



# OIL & GAS PRODUCT BROCHURE



Tested & Certified



# Vapour Recovery Units



 **AkerSolutions™**



Aker Solutions supplies a wide range of vapour recovery units (VRUs) for the recovery of gasoline, crude oil and other specific vapours, to dramatically reduce emission of the environmentally hazardous substances referred to as volatile organic compounds (VOCs).

With more than 300 VRUs in operation throughout the world, Aker Solutions is a recognised market leader. Highly skilled employees design, manufacture and supply vapour recovery units for virtually all applications, including truck and rail loading, ship and barge loading and offshore transfer operations. Since its founding in 1982, Aker Solutions subsidiary Cool Sorption has focused exclusively on VOC emission abatement technology and has developed into a leading supplier in the business. In selecting your VRU requirements we offer two alternative routes:

#### **The Depot Series**

Provides a range of pre-designed, standardised cost effective vapour recovery units offered for depots and terminals.

#### **Customised VRUs**

Providing full flexibility from a large number of design and process options.

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#### **Lecore Flame Arrestors**

Lecore Flame Arrestors are all ATEX certified. Our devices have approvals for various explosion groups and for different applications. Detonation, Deflagration and End of Line units are available, and selection of each type will be dependant on the application details. DCM is able to assist with correct selection and sizing.

The accompanying picture is an example of a typical installation, courtesy of Vopak Terminal Durban.



# Marine Loading Arms



JLA has a rich history in loading technology and is one of the world's leading manufacturers of loading systems for fluids and gases. With proven technology and 30 years of experience, JLA has a reliable and innovative reputation with its customers. With our years of experience in design, manufacturing, maintenance as well as its thousands of loading systems currently installed all over the world makes JLA the right partner for you.

## Customer Reference List:

- Oil Tanking
- Vopak
- BP
- Chevron
- DOW
- Exxon Mobil



## FuelsManager®

Tank gauging, inventory management, and refinery and terminal automation in a **single solution**



### Varec Mechanical Level Indicators

The Model 6700 Liquid Level Indicator (LLI) is an economical, easy to install measurement device utilizing a target and gauge board to indicate tank level. The indicator displays liquid level (product innage) to an accuracy of 1" (25 mm). Designed for use on a variety of atmospheric and low pressure storage vessels, the 6700 LLI may be installed on both in-service and out-of-service tanks.



The 2500 series of Automatic Tank Gauges (ATG) are mechanically operated, float and tape instruments designed to provide continuous liquid level measurement in bulk storage applications. The measured level is displayed using a dial and counter built into the gauge head. The 2500 ATG has many product options that allow it to be installed on the tank roof or at the tank side (at grade), which would facilitate ground level reading by the operator. If electronic transmission of level data or temperature measurement integration is required in the control room, then the gauge can be fitted with an optional tank gauging transmitter.



## Flow Metering Equipment



The ZCE6 metering system is designed for road and railcar tanker loading stations with top or bottom loading configuration. The compact horizontal measuring unit is ideal for easy installation in smaller facilities.

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## Metering System for Trucks ZCE26



ZCE26 is a compact metering unit designed to measure pressurized hydrocarbons on road tankers, especially fuel delivery tankers. It is fitted with a “dry” gas eliminator with no need for gas removal pipe connected to the tank. Its electronic flow computer securely archives the transactions and controls all the actions linked to delivery operations

## Veeder Root EMR3 Flow Computer



The new generation of electronic meter-register, exemplified by Veeder-Root's EMR3, wraps the latest technology within a robust/user-friendly system, providing unprecedented value for customers worldwide. Fully capable of meeting the most demanding customer requirements, it can be affordably configured to fit a wide variety of industry applications. For over four decades, Veeder-Root's Mechanical Register has set the global standard in quality, performance and value. We carry on that tradition with the EMR3.

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## Equalis Flow Computer



Designed for Depot and Petroleum Terminal, the Equalis is a state-of-the-art electronic flow calculator. It benefits from the long term Satam know-how and answers all the possible and demanding requirements, in particular thanks to its exceptional modularity.

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## Veeder Root EMR3 Data Link Software



Veeder-Root offers the EMR3 Datalink for simple, reliable, and cost effective, one-way communication from your Veeder-Root electronic register to your back office. Our easy to use PC based software provides a data management system that communicates wirelessly to the EMR3 and generates automatic reports that can be viewed anywhere in the world via a web browser.

