpis
Managing Director

Company Capabilities



Quotations & Technical Support

CMC Technologies' staff are able to assess a customer request and utilise their local knowledge and the manufacturer's resources to provide versatile technical and commercial solutions tailored to the particular process equipment requirements. CMC also assists with installation, troubleshooting, and spares enquiries.

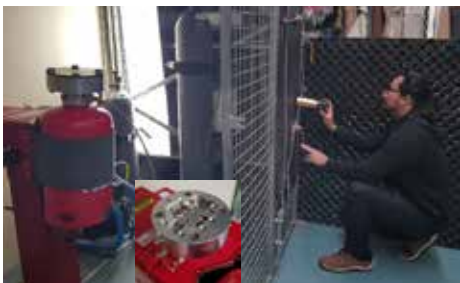


Training

CMC provides "In-Office" or "On-Site" training workshops for specific products on request.

Explosion Vent Size / Vent Area Design Calculations

CMC can provide a vent area design calculations of your explosibility data in accordance with the request of AS/NZS 4745 & the internationally recognised standards EN 14491-2012 or NFPA 68-2018.



Commissioning & Pre-Commissioning Visits

CMC service staff are able to make pre-commissioning visits to assist our customers to review & implement the manufacturers' installation requirements, and to test and check & commission specific equipment.

Filling Station for Explosion Suppressors

CMC Technologies has a factory authorised pressurising and filling station for IEP Technologies' explosion suppressors. Design registered and stamped cylinders are filled with Kiddex powder suppressant & then pressurised with dry nitrogen with a very fast turnaround time for our customers.



DP Gauge Service and Calibration

CMC is the only authorised service and calibration centre for Mid-West Instrument DP gauges and backflow test kits in Australia and South-East Asia.



Ultrasonic Flow Meter Calibration Checks, Demonstrations, and Training

CMC's service department is able to provide calibration checks for ultrasonic flow meters, as well as testing or demonstrations at your site with our portable meters to show that our flow meter technology works with your applications.

Explosion Protection



Dust, gas or hybrid explosions occur in industrial processes where combustible material is transported pneumatically or mechanically, heated, filtered, spray dried, milled, sifted, filtered, collected and stored.

Whether the best explosion protection solution is suppression, venting isolation or a combination, CMC Technologies offers the right products to meet your needs.

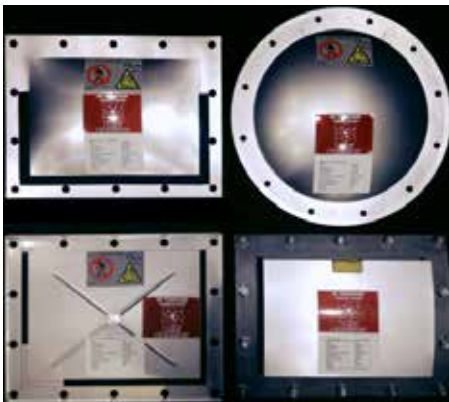
A deflagration is the rapid burning of a mixture of dust or gas within an oxygen-rich atmosphere (typically air) leading to a very rapid pressure rise and pressure shock inside the vessel or system. It can be initiated by an ignition source and if an uncontrolled deflagration is allowed to run in ductwork or pipes, it can lead to a devastating transition event such as a detonation.

Explosion Venting

Explosion Vents allow for the deflagration pressure to be relieved to mitigate vessel or system rupture and to direct where the products of rapid combustion are released.

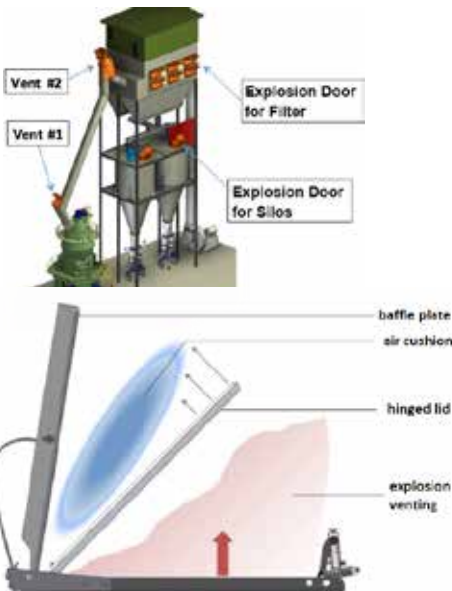
They are combined with fast acting isolation equipment to prevent or mitigate explosion propagation. Optional flameless vents combine a flame arrester with an explosion vent or reclosing valve to quench any resultant flame.

Vent area designs according to EN 14491 or NFPA 68 comply with AS/NZS 4745.



Explosion Venting - Single Use, Indoor and Outdoor

Explosion venting must be to a safe area where the vented flame width and length are calculated and approved. Alternatively, flameless venting using Indoor vents/ Flameless vents can be considered.



Explosion Doors - Self- and Manual Reclosing

Thorwesten Vent offers automatically re-closing explosion doors and explosion diverters. These devices are used for explosion venting of silos, filters and other process vessels. These explosion doors are also available in food grade (hygienic) version.

IEP Technologies / Hoerbiger EVN 2.0 & EVN 3.0 Hygienic Explosion Relief Valve

IEP Technologies / Hoerbiger Safety Solutions presents the explosion relief valve type EVN 2.0 & EVN 3.0, a flameless explosion vent of the next generation. Certified according to EN 16009 and also available in hygienic version with automatic reclosing or manual closing options.



Explosion Protection

Explosion Suppression

Whether the best explosion protection solution is suppression, venting or isolation, IEP Technologies offers the right products to meet your needs. Our system components undergo rigorous third-party testing to receive the approvals required by,

for example, ATEX and NFPA. As each explosion protection threat is unique, we offer different types of explosion detectors, controls and suppressors to tailor the protection to each individual application.



MEX Dynamic Pressure Sensor and FAB Field Terminal Box

The IEP Technologies SmartDS dynamic explosion detection system is designed for demanding explosion protection applications requiring state-of-the-art rate of rise pressure sensing and data interrogation. It is made up of a MEX-3 dynamic explosion pressure detector and a FAB-4 Field Connection Box. The detection system has IECEx approval to use in hazardous areas.

Infrared and Ultraviolet Infrared Detectors

Optical detectors include infrared ("IR") and ultraviolet infrared ("UV-IR") detectors which are integrated in explosion prevention systems for specific applications. The IR detector is typically used in interconnected duct work for dust-handling systems. The UV-IR detector is used in combustible gas or vapor protection systems such as aerosol fill rooms and chemical storage rooms.



Single Zone (EX 100.1, EX 200) Control Units Multi Zone (EX 8000) Control Unit

Any signals emerging from the explosion pressure or flame sensors are recorded, tested and evaluated by the control unit.

Protractor Operated HRD (PHRD) Suppressor

A cylindrical alloy steel container filled with 3kg, 4kg or 16kg of powder suppressant and pressurised to 60 bar (880 psi) with dry nitrogen. Inside the flange is a hinged flap supported by a beam which is kept closed by a latch. Two piston, non-explosive protractor operated actuators are used to initiate opening.

