

IDENTIC AB

Professional Handling of Fuels & Chemicals



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Company Profile

IDENTIC supplies products for professional handling of fuels and chemicals as well as system solutions for day-to-day service and management of vehicles and vehicle depots.



- Focus on Innovation – Design – System Integration
- Portfolio of proprietary products and system solutions within two main areas of expertise:
 - Spill-Free Vehicle Refilling (**SVR**) and
 - Intelligent Depot Systems (**IDS**)
- More than 30 years of experience
- More than 300 depots and 50 000 vehicles equipped
- Strong brand within its niche market

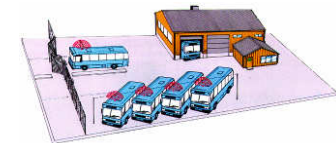
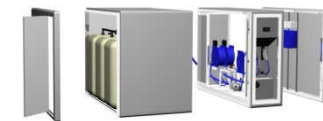


For Professionals by Professionals

Products and System Solutions

IDENTIC supplies the following categories of products and system solutions:

- **SVR Vehicle Kits:** include the male spill-free coupling, the level sensing device, the vehicle control module and fixing assemblies (inlet adaptor).
- **SVR Nozzles:** include the female spill-free coupling, ergonomically designed nozzle with flow control trigger and hose attachment fitting.
- **Refilling Systems:** include the hoses, valves, meter, pumping unit and storage system.
- **Depot Management Systems:** include vehicle identification systems, authorisation and control terminals and management software.



Working with Different Fuels and Chemicals

IDENTIC supplies SVR products and systems solutions for a range of fuels and chemicals and offers customized solutions to meet specific demands.



SVR for Diesel – Continuously Growing Market



- IDENTIC has been a supplier of SVR solutions for Diesel since 1979
- IDENTIC's SVR solution for Diesel has actually become an industry standard for refilling buses
- SVR for Diesel was originally developed by IDENTIC upon request by vehicle fleet operators experiencing problems due to extensive loss of fuel - due to spill, over-filling and unauthorized refilling - causing unnecessary cost and pollution.
- With the immediate benefits from an improved refilling process, fuel cost savings and cleaner working environment, IDENTIC's SVR solution offers the vehicle fleet operators a quick return on investment



SVR for AdBlue®/DEF – Part of the International Standard



- Selective Catalytic Reduction (SCR) and AdBlue®/DEF (urea solution) has been selected by the Vehicle Manufacturers as the solution to reduce emissions from Diesel engines.
- In 2003 ACEA invited IDENTIC to participate in the cross-industrial negotiations aiming at an agreed refilling interface for AdBlue®/DEF between depot and vehicle.
- In parallel, IDENTIC developed a SVR solution for AdBlue®/DEF.
- The specific properties of AdBlue®/DEF – crystallisation, corrosion and freezing in particular – presented challenges which required a unique solution.
- IDENTIC was subsequently also asked to draft the industry standard for the refilling interface. Said standard has now been adopted as the international standard for the AdBlue®/DEF interface (ISO 22241-4).
- IDENTIC's SVR solution for AdBlue®/DEF protects the vehicle, the depot and the environment from the risk of crystallisation and corrosion due to spill of AdBlue®/DEF.



SVR for Ethanol – Rapidly Emerging Market



- The use of Ethanol as fuel for HDV's as well as for SUV's and other vehicles is projected to increase dramatically world-wide in the next few years.
- IDENTIC has long and extensive experience from developing and supplying refilling solutions for Ethanol.
- IDENTIC has built a large number of Ethanol refilling stations - both for public service and private use.
- One of the stations being built by IDENTIC is the World's largest refilling station for Ethanol!



SVR for Methanol – Introducing a New Fuel

To facilitate the introduction of Methanol as a widely used fuel, IDENTIC has developed a SVR solution for Methanol in co-operation with the Methanol Fuel Cell Alliance – here installed in DaimlerChrysler Necar 5 Fuel Cell Vehicle.



DAIMLERCHRYSLER

XCELLSiS
The Fuel Cell Engine Company

BASF

METHANEX
A Responsible Care® Company



STATOIL



Increased Demand of SVR and IDS

IDENTIC is experiencing an increasing demand for its SVR solutions and IDS system.