# Lecore Product Range

Manufactured at DCM Group factory in Durban



Lecore was founded in 1968 for the purpose of manufacturing and developing a South African product range of pressure vacuum breather valves, flame arrestors, emergency vent valves and dip hatches. These products were made to API standards with improvements made to each product.

In January 2002, DCM Transcal acquired the intellectual property rights to the Lecore product range and brand name. A second revision of the product range has been completed with improvements to all the products and it is with great pride that we launch the new Series II.

We have recognised that long deliveries have always been a problem and a stocking programme has now been implemented. A new product range of Emergency Pressure Vent has also been introduced to accommodate smaller emergency vent sizes. We now offer an improved product range with competitive pricing.

Special attention has also been given to after sales service and a distributor network has been set up with a sales and service provider in each major centre nationally.

As we supply into the international market the Lecore product line meets international quality standards. All export orders can be supplied with a data book and certified by Moody International.

DCM is the registered owner of the trade name and logo of Lecore, Reg No. RSA 05/09624



# Road Tanker Earthing Systems



Scully's **Electronic Terminal Systems** provide Dynamic Self-Checking® overfill protection, as well as grounding verification for bottom loading terminals which load petroleum and liquid chemicals into tank trucks and rail tank cars. These systems are capable of controlling fills and eliminating spills of tanker trucks with up to 8 compartments when equipped with two-wire sensors or 15 compartment tanks when equipped with five-wire sensors. The systems work best with tank trucks and/or rail tanks outfitted with sensors pioneered by Scully.

## **The Scully Groundhog™ Vehicle Static Grounding System**

Self-Proving, the Groundhog™ monitors the grounding connection throughout the loading operation.

Can be used in conjunction with your Scully Overfill Prevention System offering one quick connection for overfill protection and grounding verification.

Can also be used as a completely independent grounding system with a special quick-release plug for grounding connection to a specially designed, vehicle mounted, electronic ball.

Direct grounding tie point at gantry available.

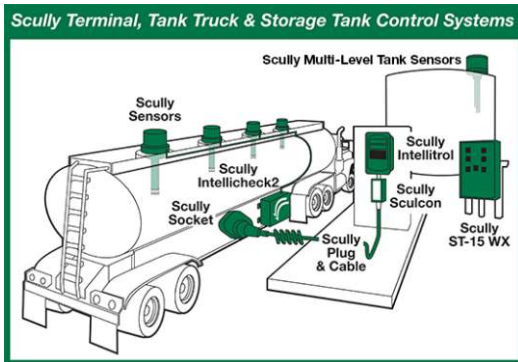
Immediately shuts down the loading operation if proper grounding is not present.

CENELEC, FM, CSA approved models available.

No manual checks are needed.

Direct grounding tie point at gantry available.

**Scully's Electronic Terminal Systems** provide Dynamic Self-Checking® overfill protection, as well as grounding verification for bottom loading terminals which load petroleum and liquid chemicals into tank trucks and rail tank cars. These systems are capable of controlling fills and eliminating spills of tanker trucks with up to 8 compartments when equipped with two-wire sensors or 15 compartment tanks when equipped with five-wire sensors. The systems work best with tank trucks and/or rail tanks outfitted with sensors pioneered by Scully.



**The Scully Groundhog™ Vehicle Static Grounding System**

Don't let unsure grounding methods leave you guessing. Transport vehicles should be properly tied to ground before and during the loading operation. There should never be any doubt that the grounding systems at your terminals are performing their proper function. Many systems give you little assurance of their operation. The Scully Groundhog™ gives you complete assurance that a proper ground tie-in is present.



The Groundhog™ is a self-proving grounding system for maximum safety in loading operations.

The system consists of a rack mounted control housing with two installation methods. It can operate in conjunction with your existing Scully Overfill Prevention System or as an independent unit. Scully Signal Company has over 30 years of electronic liquid handling system experience along with the dependability, service and safety Scully is known for.

The Scully Groundhog™ grounding system can be used for a wide variety of loading applications for use with tank trucks, rail cars, and aircraft refuelers

The Groundhog™ can be used as a completely independent system. This system is ideal for top loading or applications where a Scully Overfill Prevention System is not in use. The control monitor connects to a heavy duty Sculcon® junction box with attached cable and special quick release snap-on plug. The Scully Ground Plug connects to a specially designed electronic Scully Ground Ball mounted on each vehicle. The controller in conjunction with the ground ball provides and verifies vehicle grounding before loading can begin. The controller must receive an electronic return signal from the ball throughout the loading operation.



