

# **CONCAWE Input to the European Commission's DG Environment 'Consultation on the mandatory introduction of Stage II Petrol Vapour Recovery Controls at Service Stations in the EU'**

## **1. General**

Before addressing the six questions to which responses were invited (Section 5 of the Consultation Document), it would perhaps be helpful to provide the latest European Oil Industry data on the extent to which Stage II VR has been implemented in Europe under national initiatives. The data presented below have been obtained through the European National Oil Industry Association (NOIA) network via surveys in the various countries. These surveys are updated on an annual basis and the data below are based on the most recent (January 2007).

In order to ultimately recover the vapours from Stage II VR systems, it is essential to have Stage I in place at the service station (actual recovery of 'returned vapours' taking place in the vapour recovery device at the supply terminal). For this reason Figure 1 shows the extent of the implementation of Stage I at service stations in Member States which participated in the NOIA survey. The total volume of gasoline covered in the survey (123,000 m<sup>3</sup>/year) represents about 80% of the gasoline dispensed at service stations in the EU. The overall application of Stage Ib, as a percent of numbers of service stations, in countries participating in the survey is about 93%. However based on earlier CONCAWE data on numbers of service stations and throughput versus size, the volume of gasoline dispensed in stations with Stage Ib will be somewhat higher (in excess of 95%).

**Figure 1: Extent of Stage Ib Vapour Recovery As Applied in  
Surveyed Countries of Europe (Jan 2007)**

Data Source: European NOIA's

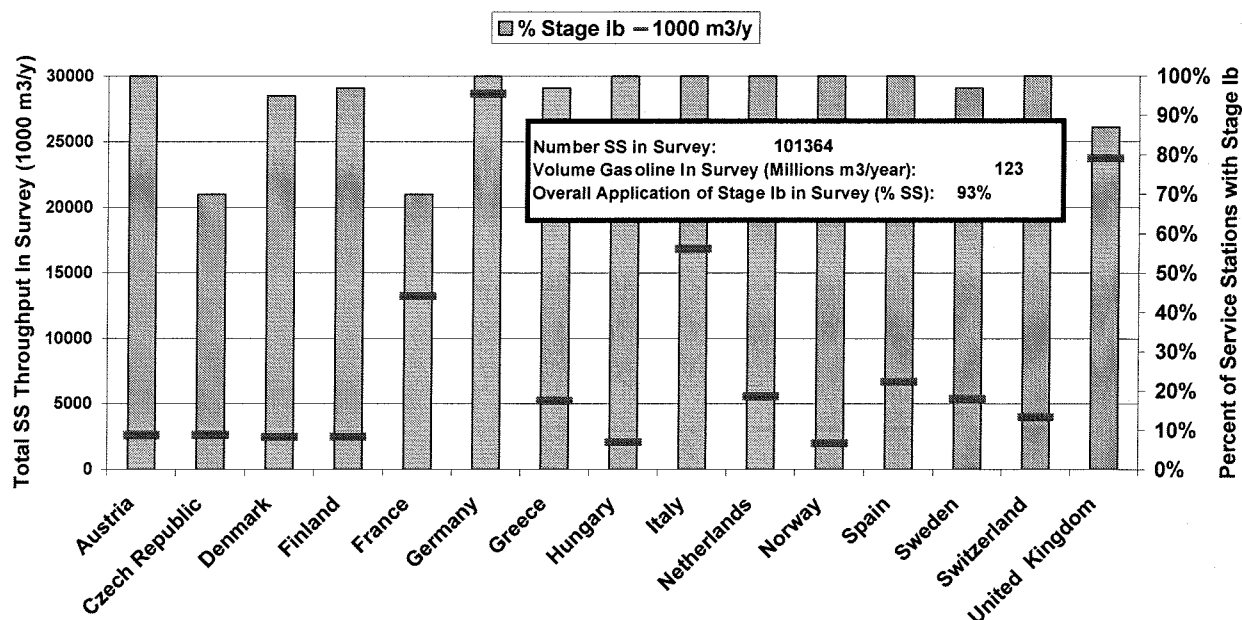
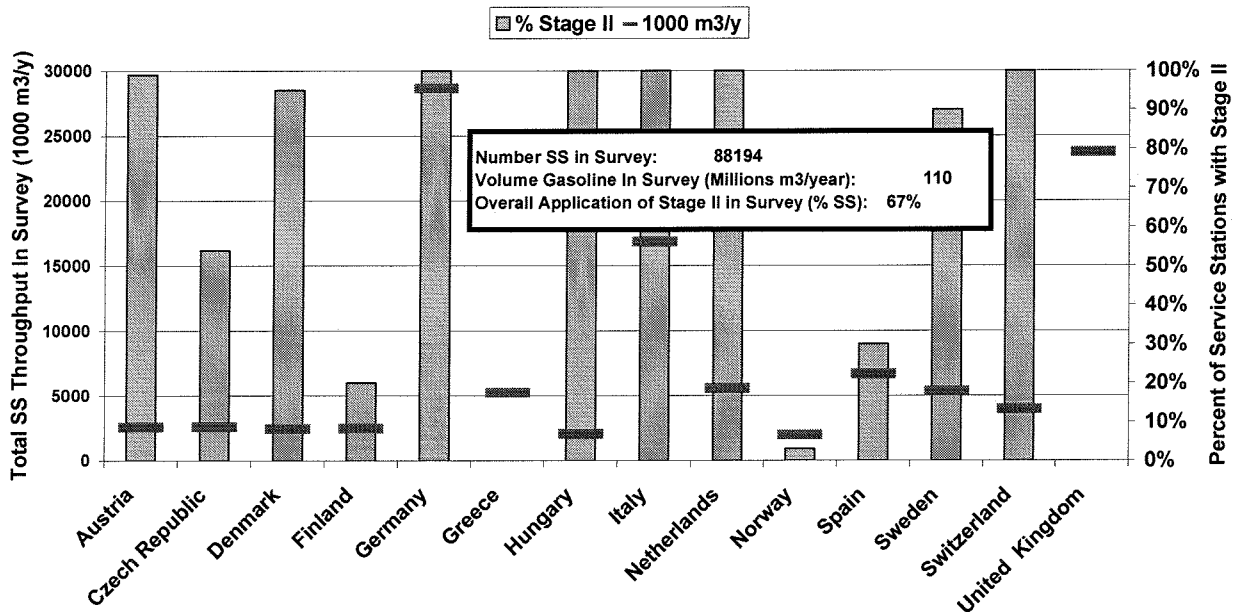