Some of the drivers behind the increased demand are:

- Escalating fuel prices increases focus on more efficient fuel handling technologies
- Increasing focus on environmental issues among legislators and vehicle operators
- The introduction of alternative fuels and new chemicals
- Growing share of bus and truck operators handling fuels and chemicals at home depots



IDENTIC SVR Solutions for AdBlue®/DEF



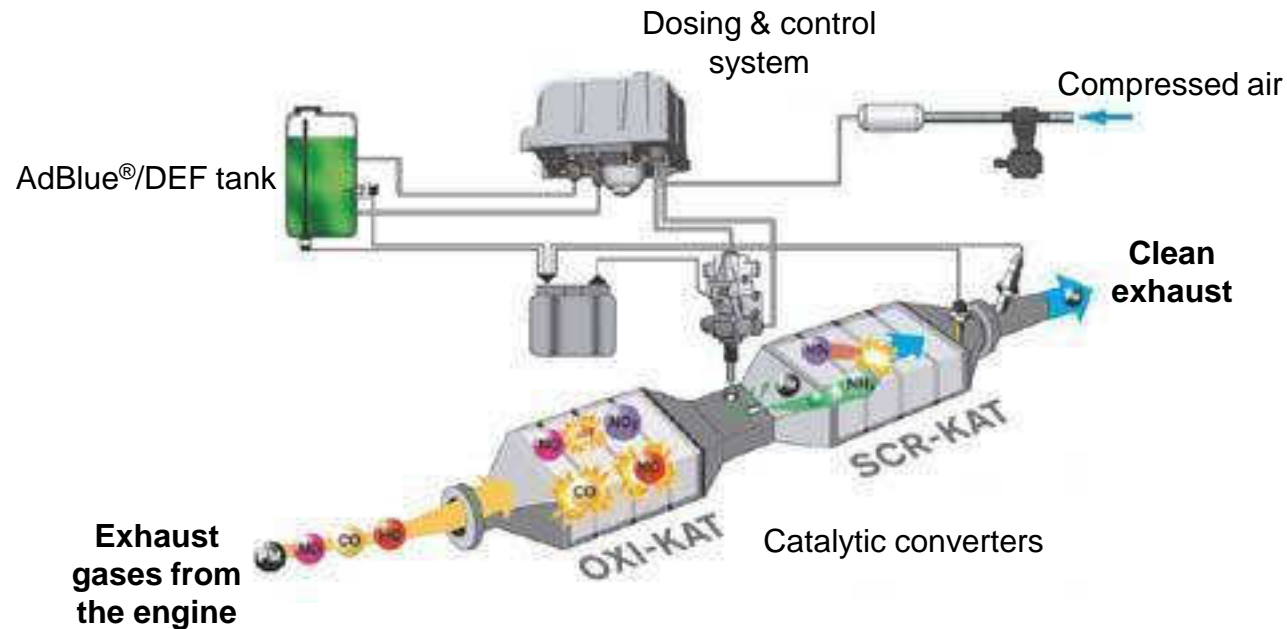
What is AdBlue®/DEF and why is it needed



- New legislation regarding exhaust emission limits have been set by the legislators all over the world.
- Selective Catalytic Reduction (SCR) and AdBlue/EDF has been selected by the Vehicle Manufactures as the solution to reduce the emissions from Diesel engines.
- AdBlue®/DEF is a high-purity aqueous Urea solution containing a 32.5% solution of Urea in water. The quality of AdBlue is important and is defined in several new ISO standards.
- SCR systems are used on Diesel powered heavy-duty vehicles to reduce the nitrogen oxide emissions (NOx). AdBlue®/DEF usage amounts to approximately 3-4% of the fuel consumption. A typical heavy-duty vehicle will consume approximately 3 tons of AdBlue®/DEF each year.
- Several vehicle manufacturers have also introduced SCR and AdBlue®/DEF on light-duty vehicles, passenger cars as well as on various off-road vehicles.

How does SCR technology work

SCR is an after-treatment system which deals with emissions in the exhaust system. AdBlue®/DEF is mixed with air and injected directly into a catalytic converter inside the exhaust system. A chemical reaction takes place which converts the NO_x present in the exhaust into harmless gas and water.



Typical SCR system on vehicle (Example from BOSCH)

The Introduction of AdBlue®/DEF

Since 2003 IDENTIC is co-operating with vehicle manufacturers, oil- and chemical producers and distributors as well as with organisations all over the world to ensure that a standardised and professional approach for introducing AdBlue®/DEF is achieved.

