



## SCR Urea Storage, Transfer, Dispensing and Metering

### **General**

Wisdom Systems supplies specialist equipment for storing and handling SCR Urea. All equipment is specified and matched to protect the Urea from contamination and to maintain the quality standard for Adblue, DN70070 and the associated guidance notes from CEFIC - QAGD

To assist customers in maintaining a consistent approach to SCR Urea quality, Wisdom offer a complete range of storage systems and associated equipment that can be relied upon to provide the best commercially available and reliable equipment solutions. Special customised equipment can be produced to customer order.

### **Security**

A set of proven engineered systems to provide product security is available to protect both the Urea manufacturer/supplier and the end user from threats arising from contamination and from counterfeiting. The first line of defence is a container access valve and corresponding coupler. The valve system is available in a range of formats and in both stainless steel and plastic materials. Further security levels are available to monitor containers and liquid batches for both single trip and multi trip containers.

### **Equipment and Service Range**

As Euro 4 and Euro 5 vehicles enter the market, end user customers are seeking a low cost entry to this new technology. Until customer vehicle fleets are fully enabled many end users will prefer to store a modest volume at their operating sites where drivers can top up tanks as part of their fuelling and operator maintenance routines. As the number of SCR vehicles in each fleet rises the small volume supplies will need to increase in size and a typical stored volume will be enough to provide a 4 – 6 week supply. It is emerging that operators will start with a 220 litre drum or a 1000 litre IBC and will then transfer to on site bulk storage and regular supplies in bulk from a specialist delivery tanker. The volume delivered and stored will impact on the price per litre, this will follow a similar pattern to fuel supplies and the larger each delivery the lower the price per litre. Wisdom offers tanks, equipment and technical advice to assist Adblue manufacturers distributors and end users in setting up bulk delivery and storage facilities.

Wisdom equipment matches the container size and duty cycle required. We can provide from small economic hand operated measuring pumps up to fully integrated forecourt dispense systems and all storage and dispense solutions in between.

All Wisdom components are tested for compatibility to Urea and are guaranteed for 12 months or longer when indicated. Where required explosion proof and extreme duty units can be requested.

### A. Transfer Pumps - from Storage to Vehicle

#### 1. Hand Pumps

Two options – One rotary with sight glass and measurement the other with simple barrel pump design. Both supplied with a standard anti drip plastic dispense nozzle.

#### 2. Standard Flow

This unit is used with our basic systems and is available in 12v, 24v, 115v, and 220v. The Flow capacity of these pumps varies with voltage and specification and can be selected by the

customer to best meet their needs. All of these pumps are constructed using the same pumping elements and have motors attached to meet the local supply and performance criteria. All pumps in this range are positive displacement and provide full self-priming characteristics. All pumps can run dry without damage.

These pumping units are fully tested for compatibility with SCR urea and the test results are available for use in the technical files of Adblue suppliers.

The 12v unit will deliver 18 L/min and a maximum pressure of 2.8 bar

The 24v, 115, and 220v units deliver 13.2 L/min and a maximum pressure of 2.8 bar except for the 220v unit that is rated at the same flow but a maximum pressure of 1.7 bar.

We have recently added to the range a 220v version with a special motor and this unit will deliver 18 L/min and is rated at 2 bar.

### 3. Medium Flow

This new range is undergoing tests and is also a positive displacement pump constructed from the same materials as above and rated for a minimum flow of 28 L/min. It will be made available with a range of motor options. The pump is self-priming and can run dry without damage.

### 4. High Flow

These pumps are positive displacement and are rated at 40 L/min. and are available in 12v, 115v, and 220v versions. These pumps are extremely robust and provide high levels of suction that make self-priming from dry very easy. The mechanical systems used in the pump provide maximum suction effort to move the liquid to the pump and restrict the outlet pressure to a maximum of 1 bar to avoid unsafe pressure build up in delivery lines. The system will also close down to a neutral position when outlet is closed. The pump can run dry without detrimental effects. The pump head configuration is easily modified to provide a range of connection options and directions.

The gearbox construction and relatively low speed operation provide high levels of durability and reliability. The pumping elements, when used to the correct operating conditions, are warranted for 5 years.

## B. Transfer from Delivery to Storage to Tanks and IBC filling

1. Centrifugal pump with all plastic construction and elastomer seals.  
Flow rates from 500 to 1000 L/min – Power options – Petrol and Diesel Engines, 240v & 415v Electric motors and Hydraulic motors. These pumps are self-priming once wet and will deliver up to 2.4 bar.
2. Stainless Steel and Polymer centrifugal pumps 250 to 350 L/min at 1.8 bar

## C. Metering

1. Dispense Point Metering
  - a. Plastic meter with 0.5% accuracy used at the dispense nozzle or mounted onto the pump set.
  - b. High accuracy Oval gear meter with integrated display or pulse output connection to a remote display
  - c. Integrated metering and batch control with liquid management system (98 users). Full PC connectivity.
  - d. Retail performance from an Island pump, single or twin output with a Diesel and Adblue combination option.