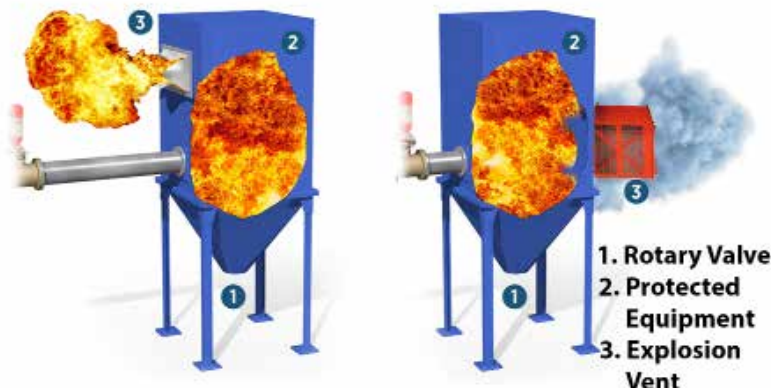
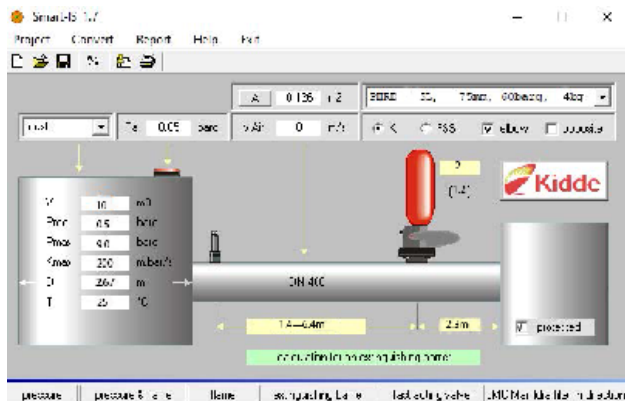
eSuppressor™

The patented eSuppressor™ is a high-rate discharge extinguisher used for explosion suppression and chemical isolation systems. Its electro-mechanical operation is unique to the industry, as no pyrotechnic devices are required for activation. The eSuppressor™ has standard features that include pressure monitoring, lock out-tag out capability and LED indication of device status. A key benefit is that all the safety functions are fully monitored, which is not possible for any device employing pyrotechnic actuators, with full redundancy and third party SIL2 certification. Upon detection of an explosion event, the eSuppressor valve mechanism is actuated via the Explosion Protection Control Unit. The highly specified trigger mechanism allows the valve flap to open extremely rapidly (less than 10ms), which allows the suppressant to be discharged through the nozzle system into the protected volume.



SmartIS

Our third party approved design software allows us to quote ATEX directive compliant design validated by actual explosion tests by FSA in Germany, an article regarding the software is published by IChemE in 2005.

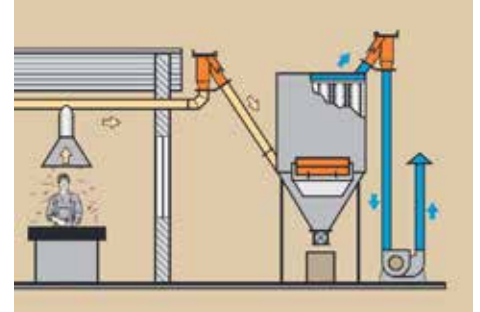


Explosion Protection

Explosion Isolation

The secondary explosions tend to cause the most damage in an unprotected system, rather than the initial explosion. This risk tends to be due to insufficient explosion isolation of plant equipment. Correct venting of isolated enclosures ensures compliance to standards.

Explosion isolation products (also known as explosion decoupling products) inhibit or stop the propagation of the accelerated flame front and pressure shock through ducts or pipes.



Active explosion isolation devices are activated when the explosion pressure or flame is detected and are integral with an electronic protection system.

- IEP-Sistag-Wey Guillotine Valves
- Rico RSV® and REDEX® Slide and VENTEX® ESI-P



Passive explosion isolation valves use the pressure wave of the explosion to isolate. No external energy required.

- IEP-Brilex SNR Isolation Flap Valve
- Rico VENTEX® ESI Valves and REDEX® Flap Valve
- IEP Technologies Isolation Flap Valve
- Aircom's Safety Not Return ATEX Valves
- IEP-Brilex Isoflap Passive Explosion Isolation Valves

CMC Technologies is the only certified service technician for Rico Ventex and RSV valves in Australia and New Zealand.



Explosion diverters are used to prevent explosion pressure and flames propagating back through pipework. The pressure wave of the explosion is used to decouple. No external energy required.

- Brilex REXS Explosion Diverters- bursting disc venting device
- Thorwesten Vent Explosion Diverters- manual re-closing, or automatically self-reclosing venting devices



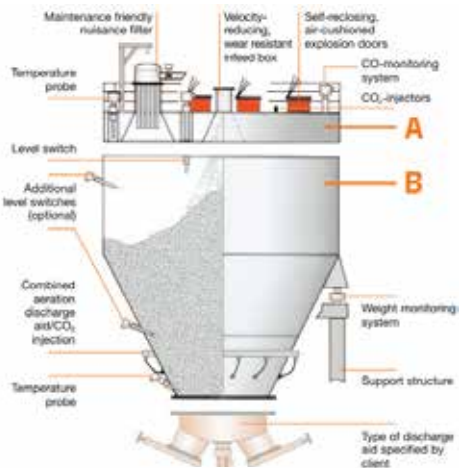
Flame Arresters

A complete range of in-line deflagration and detonation flame arresters and end-of-line flame arresters with many options for reliable protection against flames in hazardous environments with unique minimum maintenance designs.

Cast and fabricated versions enable many different material options, including special connections or other specific customer requirements. The flame arrester elements, that actually stop flame propagation, are available in many specifications and some are used for pre-volume applications.

- KITO® Flame Arresters

Explosion Protection



Silos for Pulverised Fuels – Pressure Shock Resistant

Pulverized coal silos are designed for a pressure strength of 2 barg and come with a flat roof as a standard for easy access. They are equipped with explosion doors, Pressure shock resistant dedusting filter and optional CO Monitoring and emergency inerting systems.

· Thorwesten Vent Pressure Shock Resistant Silos and Silo Designs for Pulverised Fuel



Dust Collectors / Filters – Pressure Shock Resistant

Constructional explosion protection can include pressure shock resistant dust collectors for de-dusting or filtering applications in silos.

Explosion protection of silos is simplified because the filter now becomes an integral part of the constructional explosion protection design of the complete silo by having an equal or better pressure shock resistance than the silo. In case of a dust explosion in the silo, all the components of the filter that could be exposed to the explosion pressure are designed to withstand the pressure shock. The filter is also easy-to-maintain as the filter head can be swiveled aside

· Thorwesten Vent Pressure Shock Resistant Dust Collectors / Filters



Explosibility Testing

Combustion Hazards Testing can reveal the sensitivity of materials to ignition and the explosion characteristics of flammable atmospheres.

To implement explosion protection solutions, explosibility data is essential such as:

- Dust Explosibility Properties K_{st} (bar.m/sec), P_{max} (bar), Minimum Ignition Energy (mJ)
- Minimum explosible dust concentration (g/m^3), Minimum ignition temperature (T_{min})

· IEP Technologies Combustion Research Centre

Explosion Prevention

Dust and/or gas explosions occur frequently in industrial processes where combustible material is transported, pneumatically or mechanically conveyed, heated, filtered, spray dried, milled and stored. A deflagration can be initiated by an ignition source in a confined space with the right concentration of a dispersed dust and oxygen, resulting in a pressure shock, overpressure and a flame/fireball. An uncontrolled deflagration if allowed to run in ductwork or pipes can change to a devastating detonation.

CMC Technologies provides a range of explosion prevention equipment suitable for industrial processes. This includes static earthing clamps cables and systems, spark detection & extinguishing systems, CO monitoring (detection of burning /smouldering products) in pulverised fuel and food spray drying applications, and emergency inerting systems.

Static Earthing



Static electricity is an ever-present and significant hazard for operations taking place in flammable, combustible or potentially explosive atmospheres. The uncontrolled accumulation and discharge of electrostatic charges must be avoided in these environments in order to prevent ignition to protect people, plant, processes and the environment.

We have a range of static earthing (grounding and bonding) components and systems for preventing fires and explosions that are designed to dissipate or remove electrostatic charge before dangerous ignition hazard levels can be reached.

ATC SparkSafe® Static Earthing Clamp and Cable

- No sparks if dropped or subjected to great impact
- The clamp teeth will penetrate paint, rust, and dirt to get good contact with object
- Wide opening for attaching to larger objects
- Corrosion resistant & lightweight



ATC ShovSafe® Decontamination Shovels

ShovSafe decontamination shovel made of electrically conductive plastic. Resistant to acids, bases and solvents. Does not cause sparks when used.