These organisations include:

- European Automobile Manufacturers Association (ACEA)
 - IDENTIC was engaged by ACEA to participate in cross-industrial negotiations and to draft an industry standard for a common AdBlue® interface. The industry standard has subsequently become an ISO Standard (ISO 22241-4) for a common AdBlue®/DEF interface.
- Verband der Automobilindustrie in Germany (VDA)
- Authorities, Organisations and Consultancy firms in Europe, USA and Japan
- Organisations within the Petroleum and Chemical Industries
- Transportation and Road Haulage Organisations
- AdBlue®/DEF Suppliers and Distribution Companies
- Vehicle Manufactures
- Vehicle Fleet Operators



Requires International Co-operation

Careful Handling is Required

Although AdBlue®/DEF is considered non-hazardous, it presents several challenges when it comes to storage and handling the chemical in large quantities, frequently and on a daily basis.



AdBlue®/DEF has the following specific properties:

- It quickly crystallises when exposed to air
- It freezes at -11° Celcius or 12° Fahrenheit
- It has a corrosive effect on some common metals
- It should be protected from contamination
- It should not be released freely into the environment

These properties require that AdBlue®/DEF is handled professionally and with care.

Any equipment that comes in contact with AdBlue®/DEF must be made of suitable materials to prevent corrosion and contamination.

The dispensing system must minimise contact with air to prevent crystallisation, provide protection from cold weather and prevent spillage.

Conventional dispensing equipment is not suitable for handling AdBlue®/DEF.

Why AdBlue®/DEF Requires a Sealed Connection

To ensure that AdBlue®/DEF is handled in a clean, safe and reliable way, IDENTIC has developed a refilling system specifically for AdBlue®/DEF

IDENTIC's SVR system for AdBlue®/DEF provides the following advantages:

- **It prevents the risk of spillage**
reducing the risk of crystallisation and corrosion on the vehicle and at the depot
- **It ensures only AdBlue®/DEF can be filled in the vehicles AdBlue®/DEF tank**
preventing the risk of incorrect filling which could permanently damage the vehicles engine or SCR equipment and create a hazard
- **It protects the quality of AdBlue®/DEF**
preventing the risk of contamination and ensuring the vehicle reaches the emission standards it was designed to achieve.



Conventional
AdBlue®/DEF Nozzle

Unique Interface
Not
Interchangeable



Spill-Free
AdBlue®/DEF Nozzle

Comparison of Open and Spill-Free Refilling

Open Refilling



- Problems due to crystallisation in nozzle spout and shut-off mechanism
- Allows accidental filling of wrong fluid through open tank inlet
- Allows contamination to enter the AdBlue®/DEF tank
- Exposes vehicle and depot to risk for corrosion due to spillage
- Exposes operator/user to AdBlue®/DEF
- Allows vehicle tank to be over-filled (problem when freezing)

Spill-Free Refilling



- No problems due to crystallisation
- Removes the risk for corrosion
- Eliminates the risk of filling the wrong fluid in the Diesel or in the AdBlue®/DEF tank
- Prevents contamination entering the tank
- Protects the operator/user from any contact with AdBlue®/DEF
- Automatically fills the tank to correct level

SVR Nozzle and Tank Inlet Adaptor for AdBlue®/DEF

IDENTIC has developed a SVR Nozzle and Tank Inlet Adaptor specifically for AdBlue®/DEF.

The SVR Nozzle and Inlet Adaptor provides a sealed connection between the dispenser and the vehicle AdBlue®/DEF tank.



... Emergency Refilling of AdBlue®/DEF!



Spill-Free Refilling and ...

Key Benefits

- Unique interface - only AdBlue®/DEF can be refilled
- Automatic or manual filling - to correct level
- No spillage
- No crystallisation
- No contamination
- Option; data collection and communication



Dual Tank Inlet Adaptor for AdBlue®/DEF



IDENTIC has designed a Dual Inlet Adaptor for use on SCR vehicles. This Adaptor provides the flexibility to utilise both a sealed and an open refilling system.