2. Bulk Delivery
  - a. 316 Stainless steel bulk delivery meter
  - b. Digital display
  - c. Analogue display
  - d. Pre set delivery register with auto off
  - e. Filtration
  - f. Air elimination
  - g. Delivery ticket / invoice printing
  - h. 1.5 and 2 inch models

#### D. Storage Options

1. Twin walled bunded polyethylene tanks in sizes from 1400 L up to 10,000 L
  - a. Overfill protection system
  - b. Bund leakage sensor
  - c. Level Monitoring<sup>1</sup> – Tank contents gauge with remote read out
  - d. Level Monitoring<sup>2</sup> – Optional Tank Contents plus Automatic Re Ordering
  - e. Stainless steel fittings
  - f. Inner tank in non pigmented polyethylene
  - g. Outer tank in a colour to suit customer specification and branding (typically Blue)
  - h. Tank contents and dispense equipment temperature control (heating and ventilation)
  - i. Insulated from external heating and chilling
  - j. 2" inlet port with dry break coupling to prevent cross filling and contamination
  - k. Anti evaporation tank breather with over pressure override
  - l. Filtered air inlet
  - m. Integral or remote dispense pump
  - n. Bulk head light
  - o. Electrical control box and integral safety trips
2. Twin walled bunded stainless steel tanks – for above ground OR underground installation.
  - a. Specification options as in 1. above
  - b. Standard shape and volume or custom built to order.

#### E. Supply Chain Security

1. Prevention of Cross filling and Contamination
  - a. Sealed container and quick connect dry break couplings.
  - b. Plastic or Stainless steel construction to provide single or multi trip containers.
  - c. Range of thread types and sizes.
  - d. Full flow capacity, compatible to transfer pump and dispense expectations.
  - e. Dry break performance – less than 0.25ml residue per operation.
  - f. Anti leak back prevention – no reverse flow, dispense only.
2. Container tracking and management
  - a. All containers (fixed and mobile) can be managed and monitored using RFID tag technology and software tailored to your company. Using the tags and container will provide excellent inventory and asset management control.
  - b. Tailored software linked to the container access options above gives the system capacity to provide a high level of quality control and trace ability enabling clear documentation of the supply chain in the event of challenges to product supply, integrity or quality.
  - c. In line filling and read / write updating equipment.
3. Retail Packaging Filling Systems
  - a. Wisdom can supply and advise on methods to cleanly and quickly fill all container types with retail quality flow meters and mass measurement control.
  - b. Fixed storage tanks can be equipped with level monitoring equipment to assist in stock control and timely re ordering. This can be a system using operator intervention to visually

Check levels and reorder or automatic systems using volume or flow measurement of product to trigger a signal to arrange a re supply within a set period.

- c. Modified tanks of the ISO and full road tanker specifications in Stainless steel and multi compartment or baffled configurations. Fitted with Urea hoses, pumps and metering equipment with EU standard auto overfill prevention.

Selection of this closed loop supply system can provide a secure method of assuring product availability and retaining retailer loyalty to any storage or dispense equipment supplied under loan, rental, lease or supply based contracts.

Dispense Pistols – Open, Automatic, Drip Free and Closed connection models.

Closed Transfer Capability to BS 6356 Pt.9 for Dispense site filling and transfer to vehicle can be provided if required.





### WS 4000 Dispense Set Performance in Accelerated Compatibility Study.

#### Meßwerte [Angaben in mg/kg]

	Spezifikation	1	2	3	4
Al	0,5	< 0,05	< 0,05	< 0,05	< 0,05
Ca	0,5	0,1	0,1	0,1	0,1
Cr	0,2	< 0,05	< 0,05	< 0,05	< 0,05
Cu	0,2	< 0,05	< 0,05	< 0,05	< 0,05
Fe	0,5	< 0,05	< 0,05	< 0,05	< 0,05
K	0,5	< 0,05	< 0,05	< 0,05	< 0,05
Mg	0,5	< 0,05	< 0,05	< 0,05	< 0,05
Na	0,5	ca: 0,05	0,07	0,1	ca: 0,05
Ni	0,2	0,06	0,07	0,07	0,07
P	0,2	ca: 0,05	< 0,05	< 0,05	< 0,05
Zn	0,2	< 0,05	< 0,05	< 0,05	< 0,05

- 1 05S00991 - IBC-Inhalt vor Montage Wisdom-Pumpe
- 2 05S00968/1 - 06.09., aus Abfüllsystem nach 8 h Umpumpen gezogen
- 3 05S00968/2 - 07.09., erster Liter aus Abfüllsystem (gefüllt über Nacht gestanden)
- 4 05S00968/3 - 07.09. aus Abfüllsystem nach weiteren 8 h Umpumpen gezogen (Vorlauf ca. 3 Liter)



## Manual Pump Options



Low cost – This pump can be supplied with an integral dip telescopic tube and will fit directly to a Tri Sure opening. Alternatively it can be fitted with the Micro Matic or similar couplings for use with Industry standard Drum valves and dip tubes.

## Close up of IBC / Drum Dispensing Equipment



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