Service Equipment / Tank Components
for the new ADR 2005 and OPS

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Manhole assembly complete with fill hole cover with EPRV, vapour transfer valve, pressure and vacuum breather vent and five-wire optic sensor, all certified according the relevant EN.

The new ADR defines standards for tank components for all new low-pressure tanks for the transport of dangerous goods. This finally harmonizes and sets comparable safety standards for the transport of dangerous goods in low pressure tanks within the European Union.
It has been a very tedious and difficult process involving many specialists from the industry over many years to develop norms and standards meeting such complex safety and operation requirements.
Starting 30.6.2005 the ADR 2005 has become national law in the member countries and now requires that the tanks for the transport of dangerous goods are fitted with service equipment, eg. filling, emptying, venting and safety devices, and openings and their closures, which are required to be according the relevant European Standard EN (as described below). This means that all new tanks need to be either constructed to EN 13094 or shall be designed, constructed and tested in accordance with provisions of a technical code providing the same level of safety being recognised by the competent authority. This last statement however, will most likely be deleted in the next ADR issue.

This information was provided in support of an article on the impact of the new ADR in the UK published in "Hazardous Cargo Bulletin" - March 2006

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Following service equipment need to be according to EN:

EN 13317	manhole cover assembly The manhole cover assembly generally comprises the fill hole cover with or without emergency pressure relief valve (EPRV), vapour transfer valve, pressure and vacuum breather vent (which may be integrated into the vapour transfer valve) and the level detection equipment. As of July 2006 the material of the manhole cover is required to be according to EN 13094, specifying for aluminium alloy 12% elongation after fracture EN 13314 fill hole cover
EN 14596	ERPV, which is generally integral part of the fill hole cover. It is interesting to note, that the ERPV is not accepted by the ADR, but is not prohibited neither
EN 13082	vapour transfer valve
EN 14595	pressure and vacuum breather vent, which may be integral part of the vapour transfer valve
EN 13308	non pressure balanced footvalve
EN 13316	pressure balanced footvalve
EN 13083	adapter for bottom loading and unloading, this is not an ADR mandatory standard, but a build standard which became national law in the EU member coutries.
EN 13922	overfill prevention system, this system clearly defines cross compatibility so that any tanker can load at any gantry. This is not an ADR mandatory standard, but a build standard which became national law in the EU member countries in accordance with the VOC directive 94/63/EC

Since the CEN/TR 15120 (Guidance and recommendations for loading,transport and unloading) permits both the type 1 and type 2 vapour return configuration and also the EN 13082 vapour transfer valve provides for the pressure and vacuum breather vent to be integrated it should be a common design to improve loading speed and consequently reduce loading time. The tanker equipped with type 2 vapour recovery has practically no limitation to the number of loading arms connected simultaneously and is suitable for high speed loading (provided other design criteria are considered as well). 5 loading arms connected simultaneously, each with a loading rate of up to 2400 LPM permits fastest possible tanker loading.

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As required in prEN15120, type 1 vapour recovery tankers however, have to prove by individual emperical test how many loading arms may be connected to prevent vapour venting to the atmosphere through the pressure and vacuum breather vents during bottom loading.

Although detonation and flame arresters are not specially addressed in the ADR and their requirement is only hinted at in ADR 4.3.4.1.1 part 4, it is without doubt that the present practise of providing only end of line flame arresters in the vapour transfer hood do not protect the tank against detonation, explosion or endurance burning and therefore constitute a much lower safety level against tank fire and explosion than detonation and enduring flame arresters. Some countries however specify the requirement of detonation and enduring flame arresters for the vapour transfer valve, for example as required by TRT 030.

Shell protected installion of manhole assembly to improve roll over safety, complete with fill hole cover with EPRV, vapour transfer valve, pressure and vacuum breather vent and five-wire optic sensor, all certified according the relevant EN, note the low profile detonation and enduring flame arrester

SCDS

sealed compartment delivery systems

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Fuel and automotive fuel distribution can be controlled and logistics can be economized by using a reliable and NWML certified sealed parcel delivery system. Such systems are defined in EN 15208.
To achieve sealed parcel delivery it is required that the

- -compartment emptiness is checked before loading,
- -the integrity of the compartment is controlled (by controlling each opening)
- -indicating non tempered status of the compartment to the receiving party
- -assuring complete compartment delivery before indicating empty status

A on board controller assures that even with battery power disconnected the control function is still active and all movements/manipulations of either manhole fill cover, footvalve, wetleg sensor or API adapter are recorded and the compartment indicated as tempered. The display of the controller not only shows the current compartment status, but on request also all sensor activities with activity time since the sealing of the compartment. Frustrated deliveries are recorded and resealed as such.
Of course, all equipment is designed, constructed and approved for installation in hazardous area assuring most simple installation, even for retrofitting.
Since the SCDS controller works automatically in the background, the tanker operator can perform all required loading and unloading/delivery operations as commonly practised.
Connecting the controller to a printer permits printing of a delivery ticket, showing loading and compartment sealing time and completed delivery time for each compartment. Of course, these data may also be written on a chip card for office editing. By means of a modem for direct communication with the office the tanker can be tracked and deliveries supervised. Such communication also permits notice to the office for any sensor movement and alarm for any unauthorized sensor status change.

Turbine Metering Units

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NWML approved turbine metering units are available for gravity and/or pumped discharge. Since the turbine metering system is emptied after delivery such systems are specially suited for AD tankers carrying different product for distribution. Product contamination is a matter of the past, and since turbine meters require less space for installation and are lower in weight than conventional metering systems (positive displacement meters), tankers can carry more fuel and have more space available for the necessary adapters, hoses etc.

Picture shows typical turbine meter installation with pump

Tankers equipped with turbine meters of course, may be fitted with controlled API adapters with wet leg sensors and manhole fill cover control to monitor the integrity of the loaded product quantity. This is a very economical solution for many tanker applications, because the sealed compartment control system is integrated in the controller for the turbine meter.

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