CENELEC, FM, CSA approved models available.

### ST-15C-WX Series Overfill Prevention Control Units for Storage Tanks

Multiple-Point Liquid-Level Detection System for High and Low Level Warning and Spill Prevention.

INTERNATIONAL  
ATEX  
PRODUCT  
LINE



### Featuring Dynacheck® Automatic and Continuous Self-Checking Circuitry

#### DESCRIPTION



ST-15C-WX 4

The Scully ST-15C-WX series multiple point liquid level detection control units are available in three through twelve channel models.

The ST-15C-WX is commonly used to provide overfill protection, high level warning, low level warning and/or pump and valve control functions. They are well suited for multiple xed storage tank and transport tank applications where individual display and/or output control is required.

The output control function may be reversed to alarm for a dry sensor condition rather than a wet sensor condition for low level warning.

The ST-15C-WX enclosure includes individual red indicator lamps that light when a sensor is wetted, a power indicator lamp, an alarm acknowledge push button and alarm test push button. Once a sensor alarm is acknowledged the alarm output circuit is reset, however, the indicator lamp remains lit until the sensor is dry again.

ST-15C-WX series controllers incorporate Scully's unique and exclusive Dynacheck circuitry when connected to Scully sensors. Using pulsed signals to simulate a wet or "unsafe" condition, the monitor automatically and continuously checks the entire system operation; controller, wiring, connectors and sensors for faults thirty (30) times per second.

If liquid comes in contact with the sensor tip, or in the unlikely event a fault occurs, the pulsed signals cease and the monitor signals an audible alarm and/or controls, pumps and valves for immediate shutdown.

Compatible liquid level sensors for the ST-15C-WX employ solid state thermistor and optic sensing technology. Sensors and holders constructed of aluminum or stainless steel for sensing a wide variety of liquid products including petroleum and chemicals are available. Consult the technical data sheets listed on the back for further sensor information.



SIL2 HFT=0  
SIL3 HFT=1

#### FEATURES AND BENEFITS

- Incorporates Dynamic Self-Checking® circuitry which monitors the controller, wiring, connections and sensors for faults thirty times per second.
- Sounds an audible alarm and/or controls pumps and valves for automatic shutdown.
- Monitors from 2 –12 sensing points depending on model
- Provides high level detection for a wide variety of petroleum and chemical products.
- Uses output sensors approved as intrinsically safe for use in Class 1, Division 1, Group D hazardous environments
- Features NEMA 4 style watertight housings.
- Works in conjunction with either Scully eld-proven thermistor or optic sensors.

# Top and Bottom Loading Arms



Gassó manufactures loading arms and stairs in accordance with the highest standards: ISO 9001: 2000, design, installation and maintenance of Loading arms: top loading, vapour recovery, charging lower hose, 1 liquid phase bottom-loading, bottom 2 stages liquid-gas, Swivel, stairs, Design, Installation and Maintenance of Loading Arms: Top Loaders, with Recovery Vapours, Bottom loader, Twin (Gas and Liquid phases) Swivel-Joins, Folding Stairs, Platforms.

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## Composite Hoses



GASSOFLEX meets the requirements of the ISO 9001:2000, EN 13765, BS 5842, BS 3491, PED 97/23/CE, IMO CODES, ATEX/94/9/EC.

GASSOFLEX is designed for the transfer of products from truck to tank or tank to tank using a hose. The main characteristics of GASSOFLEX are:

- MULTI-USE: because of its resistant interior lining it can be used with hydrocarbons and chemical products.
- FLEXIBLE: two wire spirals, inner and outer provide added strength and minimum curves of radius to adapt to all types of loading and transferring operations: on-land installations, loading arms and marine applications.



# Depot Series™

Cost effective vapour recovery units

Aker Solutions' Depot Series™ vapour recovery systems are a range of pre-designed, standardised, cost effective vapour recovery units (VRU) intended specifically for small to medium sized depots and terminals, each Depot Series™ vapour recovery unit encompassing all of our years of expertise, knowledge and experience in the business.

The Depot Series™ units are based on the use of a rotary vane dry vacuum pump, and are available in a range of sizes, dependent on the loading capacity of the terminal. The units **cover seven standard sizes and we are confident that the range will fully meet the loading capacities of your terminals.**

At depots and terminals the requirements for full functionality and easy installation are paramount to the selection of a vapour recovery unit.