CMC ALPTEC Static Earthing Clamps, Cables, and Reels



SC-01 Clamp

- Aluminium Clamp
- SS Clamping Points (2)
- 20mm jaw opening
- FM and ATEX approved



SC-03 Clamp

- Aluminium Clamp
- SS Clamping Points (3)
- 30mm jaw opening
- ATEX approved



SC-05 Clamp

- SS 316L Clamp
- SS Clamping Points (2)
- 18mm jaw opening
- ATEX approved



SC-02 Clamp

- Aluminium Clamp
- SS Clamping Points (2)
- 28mm jaw opening
- ATEX approved



SC-04 Clamp

- Aluminium Clamp
- Bronze Clamping Jaws
- 18mm jaw opening
- ATEX approved



SC-06 Clamp

- SS 316L Clamp
- SS Clamping Points (3)
- 28mm jaw opening
- ATEX approved



Static Grounding Reel

- SS Housing
- Can be combined with any clamp
- Straight SS cable with polyurethane jacketing.
- ATEX approved



Pipe Clamps

- Bronze
- Sizes from 1" to 3"



C-Clamps

- 304 SS
- Sizes from 3/4" to 1-1/2"



Static Grounding Reel with Alarm

- Grounding reel with alarm



Self-testing Grounding Clamp with Visible & Audible Alarms

- Alarm Volume: >90dB (measured at a 30cm straight distance)
- Monitoring Set Point: 10 ohms



Static Earthing Monitoring System

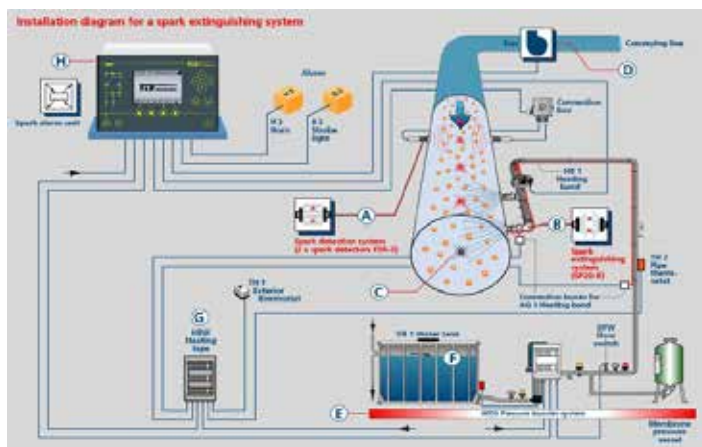
- Visual Indication
- Can be supplied with either straight cable reel or spiral cable
- ATEX approved

Explosion Prevention

Spark Detection & Extinguishing

Spark extinguishing systems prevent fire and explosions by detecting ignition sources such as sparks or embers that are produced in the process. They are detected and extinguished or before entering the process equipment at risk.

We supply systems for customised protection of filters (dust collectors), silos, processing machines, pneumatic suction systems and many others.



System components include:

- Spark alarm control units - single and multizone consoles
- Spark detectors - Infrared (short wave IR) with silicone photocell or (long wave IR) lead sulfide cells - Applications for high temperature, daylight sensitive, or dark areas.
- Water Extinguishing or Gas Extinguishing and Isolation devices, diverters etc
- Thermal imaging camera for early fire detection
- UV/IR detectors for open flame detection
- Smouldering or Other Fire Detection
- Water Pressure booster system
- Smoke, or thermal detectors
- Flow switches
- Antifreezing protection



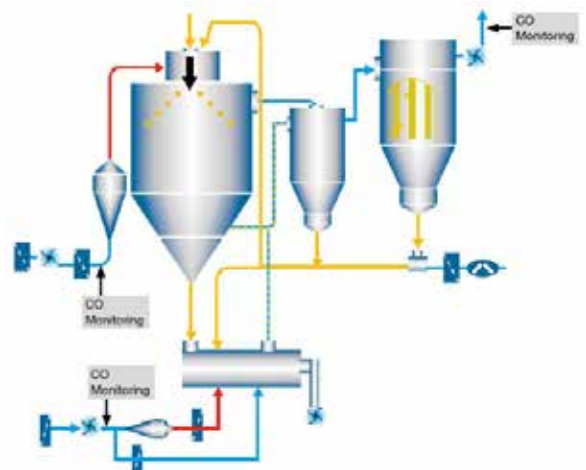
· T&B Electronic Spark Detection and Extinguishing Systems and Components

CO System for Spray Drying Plants, CO System for Fuel Grinding Plants



Robecco, originally a classic owner led electrical engineering company, has developed into a globally present service-oriented specialist for modern, forward- locking control systems and switching cabinet construction in the area of mechanical and plant engineering. Especially, robecco has established in the business of coal grinding plants. robecco supplies special controls to inerting systems and to coal powder silos.

- robecco CO System for Spray Drying Plants
- robecco CO System for Fuel Grinding Plants



Fire Protection

CMC Technologies provides range of Fire Protection solutions for some unique applications such as emergency inerting systems that prevent the formation of an explosive atmosphere (even when there are hot spots and smouldering fires), fire protection after an explosion in a process vessel, or flame quenching/ flame arresting in event of fires or deflagrations outside or inside a process.



End of Line Flame Arresters



Flame Protection - Flame Arresters

If explosive gases ignite in a pipe then the explosion initially starts as a deflagration characterised by relatively low pressures and flame speeds. KITO In-line deflagration flame arresters are installed to prevent a flame spreading to other parts of the system. In contrast to detonation arresters, there are limits on the length of pipe between any possible source of ignition and the flame arrester. Beyond the limits, detonation arresters are used. Flame arresters are also used on tanks and vessels for end of line applications

The KITO technology is applied to the following flame arrester applications and combinations:

- **End of Line Flame Arresters** for deflagration and endurance burning proof
- **In-line deflagration and detonation** - short and long time burning proof, bidirectional, short time burning proof.
- Pre-volume applications for Diesel Engines, Mining Vehicles - flame arrester elements for integration in 3rd party equipment.
- Hydraulic Seals
- Flame arrester combinations with pressure & Vacuum relief Valves
- Certifications to ISO 16852 and others

Based on the principle of the Davy Safety Lamp and the "Kiestopf" "gravel pot" developed from it, KITO® developed their "crimped ribbon" flame arrester element as the basis for their flame arresters.



In-Line Detonation and Deflagration Flame Arresters



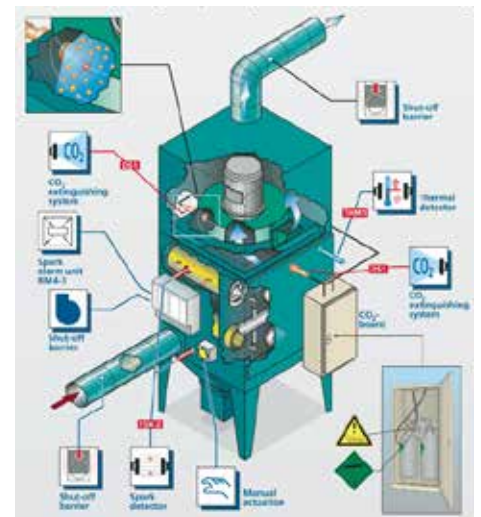
Fire Protection of Cartridge Filter System

Cartridge filter protected by a T&B Spark extinguishing system with Nitrogen/CO2 or Argon.

Applications: Animal feed industry, food industry, grinding and polishing, laser welding, and laser cutting.

· T&B Electronic Fire Protection of Cartridge Filter System

· Aircom Fire Dampener Valves, also used in conjunction with spark detection system



Fire Protection

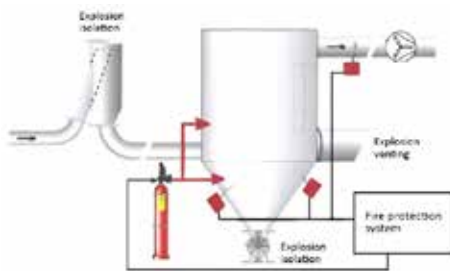
Emergency Inerting



Our emergency inerting systems are used to prevent fires and explosions by introducing inert gases into the process, reducing the oxygen level (reduce LOC) below the critical concentration level, making it impossible for a fire or explosion to occur.

Robecco (formerly Yara) Industrial Emergency Inerting, special nozzles with gas pressure valve station, low and high pressure CO2 tanks, High Pressure N2 packs.