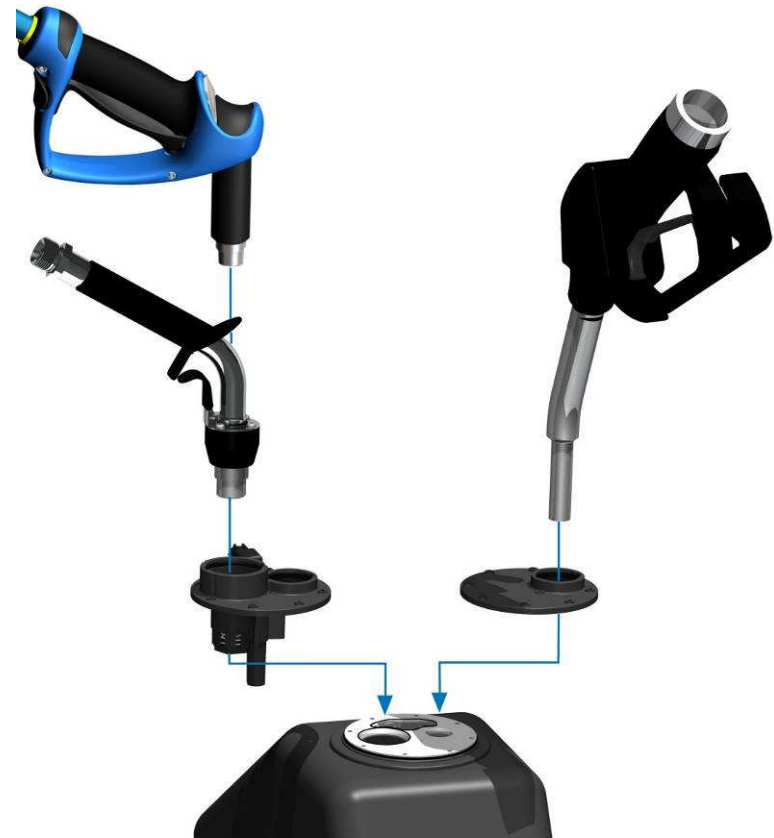
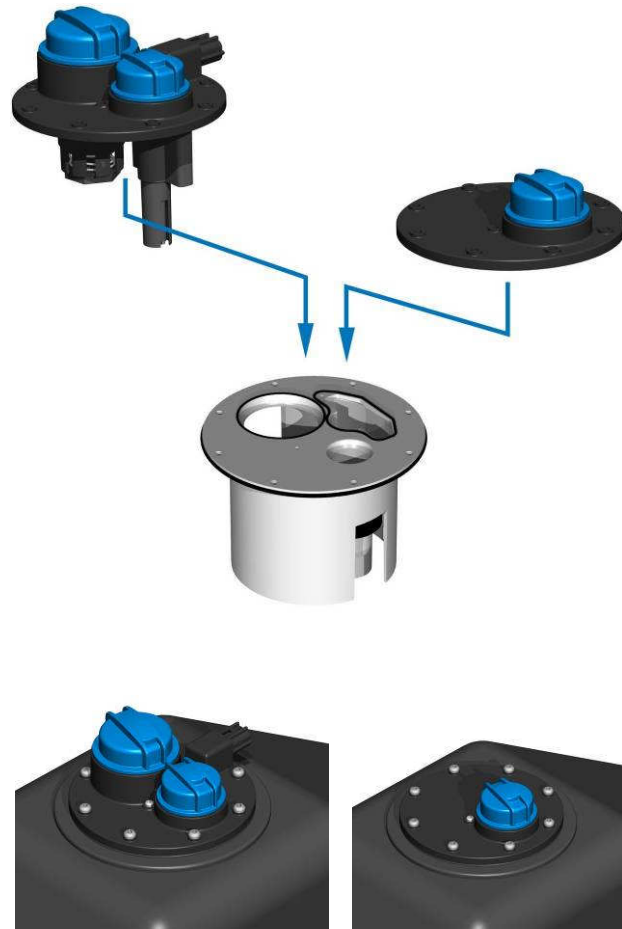
A range of Inlet Adaptors are offered to suit different types of vehicles and different AdBlue®/DEF tank designs.