**Our Depot Series™ units are designed specifically for this purpose. Furthermore, using pre-engineered, standard designs provides a number of specific advantages for our customers:**

- Short lead time
- Low installation time and cost
- Low running cost
- Low maintenance cost
- High reliability
- High level of safety and functionality

Through adherence to our standard design and scope of supply we are able to offer units at very attractive prices and **with a short lead time, fulfilling your needs for an expedited project completion.**

# A pre-engineered solution

As a dedicated supplier of vapour recovery systems for over 30 years and with an experience record covering over 300 vapour recovery units installed world-wide, we are certain that our vapour recovery units will fully meet the needs of your terminal — at a favourable price and with a short lead time.

Our Depot Series™ is a range of seven pre-designed and standardised VRU models, designed for truck and rail loading terminal operations. The VRUs utilise the same components and are engineered to the same high standard as those you have come to expect from all our VRUs. Only well-known and respected suppliers known to deliver high quality equipment are used. All our systems are constructed in accordance with internationally recognised standards and codes.

The basis for the selection of each of our Depot Series™ models:

Although the Depot Series™ has been designed with truck loading terminals in mind, the continuous duty flows found in tank filling and barge and ship loading operations can also be readily accommodated.

The vapour loading profiles have been developed to ensure a reasonable level of utilisation based on a number of loading bays or loading arms.

- Average inlet hydrocarbon concentrations, 40 per cent v
- Emissions, from 35g/Nm<sup>3</sup> to 150mg/Nm<sup>3</sup>

Depot Series™ VRUs are all based on the use of rotary vane type dry vacuum pumps. These vacuum pumps offer an extremely reliable and economical operation.

To demonstrate our high degree of confidence in the reliability of these vacuum pumps, we can offer a five year guarantee on the vacuum pumps for all of our Depot Series™ units, where we provide a service and maintenance contract.

Aker Solutions has been using dry vacuum pumps in our vapour recovery system designs since 2002. During this time we have found that this technology offers many advantages over the conventional liquid ring vacuum pump (LRVP) design.



# Advantages

## Main advantages of the dry vacuum pumps:

- No glycol loop required: as such all the ancillary equipment required by the LRVP is eliminated, using dry vacuum pumps greatly simplifies the design of the VRU
- High level of reliability
- Durability: the rotary vane pump design is robust and has good resistance against particulate contaminants such as sand and grit
- Safe operation: the rotary vane vacuum pumps are tested to a pressure of 20 barg
- Easy to maintain: maintenance of the rotary vane vacuum pumps is performed on site, including full dismantle and reconstruction
- Lower power requirements

## Advantages of of a pre- engineered solution:

- All interface engineering available
- Fast delivery between 20 and 25 weeks
- Competitive price without compromise

## Choose Your VRU

The key to selecting an adequately sized vapour recovery unit is accurately defining the loading profile. The loading profile provides the key information we at Aker Solutions need to complete the design.

Each VRU supplied is specifically selected, utilising detailed knowledge of your terminals' requirements. The table below is indicative of the capacities of each model in the range, and provides the maximum interrelated vapour flow rates that the particular VRU is required to process. The figures should be considered as guidelines only. We will always fully check the designs to ensure the most appropriate design is selected for each unit.

Loading profile — data selection table

Depot series <sup>TM</sup> model no.	DS080	DS150	DS300	DS450	DS550	DS700	DS850
Number of bays	1	2	4	6	8	10	12
Arms connected Simultaneously	4	8	16	24	32	40	48
<b>Loading profile</b>							
Instantaneous flow (Qi) m <sup>3</sup> /min	10	18	28	37	48	68	83
15 min capacity 10g/Nm <sup>3</sup> (Q15) m <sup>3</sup>	40	90	180	235	315	400	510
For 150 mg/Nm <sup>3</sup> emissions		52	115	197		315	
1 hour capacity 10g/Nm <sup>3</sup> (Q1) m <sup>3</sup>	120	260	510	690	900	1 160	1 440
For 150 mg/Nm <sup>3</sup> emissions		154	335	576		910	
4 hour capacity 10g/Nm <sup>3</sup> (Q4) m <sup>3</sup>	348	710	1 420	2000	2 480	3 300	4 000
For 150 mg/Nm <sup>3</sup> emissions		450	964	1 667		2 630	
Daily capacity 10g/Nm <sup>3</sup> (Qd) m <sup>3</sup>	950	1 900	3 850	5 500	6 700	9 000	10 700
For 150 mg/Nm <sup>3</sup> emissions		1 200	2 640	4 575		7 200	
Continuous capacity, hourly	76	152	304	436	530	721	841
Continuous capacity 150mg		99	202	364		575	
Plot space (LxB mtr)	6x3	6.5x4	9x5.5	9.5x5.5	9.5x6.5	10x7	10x7
Power installed kW	22	28	36	71	71	102	102
Power consumption kW	16	21	26	50	50	76	76