The technology can be used as a safety measure in coal grinding / fuel grinding systems or other applications. In a fuel grinding process, the emergency inerting system is combined with the gas and temperature monitoring – eg. CO, O2 and T. The signals from the CO system activate the emergency inerting system, injecting inert CO2 gas or other effective inert gases inside silos, filters and connecting equipment to the mill by high speed blending and thorough mixing.



Post-Explosion Fire Protection

After an explosion, a fire in vented installations is not uncommon. This is particularly common if explosion doors do not close after operation. To avoid further damage by a post-explosion fire, fire protection systems are installed (Aquasafe, powder, CO2, Argonite, FM200, etc.). The choice of the fire suppressant is based on the product properties. The fire is detected early during its development using temperature sensors which are unaffected by pollutants and will automatically extinguish the fire.

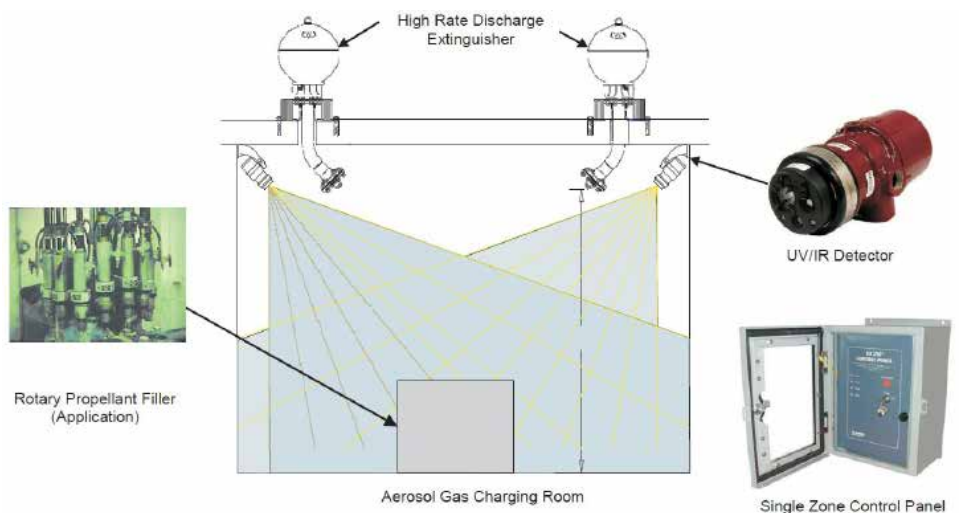
· IEP Technologies Post-Explosion Fire Protection

Fire Protection of Aerosol Gas Charging Room

The system design is based on suppressing a localised deflagration from the ignition of the hydrocarbon propellant gases. Ultraviolet/infrared (UV/IR) sensors mounted in the room detect the deflagrations and, through the control unit, trigger high rate discharge (HRD) suppressors to discharge the distilled water suppressant in an effort to suppress the fireball.

Simultaneously, the control panel interlocks with the protected components and associated process equipment to shut them down to prevent spread of burning material and to minimise possibility of re-ignition occurring.

· IEP Technologies Fire Protection



Fire Gas Detection

Fire detectors GSME of the ADICOS series are fire gas detectors with advanced multiple-criteria technology for gas sensing. Smouldering and open fires are detected early. The “GSME-Ex” models can be used in areas where combustible dust leads to fire or explosion hazard (Zone 20).

· T&B Electronic ADICOS Fire Gas Detector GSME-Ex



Pressure Relief

CMC Technologies provides pressure relief solutions for safe and instantaneous overpressure or vacuum pressure relief in many applications. These include Rupture Discs, Pseudo Pin pressure relief valves and Pressure and vacuum relief valves or breather/valve combinations with flame arresters.

Specifications according to the applicable standards - ISO4126, ASME VIII, AS1210, AS 1358, European PED, API or other.



Rupture Discs – Bursting Discs, Holders, and Disc Sensors

FDC, a world leader in the manufacture of rupture discs/bursting discs, is accredited to ISO-9001:2008 quality systems. FDC continuously invests in R&D for new product development and quality improvement of existing products to protect your plant and personnel from overpressure hazards including explosions.

They are used as pressure safety devices in applications including atmospheric tanks, various pressure vessels and industrial plant reactors, pumps, heat exchangers, flares, ships etc. The performance and quality of the products have been proven by FDC's participation in the Defence Industry.

Reverse Type Rupture Discs



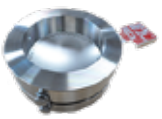
- KSRR - Reverse Dome Knife Type
- KS: Insert Flat Seat Knife Blades Single Type
 - KD: Insert Flat Seat Knife Blades Double Type
 - BK: Bolted Flat Seat Knife Blades Single Type



- KSRRK - Reverse Dome Shear Type
- FS: Insert Flat Seat Single Type
 - FD: Insert Flat Seat Double Type
 - BF: Bolted Flat Seat Single Type



- KSRRKf - Reverse Dome Shear Type for Ferrule
- FERRULE: Ferrule Connection Type



- KSRBKH - Reverse Dome Buckling Knife Type
- BFS: Insert Flat Seat Single Type for RBK
 - BBF: Bolted Flat Seat Single Type for RBK



- KSRBK - Reverse Dome Buckling Knife Type for Flange
- RF: Raised Face Flange Type
 - FF: Flat Face Flange Type



- KSRSR - Reverse Dome Scored Type
- FS: Insert Flat Seat Single Type
 - BF: Bolted Flat Seat Single Type



- KSRSR Scored Reverse Buckling with Pre-Torqued Holder
- Cross Scored Disc
 - Circular Scored Disc

Forward Type Rupture Discs



- KSRSF - Forward Dome Scored Type
- FS: Insert Flat Seat Single Type
 - BF: Bolted Flat Seat Single Type



- KSRST - Forward Dome Tension Flat Seat Type
- FS: Insert Flat Seat Single Type

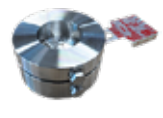


- KSRCT - Forward Dome Tension Sloped Seat Type
- SS: Insert Sloped Seat Single Type
 - SD: Insert Sloped Seat Double Type

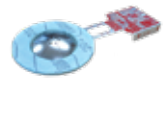
Composite Dome Type Rupture Discs



- KSRC - Composite Dome Sloped Seat Type
- SS: Insert Sloped Seat Single Type
 - SD: Insert Sloped Seat Double Type



- KSRCH - Composite Dome Flat Seat Type
- FS: Insert Flat Seat Single Type
 - FD: Insert Flat Seat Double Type
 - BF: Bolted Flat Seat Single Type



- KSRBK - Composite Dome Flat Seat Type for Flange
- RF: Raised Face Flange Type
 - FF: Flat Face Flange Type



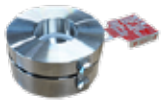
- KSRRCf - Composite Dome Flat Seat Type for Ferrule
- FERRULE: Ferrule Connection Type



- KSRRCFD - Composite Dome Flat Seat Double Acting Type for Ferrule
- FERRULE: Ferrule Connection Type

Pressure Relief

Composite Flat Type Rupture Discs



KSROH - Composite Flat Type
 · H: Insert Flat Seat Single Type for RO
 · B: Bolted Flat Seat Single Type for RO



KSRO - Composite Flat Type for Flange
 · RF: Raised Face Flange Type
 · FF: Flat Face Flange Type



KSROF - Composite Flat Type for Ferrule
 · FERRULE: Ferrule Connection Type



KSROHD - Composite Flat Double Acting Type
 · H: Insert Flat Seat Single Type for RO
 · B: Bolted Flat Seat Single Type for RO



KSROFD - Composite Flat Double Acting Type for Ferrule
 · FERRULE: Ferrule Connection Type

Rupture Disc Sensors



KSBS-A
 · Installed separately on the vent side of the Rupture Disc Holder
 · Gasket Material: Non-asbestos, Teflon and Graphite etc
 · Sensor is activated when the rupture disc pierces the sensor film to disrupt the circuit



KSBS-B
 · Integrated directly into the rupture disc on the vent side
 · Sensor is activated when the rupture disc pierces the sensor film to disrupt the circuit