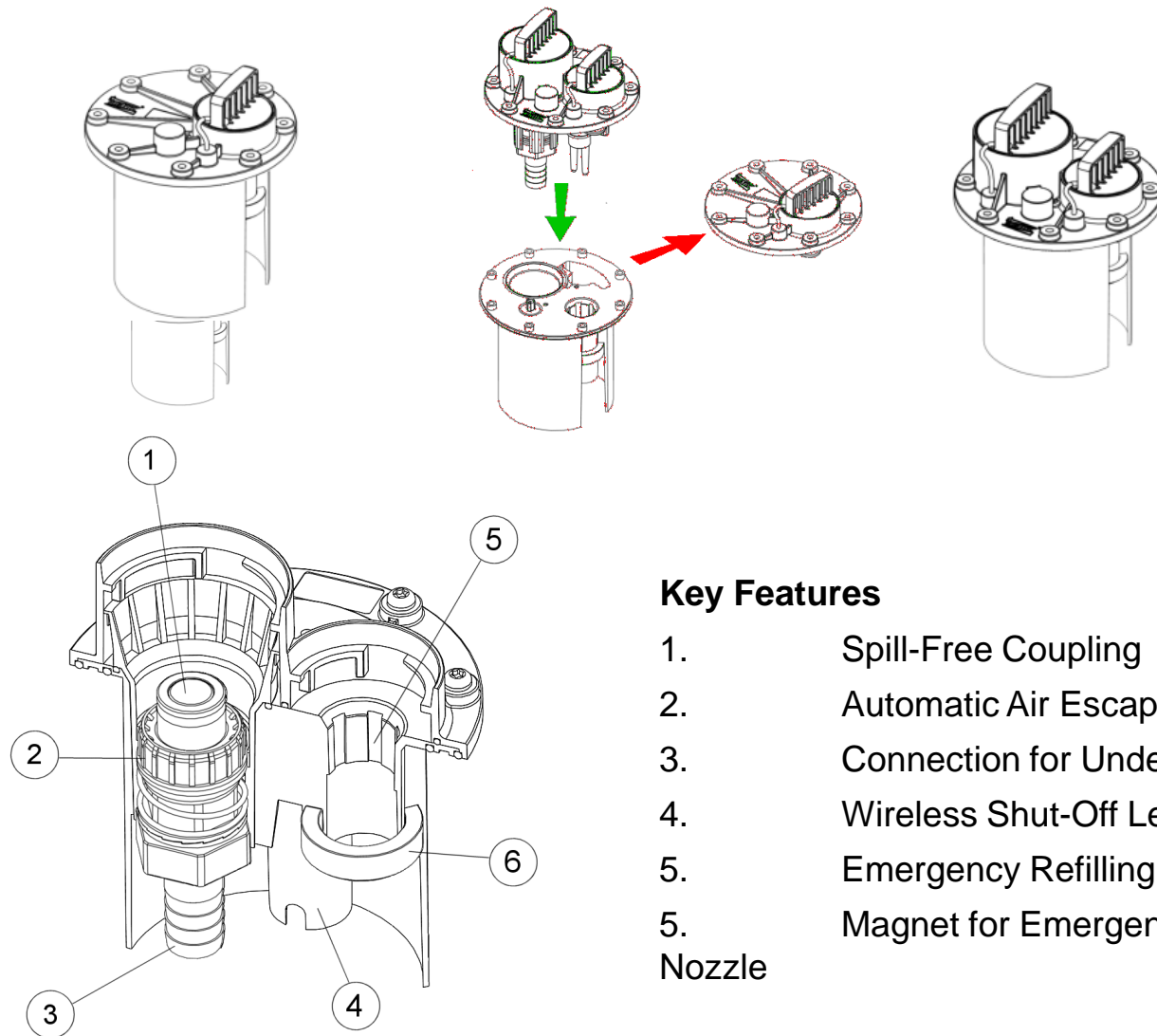
Key Benefits (see also SVR Nozzle)

- Can be installed by the vehicle manufacturer or the tank supplier
- Can also be retrofitted by the vehicle operator
- Adaptable for all types of vehicle tanks
- Allows the tank inlet to be positioned at all angles
- Built-in pressure and expansion control