# Local presence, service and maintenance

Aker Solutions maintains a strong local presence in order to accommodate local languages, needs and cultures. Many years of experience and great relations with clients has shown us the value of maintaining a strong post-project relationship.

We always aim to be the market leader in service and maintenance of our vapour recovery units. We follow each VRU's lifecycle to provide the best possible service and maintenance based our world- wide experience and our service team has extensive experience in providing commissioning and start-ups, troubleshooting and capacity tests, and system revamps.

We also offer a wide range of extensive, worldwide service agreements for our Depot Series™.

### Choosing the right application

A Depot Series™ VRU can be selected quickly from the selection table on the previous page. We do however recognise that these numbers cannot be representative of every application and will therefore always check every design.

In order for us to deliver the best possible proposal for a suitable system, we need a relatively limited amount of information from you. Please fill out the form below with as much information as possible and return it to us using the contact information below. If you prefer, you can simply return the form by email. We will respond with a proposal for a system best suited for your needs.

**Cool Sorption A/S**  
 Smedeland 6  
 DK-2600 Glostrup  
 Denmark  
 Tel +45 43 45 47 45



### System profile data form

<b>Type of application</b>			
Truck loading	Tank filling	Rail wagon loading	Balanced vapour system
Number of loading spots _____		Number of loading arms per spot _____	
Gasoline	Diesel	Oils split _____	RVP of gasoline _____
Gasoline temperatures: Max/min _____		Ambient temperatures: Max/min _____	
Required emissions limit _____			
<b>Loading profile</b>			
Number of trucks that can be loaded simultaneously _____		Number of trucks loaded per hour _____	
Maximum volume of product loaded per hour _____		Daily _____	
Estimated maximum volume loaded in four hours _____			
<b>For tank filling applications</b>			
Maximum fill rate number of storage tanks _____		Do the tanks have floating roofs Y    N	
Volume of tanks _____			



# Oil & Gas Solutions

Loading Arms



DCM Group is proud to associate itself with JLA. JLA has a rich history in loading technology and is one of the world's leading manufacturers of loading systems for fluids and gases.



With proven technology and 30 years of experience, JLA has a reliable and innovative reputation with its customers. With our years of experience in design, manufacturing, maintenance as well as its thousands of loading systems currently installed all over the world makes JLA the right partner for you.