KSBS-C
 · Integrated directly into the rupture disc on the vent side
 · Sensor is activated when the rupture disc breaks the sensor cable to disrupt the circuit

Graphite Rupture Discs



KSRGM - Mono Type Graphite Disc
 · Inserted between Flanges



KSRGI - Inverted Type Graphite Disc
 · Inserted between Flanges



KSRGD - Double Acting Type Graphite Disc
 · Inserted between Flanges

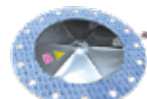
Ultra Low Pressure Type Rupture Discs



KSRRL - Reverse Dome Knife Type - LP
 · LS: Insert Flat Seat Single Type for RRL & RRLD
 · LVS: Insert Flat Seat Single Type for RRL & RRLD (vacuum)



KSRRLD - Reverse Dome Knife Double Acting Type - LP
 · LS: Insert Flat Seat Single Type for RRL & RRLD
 · LVS: Insert Flat Seat Single Type for RRL & RRLD (vacuum)

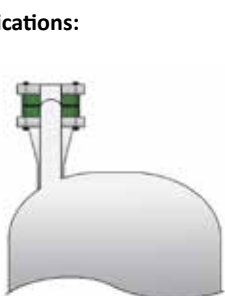


KSROL - Composite Flat Type for Flange - LP
 · RF: Raised Face Flange Type
 · FF: Flat Face Flange Type

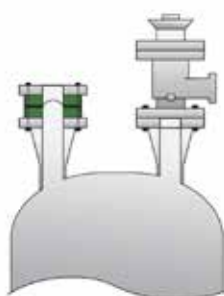
Rupture Disc Accessories



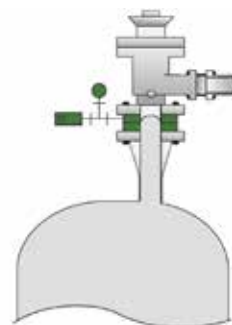
Applications:



Primary Case



Secondary Case



Combination Case



External Fire Case

Pressure Relief



Pressure/Vacuum Relief Valves and Flame Arrester Combinations – Tank Storage

Tank protection valves are used to limit the pressure and vacuum created by changes in atmospheric pressure. As pressure rises or falls they allow the tank to breathe, preventing damage and spillage to ensure the safety of personnel and the surrounding environment.

Pressure relief valves, vacuum relief valves and combined pressure and vacuum relief valves can be weight, spring or pilot operated and combined with flame arresters for end of line applications.

- KITO Pressure Relief Valves and Flame Arrester Combinations
- KITO Vacuum Relief Valves and Flame Arrester Combinations
- KITO Combined Pressure/Vacuum Relief Valves and Flame Arrester Combinations

Sanitary Pressure Relief and Vacuum Relief Valves

The Quick Clean line of sanitary pressure relief valve and vacuum breakers are simple, low maintenance and reliable. They been used widely in Pharmaceutical, Biotech, Food Processing, Dairy, and Brewing industries.

Key Features are:

- Tested and set at the Factory
- CIP/SIP and/or disassembly for sterilization. (reassembled without changing the set pressure)
- Vacuum Relief from 1" WC
- Overpressure relief from 7 KPag (1 Psig)

- Safety First Valve Sanitary Pressure/Vacuum Relief Valves

Pressure Equalisation Valves



The equalisation valve ensures pressure equalisation during loading and unloading of a vessel. A typical example would be in case of an insufficiently working filter on a silo.

The valve responds to system-related pressure fluctuations (overpressure and vacuum) in storage tanks, i. e. silos. The valve's elements open gradually upward (overpressure) and downward (negative pressure), respectively and re-close when the pressure no longer exceeds the activation pressure.

Once the vessel's pressure is neutralised, the valve's circumferential internal seals guarantee that the conveyed or stored material is not emitted into the atmosphere and prevents the ingress of humidity.

- Thorwesten Vent Pressure Equalisation Valves available in hot-dip galvanized steel and stainless steel.

Pressure Relief



Nitrogen Tank Blanketing Valves

The Nitrogen (N₂) tank blanketing system is a control device to maintain a constant pressure state by injecting N₂ gas (an inert gas) to upper room of the tank which:

- Reduces evaporation loss of the products to minimize the formation of vapor in the tank
- Removes explosive factors by controlling hazardous gas ingredients from vapour space in the tank
- Prevents products from damage by inflow of unnecessary moisture and air
- Prevents explosion by controlling electrostatic spark
- Promotes delivery rate of product by decreasing of discharging time of product
- Prevents the modification of tank by controlling vacuum in the tank

- FDC N₂ Tank Blanketing Valve - KSBKL for Low Capacity
- FDC N₂ Tank Blanketing Valve - KSBKT for High Capacity
- FDC N₂ Tank Blanketing Valve - KSBKS for Ultra High Capacity



Tank Emergency Relief Vents

Emergency vent manway is used to provide overpressure protection in the event of the tank being subjected to fire exposure and to facilitate access to the vessel from the top for internal inspection.

Gauge hatches also enable product level measurement and sampling.

- KITO EV/o Tank Emergency Relief Vents



Pseudo Pin Pressure Relief Valves

The CMC Pseudo Pin Pressure Relief Valve is a quick-opening, full line capacity pressure relief valve.

It uses force vectoring and pseudo-pin technology that eliminates the need for buckling pins required by traditional pin valves.

This patent pending design is superior to current pin valves due to the repeatability across a broad range of set pressures and service conditions.

- CMC Technologies - Pseudo Pin Pressure Relief Valves

Flow Measurement

CMC Technologies provides a complete range of flow measurement technologies. This includes electromagnetic – magflow meters, ultrasonic flow meters, thermal mass flow meters and thermal mass flow switches, coriolis mass flow meters, delta-tubes/averaging pitot tubes, open channel flow meters, orifice plates, positive displacement flow meters, turbine flow meters, variable area flow meters, venturi flow meters and vortex flow meters.

Thermal Mass Flow Meters

- Gas flow measurement of virtually any gas mixture
- Single and multipoint
- IECEx Explosion Proof rated versions
- Inline and insertion
- High downturn
- Excellent accuracy and reliability
- Patented flow averaging tube option



- Eldridge (EPI) Master-Touch™ Thermal Mass Flow Meters – Also for Hazardous areas with IECEx approvals
- Eldridge (EPI) ValuMass™ Thermal Mass Flow Meters

Electromagnetic Flow Meters

An electromagnetic flow meter (mag flow meter) is a high accuracy / low cost flow meter that applies a magnetic field to the metering tube resulting in a potential difference proportional to the flow velocity perpendicular to the flux lines, and requires a conducting fluid and an electrical insulating pipe surface, for example, a rubber-lined steel tube. Little or no pressure drop.



- Types available in many options are:
- Battery Powered Magnetic Flowmeter
 - Energy/BTU Magnetic Flow Meter
 - High Pressure Magnetic Flow Meter
 - Insertion Magnetic Flow Meter
 - General Purpose Magnetic Flow Meter



- SmartMeasurement® Electromagnetic Flow Meters

Averaging Pitot Tubes

- Primary flow - differential pressure elements with transmitters
- Tear drop and diamond shapes
- Volumetric flow of liquids, gases and steam
- Low cost, low maintenance, simple installation
- Inline and insertion versions
- Hot tap, large diameter, high temperature versions



- Mid-West Instrument Delta Tubes®
- SKI SDF and Accuflo

Ultrasonic Flow Meters

A non-intrusive volumetric flow measuring device that utilises sound waves.

- Transient time
- Liquid flow rate or total volume
- Strap on transducers
- No pressure drop
- Portable and fixed versions
- Graphic multi-channel DSP - digital signal processor
- Cost-effective Open Channel and Industrial Energy versions



- SmartMeasurement® Ultrasonic Flow Meters
- CMC Technologies Ultrasonic Flow Meters

Thermal Mass Flow & Level Switches

- Detection of the mass flow rate of liquids and gases
- Flow/No Flow Detection
- Point or multipoint level detection
- Hazardous Area versions
- Many applications including pump protection, dry line indication, bursting disc or relief valve opening detection, and many more.