Dual Tank Inlet Adaptor for AdBlue®/DEF



Dual Tank Inlet Adaptor for AdBlue®/DEF

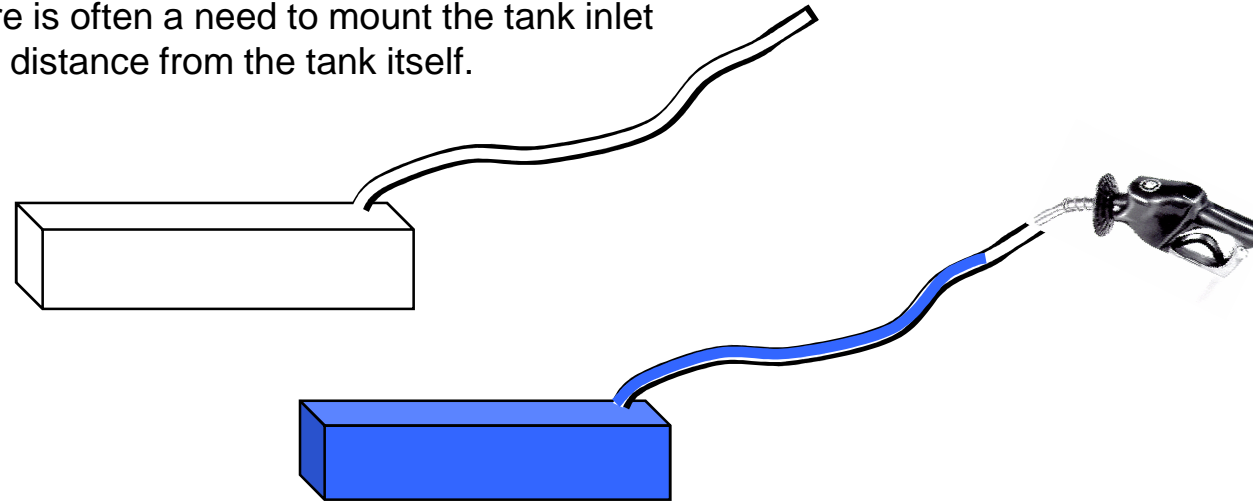


Key Features

1. Spill-Free Coupling
2. Automatic Air Escape Valve
3. Connection for Under-Filling Hose
4. Wireless Shut-Off Level Sensor
5. Emergency Refilling Inlet
5. Magnet for Emergency Refilling Nozzle

Location of Tank may require SVR Solution

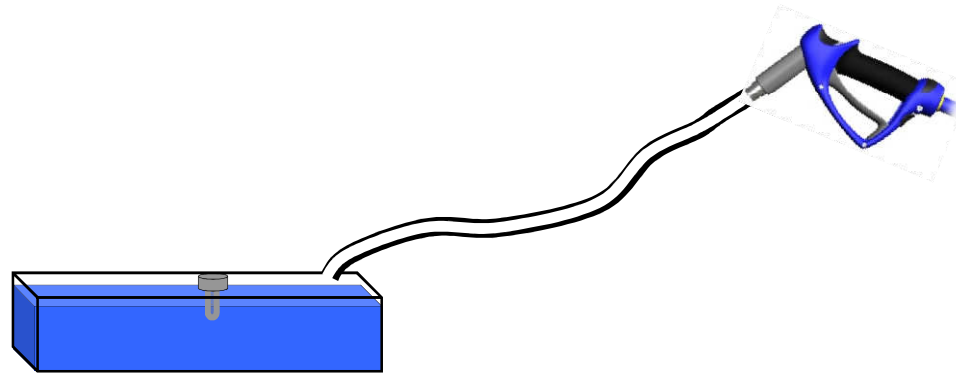
Due to vehicle design and/or lack of space there is often a need to mount the tank inlet at a distance from the tank itself.



If the tank inlet is mounted at a distance from the tank itself **and AdBlue®/DEF is filled with an open/conventional nozzle**, the extended tank neck will be filled with AdBlue®/DEF before the nozzle shuts off which, in turn, will cause large problems with AdBlue®/DEF crystallizing, freezing and expanding in the tank neck.



Location of Tank may require SVR Solution



With IDENTIC's SVR solution for AdBlue[®]/DEF, distance between the tank inlet and the tank itself does not cause any problems.

IDENTIC's solution for AdBlue[®]/DEF enable the vehicle manufacturers to adopt a more flexible approach to location of the tank and tank inlet.

With the SVR solution, only the tank itself is filled and always to the correct level.

The tank inlet can be mounted wherever suitable and in any angle.

Also, the crystallization in the tank neck is kept at a minimum.

IDENTIC – Bringing Solutions to the Market



Spill-Free Vehicle Refilling

**Vehicle
Manufacturers**

**Fuel/Chemical
Distributors**

**Forecourt Equipment
Manufacturers**

Vehicle Operators

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