## Customer reference list:

**Oil**tanking



MARINE LOADING ARMS  
HOSE TOWERS  
TRUCK & TRAIN LOADING ARMS

NO EMISSIONS  
LESS MAINTENANCE  
QUICK DELIVERY TIME  
BETTER AFTER SALES  
DUTCH QUALITY

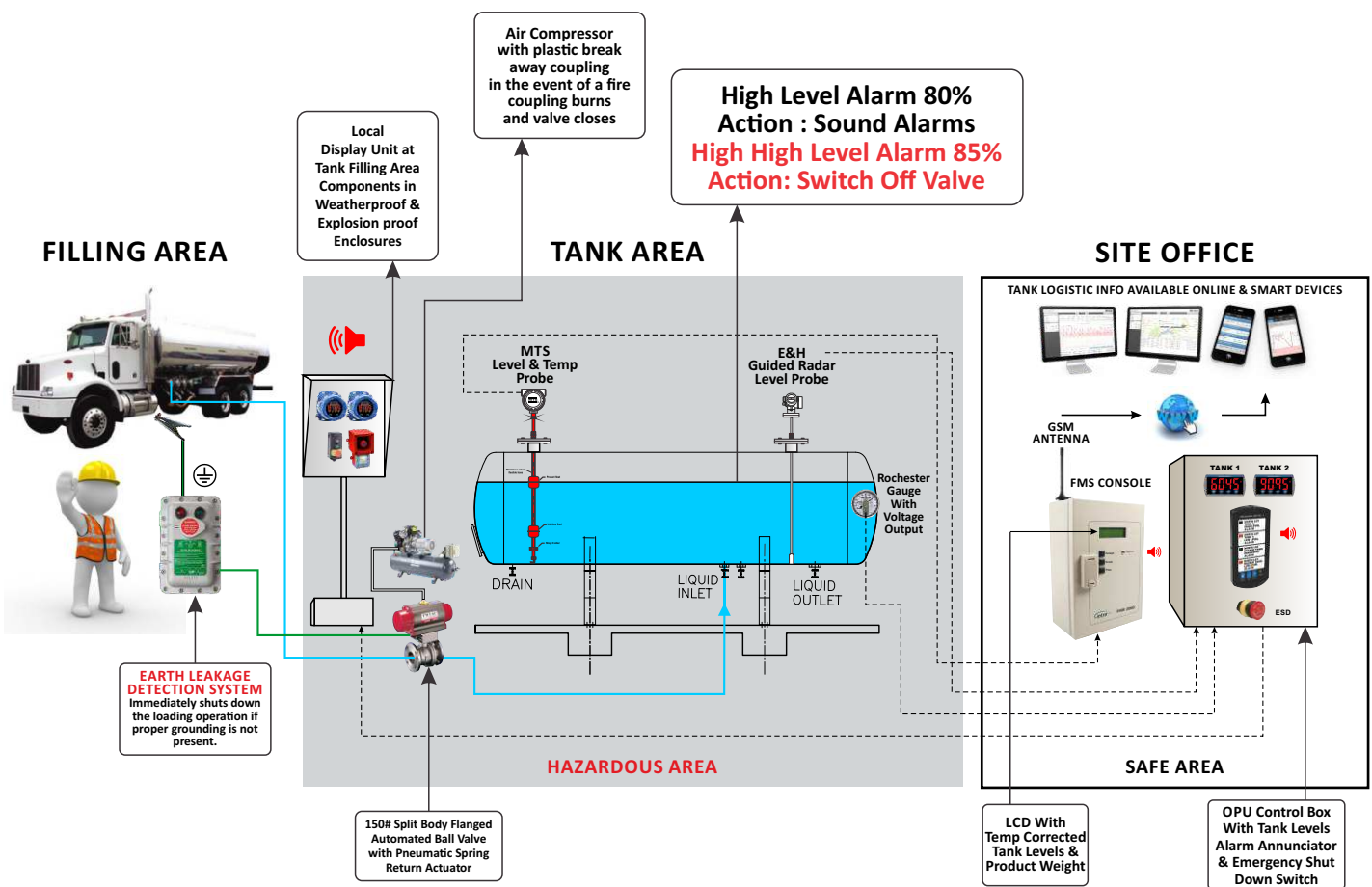


DCM Group offers a fully redundant & automated overfill protection system that meets european safety standards.

With a control box in the site managers office the manager has the ability to see current tank levels. If a soft alarm which can be pre-determined is reached during filling the manager will receive a visual and audible alarm. Once a high alarm is reached the loading operation can be automatically shut down via an actuating valve. For emergency situations the control box is also fitted with an emergency shutdown switch and only the manager will be able to continue loading operations by acknowledging the alarms from the alarm annunciator.

The local display unit at the filling station will also have tank level displays with an audible alarm and an emergency shut down switch in case of emergencies. An optional Earth Leakage Detection system can be interfaced into the actuating valve to eliminate pumping should the filling tanker not have a proper grounding.

**Fully Redundant Overfill Protection Unit  
Automatic Tank Level & Temperature Gauging  
With Earth Leakage Detection**



**AkerSolutions**™ supplies a wide range of vapour recovery units (VRUs) for the recovery of gasoline, crude oil and other specific vapours, to dramatically reduce emission of the environmentally hazardous substances referred to as volatile organic compounds (VOCs).

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### The Depot Series

Provides a range of pre-designed, standardised cost effective vapour recovery units offered for depots and terminals.

### Customised VRUs

Providing full flexibility from a large number of design and process options.

### DCM Group Project Management

For all Aker VRU projects, DCM will manage the installation process, from delivery to site, to commissioning and maintenance. A full turnkey service will be provided.



**DCM Group** & Aker Solutions supplied & installed 5 Vapour Recovery Units to Engen between Feb & Mar 2015, finishing 2 weeks ahead of schedule.





## The Fuel and LPG specialists

### Durban

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