- Delta M Thermal Mass Flow and Level Switches

Vortex Flow Meters

Vortex flow sensing technology relies on measuring the number of vortex pulses generated by a bluff body immersed in the flow stream.

- Volumetric flow of liquids, compressed gases, and steam.
- No moving Parts - no routine cleaning
- Inline threaded and flanged versions
- Insertion styles with Hot Tap ball valve
- Multivariable option with RTD and Pressure Transducer



- SmartMeasurement® Vortex Flow Meters

Flow Measurement

Venturi Flow Meters

Primary Flow Venturi Element combined with DP transmitters and multivariable RTD and Pressure transducers.

- Wedge Elements also available
 - Highest accuracy and reliability
 - Liquids, gases and steam as well as high-viscosity line fluids, solids-bearing line fluids, and harsh or contaminated line fluids
 - Proven accuracy: +/-0.25% (lab) and +/-0.50% (field)
 - No line size limit: PFS has supplied inserts in line sizes from 0.50 to 120.0 inches
 - No downstream straight pipe requirement for standard +/-0.50% accuracy
 - Short laying length
- Primary Flow Signal (PFS) HVT-Halmi Venturi Flow Meters



Turbine Flow Meters

Ruggedised, stainless steel, precision machined, and can be quoted with CD4MCu and/or 316 stainless steel rotors

- Wafer turbines for insertion between two pipe flanges
 - In-line turbine flow meters to be installed within a length of pipe
- Turbines, Inc. Turbine Flow Meters
· SmartMeasurement® Turbine Flow Meters



Orifice Plates

Primary Flow Differential Pressure Element.

Orifice plates, or orifice primary flow elements, flange unions, and holding blocks offer lower capital investment and ease of replacement.

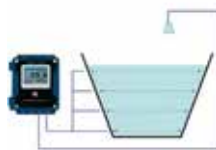
- Primary Flow Signal (PFS) Orifice Plates



Open Channel Flow Meters

Open channel flow meters use a system including an area-velocity meter used in conjunction with a user-supplied level transmitter to measure flow rates.

- For rectangular, circular, trapezoidal, or other shaped channels
 - Advanced DSP-based flow computer with cross-correlation and FFT technology
 - Suitable in liquids with high concentrations of suspended solids and air or a large noise component
 - Patented Laser Pointer Alignment tool
- SmartMeasurement® Open Channel Flow Meters



Coriolis Mass Flow Meters

Coriolis flow meters rely on the Earth's Coriolis effect to measure fluid mass flow rates. Inside the body the flow is diverted into two parallel sensor flow tubes, which are vibrated in opposition to one another by an energized drive coil.

- Liquid flows
 - Available in microbend, U-tube, and Delta Tubed versions
 - Multi-parameter measurement capability
 - Direct mass and volumetric flow rates, process temperature, and density readings
 - No straight pipe runs upstream or downstream of the meter
 - Special applications for water-in-oil percentage, degrees Brix, and degrees Baume
- SmartMeasurement® Coriolis Flow Meters



Variable Area Flow Meters

Metal tube variable area (VA) flow meters, or rotameters made of rugged, metal tube construction are ideal for high pressure, high temperature and other demanding flow applications where safety is a concern. VA flowmeters make use of a float, piston or vane placed inside a flow body, which changes position in response to changes in flow rate of the measure fluid media.

- Low cost for liquids, gases, and steam
 - Horizontal or vertical orientations
 - Mechanical readouts
 - Hazardous areas, analog and digital LCD local display options
- SmartMeasurement® Variable Area Flow Meters



Positive Displacement Flow Meters

Positive Displacement Flowmeters feature two precisely machined rotating members inside a measuring chamber of known volume which may be used to accurately determine volumetric flow rate as a function of the rotors' velocity.



- SmartMeasurement® Positive Displacement Flow Meters

Vision in the Process

The inspection and monitoring of vessels and pipelines require the use of process observation equipment such as sight glasses, lights, cameras, sight flow/visual indicators and associated fittings. Vessels and pipes are often naturally dark and our sight glass and light combinations can be used to assist with visibility.

CMC Technologies provides a complete range of vision in the process equipment suitable for industrial processes. This includes sight glasses & fittings, process lighting & camera systems, visual flow indicators, level, pressure, boiler & temperature gauges, and sanitary visual flow products.

Toughened/Tempered Sight Glasses – Circular and Rectangular

A sight glass, also called a sight window or view port, provides a means of seeing inside a process vessel or tank. Operators use sight glasses to visually verify stages of a process, inspect process media, and to observe liquid levels. It may seem low tech, but a sight glass is a highly engineered component, designed for particular levels of pressure, temperature, corrosion resistance, thermal stress and impact.

We can supply:

- Circular Sight Glass Discs:
 - DIN 7080 - Lumiglas Borosilicate Glass Discs - up to 280°C
 - DIN 8902 - Lumiglas Sodalime Glass Discs - up to 150°C
- Special Materials - Quartz or Sapphire for higher temperatures
- Rectangular Sight Glasses - Reflex or Transparent Borosilicate Glass (DIN 7081) or Sodalime (DIN 8903) - for liquid level viewing
- Oval Sight Glasses - Transparent Borosilicate - for liquid level viewing
- Sight Glasses are ground and polished and can be supplied with coatings, shields, wipers and gaskets to suit the specific application



Metal Fused Sight Glasses – Metaglas®

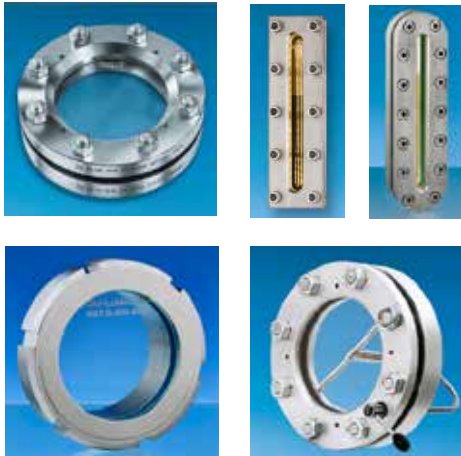
A borosilicate sight glass fused to a metal ring according to DIN 7079. A unique combination of glass and metal places the glass in compression, creating an amazingly strong and reliable sight glass.

Metaglas® is the No. 1 selling sight glass, installed in more locations around the world.

Aseptic - Clamp/Sanitary Ferrule-style, bolt-on, weld-on, threaded, and optionally combined with Lumiglas® Luminaires for light ports.

- Herberts Industrieglas - Metaglas®

Vision in the Process



Sight Glass Fittings – Lumiglas

An industrial sight glass assembly in which a glass disc is sandwiched between two gasketed metal rings. The bottom ring is welded to the vessel. Sight glass fittings can be used for sight, light, or a combination.

High and low pressure sight glass fittings for conventional or metal fused sight glasses.

- Screwed sight glass fittings acc. to DIN 11851
- Circular sight glass fittings acc. to DIN 28120 and DIN 28121
- Rectangular or Oval sight glass fittings for welding into or onto vessel wall
- Accessories - Luminaires, Wipers, Motor Drives, Spray Devices



Sight Flow Indicators

A visual flow indicator (VFI) is used in line to facilitate visual inspection in the piping system or viewing the movement of flow.

Standard Flanged or Threaded Visual Flow Indicators are available in five (5) styles to suit various mounting positions, fluid characteristics, flow rates and directions:

- Plain Style: Can be installed in any position to observe fluid flow in any direction.
- Drip Tube Style: This style is well suited for vertical lines with downward flow direction.
- Flapper Style: Suited for monitoring either horizontal or vertical lines with upward flow.
- Rotator Style: Can be installed in any position to indicate flow in any direction.
- Gaseous Style: For monitoring horizontal or vertical upward low velocity fluid streams.



Full View Flanged or Threaded Visual Flow Indicators are available in two (2) styles to suit various mounting positions, fluid characteristics, flow rates and directions:

- Plain Style: Can be installed in any position to observe fluid flow in any direction.
- Drip Tube Style: This style is well suited for vertical lines with downward flow direction.

Sterile Visual Flow Indicators are also available in standard and full view options.

Vision in the Process



Process Lighting – Lumiglas Luminaires

Our sight glass light products (also called “luminaires”) illuminate process vessel interiors in pharmaceutical, food processing, and chemical plants. Choose from standard and explosion-proof (ex-lights) housings as well as halogen or LED designs.

- Half-Moon Lumistar Luminaires® in Aluminium and Stainless Steel with sight glass combinations
- Dedicated or separate ports for viewing and lighting
- Halogen and LED versions available
- Explosion Proof Rated, Fibre Optic, Various Power Supplies, Spot and Flood reflectors, Metaglas® Combinations, cordless, biogas, and other specialties
- Lumiglas® Luminaires - for Hazardous and Non-Hazardous Areas



Cameras & Systems – Lumiglas, Visulex

For live, remote process observation viewing of interiors of vessels, tanks or reactors, the easy-mount sight glass process vessel camera combines high performance video imaging capability with unparalleled durability. The process vessel camera can be used to monitor cleaning, spray patterns, mixing, foaming, reactions and level in non-hazardous areas. An operator can safely and efficiently exercise remote visual control over a process, whether the application entails one vessel or a number of vessels. They may also be used to monitor areas at a distance.

Compact and lightweight, the camera can be mounted onto virtually any existing sight glass port or sanitary connection, and is available in black & white or color versions, with resolutions up to 450 TV lines. The addition of a standard video recorder makes it possible to create visual, real-time records of these processes.

The Lumiglas® VISULEX Ex Camera System affords inspection and long-range process observation of technical processes primarily in hazardous locations with optimal cost-effectiveness. The permanent availability of visual process data in a central control room saves considerable expenses such as work and travel time. Physical visits to critical production areas or external facilities are no longer required, contributing to plant safety.

- Lumiglas® VISULEX Camera Systems - for Hazardous and Non-Hazardous Areas

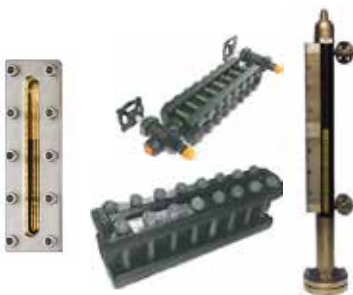
Vision in the Process



Sanitary Components

Sanitary processes for the food, biotech and pharmaceutical industries often require specialist connections and fittings in order to meet government regulations. Our products are created for industries where hygiene, efficient flow, and joint cleanliness are critical – ports, sanitary clamps, mounts and indicators.

- Clamps with reliable leak-free connections, Hygenic, Safety Clamps, ASME section VIII versions
- Ferrules to ASME BPE, DIN, ISO, BS and others
- TCI Clamp Connect - deadleg elimination
- Blanks
- O-Rings and Gaskets - USP V1, FDA
- Hoses - crimped or self assembled
- Standard Connections
- Vessel Connector & Block Flange
- Ball Check Valve Diaphragm Valves
- Specialty designs.



Level, Pressure, Boiler & Temperature Gauges

Level gauges are generally welded to the side of a vessel and used to visual inspect level.

- FHP Rectangular Sight Glass Fittings
- QG&V Level Gauges
- LJ Star - Magnetic Level Gauges

In addition to standard products shown, CMC are also able to provide custom solutions for any of your vision in the process needs.



Process Instrumentation

CMC Technologies provides a unique range of industrial instrumentation. This includes differential pressure gauges & switches, pressure gauges, back flow test kits, data loggers & transmitters for temperature, humidity, voltage & current, filter/application dryers & coalescers, and process and laboratory gas and liquid analysers.

Differential Pressure Gauges, Switches, and DP Transmitters

Piston DP Gauges

Differential pressure is sensed by the movement of a precisely ground floating piston/magnet in a precision bore against a calibrated spring.



Diaphragm DP Gauges

Differential pressure is sensed by the movement of an elastomer diaphragm against a precision calibrated range spring. The change in position of the diaphragm in response to the change in Differential Pressure moves an internal magnet. This magnet, in turn, causes a rotary magnet external to the gauge body to rotate. This rotary magnet has a pointer attached which indicates the differential pressure on the dial.



Bellows DP Gauges

The major components are a two-piece body, bellows sensing element and over-pressure assembly, a torque tube assembly, a range spring and the gauge front assembly.

The body halves provide the pressure containment function. They also clamp the sensing element and over-pressure assembly between the halves, isolating the high side and low side pressures of the system. The high side body half also provides a mount for the torque tube assembly and the gauge front assembly.



Bourdon Tube DP Gauges

Powered by a test quality Bourdon Tube Assembly. The assembly is encapsulated in a high pressure chamber that is fitted with a pressure connection to the inside of the Bourdon Tube and a second connection to the pressure chamber.



DP Gauge Option & Accessories

Hermetically sealed reed switches, explosion proof, maximum pointers, coloured dials, pulsation dampeners + pressure limiting valves, DP transmitters, 3 & 5 valve manifolds.

Back Flow Test Kits

For the past 30 years Mid-West Instrument has been producing Quality Backflow Test Kits.

The Model 830 has been the benchmark of the industry for decades, and is joined by the Model 845 Family. Constant input from field testers led to refinements such as inline filters, laminated test procedures, removable lids, soft seated needle valves & line pressure gauges.



· Mid-West Instrument Back Flow Test Kits & Backpack



Pressure & Temperature Gauges

· CMC Technologies Pressure Gauges
· CMC Technologies Temperature Gauges



Process Instrumentation

Data Loggers & Transmitters

> Wireless Data Loggers

Compact wireless temperature and humidity data loggers from T and D enable secure and accurate collection of data. In combination with free cloud internet access, multiple site installations can be accessed globally. Free software is provided for the storage of data on your local server, as well as for data analysis on your computer. Data loggers also available for measuring voltage, current, pulse, CO₂, and illuminance.

> Standard Data Loggers

Compact data loggers from T and D, and Comet System SRO, for the measurement of temperature, humidity, barometric pressure, voltage, current, CO₂, illuminance and more.

> Transmitters & Regulators

A comprehensive range of data transmitters and regulators, with a variety of outputs for connection to existing control systems.

> Monitoring Systems

The complete solution for monitoring of temperature, humidity and other values.

> Temperature Recorder with Printer

Record temperature during transport of food, flowers, livestock, pharmaceuticals, HACCP.

> Portable Instruments

- T and D Wireless, Bluetooth and Standard Data Loggers
- Comet Data Loggers, Transmitters, Regulators, Monitoring Systems, Temperature Recorder with Printer, Portable Instruments



Filter/ Application Dryers and Coalescers

- Eliminox Mainline Separator & Combo
- Eliminer Mainline Separator & Combo
- Coalescers
- Oil Extractor & Combo
- Eliminator II Desiccant Dryer
- DRAD Regenerative Desiccant Systems
- Refrigerated Dryers & Compressors
- Regulators & Heavy Duty Regulators
- Lubricator & Heavy Duty Lubricators
- Food Grade, 316 Stainless Steel, High Pressure Products



Process and Laboratory Gas and Liquid Analysers

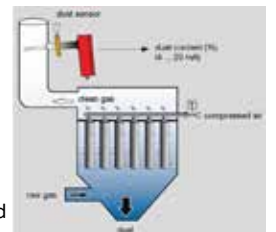
Analytical Systems International Keco has provided field-proven, continuous on-line process and laboratory analysers for refineries, chemical plants, gas processing plants and other industries world wide for over 26 years. These highly dependable and trouble-free products include H₂S in liquids analysers (water, crude, amine, diesel, gasoline, and naphtha), Hydrocarbon (VOC) in Water analysers, Oil in Water monitors, and hydrogen sulfide (H₂S), carbon dioxide (CO₂) and Total Sulfur gas analysers.



- Analytical Systems International / Keco R&D Process and Laboratory Gas and Liquid Analysers

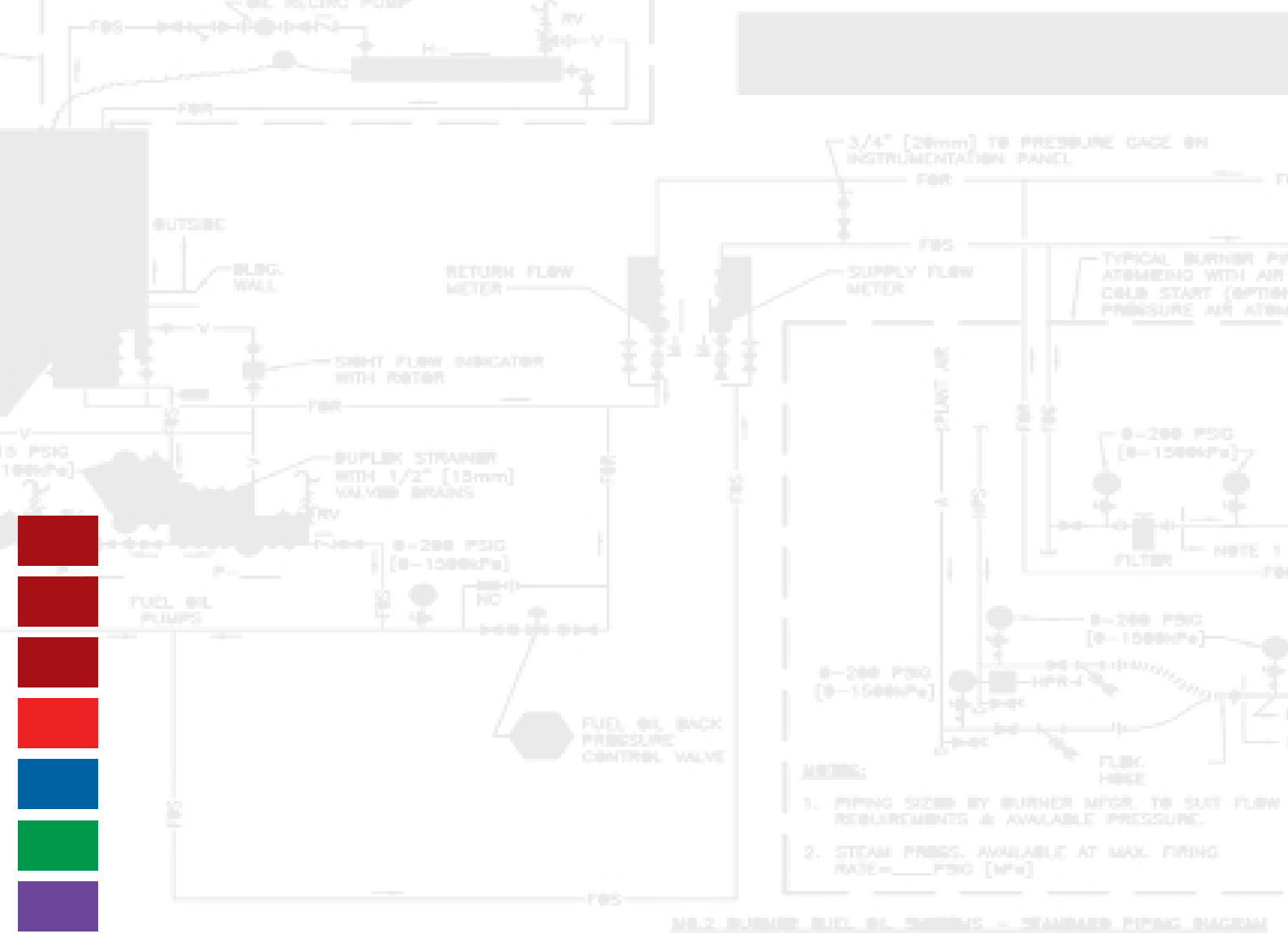
Dust Monitoring & Control

Dust control systems from Robecco enable emission measurement and filter monitoring with one device. This allows the simplification of filter maintenance with the early identification of filter wear and the ability to locate defective filter elements. The compact system combines a probe and control device, making for easy installation and low operational costs.

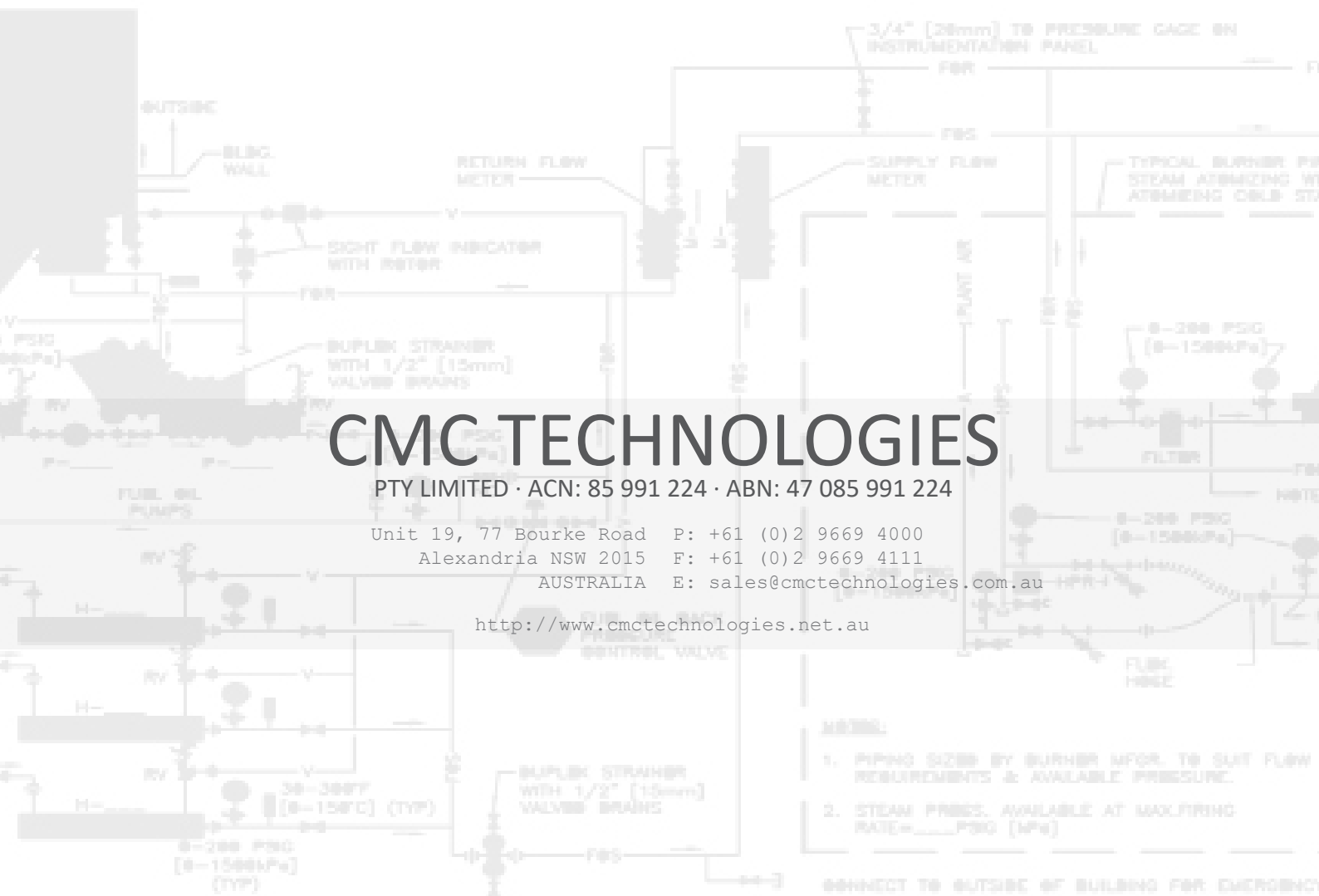


- Robecco Dust Monitoring and Control





M8.2 BURNER SUPPLY & RETURN - STANDARD PIPING DIAGRAM



CMC TECHNOLOGIES

PTY LIMITED · ACN: 85 991 224 · ABN: 47 085 991 224

Unit 19, 77 Bourke Road P: +61 (0)2 9669 4000

Alexandria NSW 2015 F: +61 (0)2 9669 4111

AUSTRALIA E: sales@cmctechnologies.com.au

<http://www.cmctechnologies.net.au>