Figure 2 shows the extent of the implementation of Stage II in the fourteen Member States covered in the most recent 2006 NOIA survey. The total volume of gasoline represented in the survey (110, 000 m<sup>3</sup>/year) is about 70% of the gasoline dispensed at service stations in the EU. While the overall application of Stage II, as a percent of number of service stations, is 67%, based on the same earlier CONCAWE data as above, the volume of gasoline covered will be significantly higher at some 90%. Consequently, these data, indicate some 60% of all

gasoline dispensed in EU is via service stations already equipped with Stage II. These data do not account for the already well-developed plans in the UK and France. If Stage II is implemented in these countries to the same extent as in Germany, then the quantity of 'Stage II controlled' gasoline would rise to more than 75%.

**Figure 2: Extent of Stage II Vapour Recovery As Applied in Surveyed Countries of Europe (Jan 2007)**

Data Source: European NOIA's



CONCAWE believe these data provide important input on the question of whether a Commission initiative to bring forward an EU Directive proposal on Stage II VR is appropriate and justified.

## 2. Responses to Questions Posed in Section 5

### ***5.1 Would minimum/harmonized technical requirements at the EU level, facilitate the functioning of cross border trade and services in Stage II equipment?***

CONCAWE believes this is not a valid justification for a Stage II Directive. Manufacturers of Stage II equipment are truly international and the extensive experience of implementing Stage II in Europe (and the USA) has shown that no 'localised' Stage II designs have emerged. Furthermore, cars now have standardised fill neck/tank vent designs which have overcome the low recovery efficiency problems encountered in very early European tests.

### ***5.2 Should Stage II be applied to only new and substantially refurbished stations?***

The cost of installation of Stage II at existing stations varies significantly between those at sites which are undergoing a scheduled 'knock-down and rebuild' and those where controls are installed at a mandated date outside of a major refurbishment timetable. A major reason for this is the significant cost of digging up the forecourt to install the return vapour lines to the storage tanks, especially if it has an impermeable surface. The data provided in the COWI 2007 Report on Stage II Costs indicate that the unscheduled installation cost of Stage II systems averages 250% of the cost of systems installed during a scheduled knock-down and rebuild. The knock-down and rebuild of stations is undertaken on a regular basis for the largest throughput stations and less frequently for the smaller sites. If mandated, Stage II should be implemented in the most cost-effective way (CAFE/TSAP) which implies that it should be required only during major refurbishment.

### **5.3 Should there be a minimum size or throughput threshold?**

This depends on what problem the Directive is trying to solve. If the concern is benzene (as in the situation addressed in Question 5.6), then a lower cut-off threshold would be difficult to justify on health grounds. If the concern is ozone (an identified concern within CAFE/TSAP), then a focus on cost-effective measures would lead to a priority for sites which are big and/or where civil works to install vapour lines is not an issue i.e. new sites and those being demolished and rebuilt since these tend to be the higher throughput end.

The diversity of approaches taken in different MS that have already implemented Stage II reflects such differing drivers. National legislation in some cases has no threshold (because Benzene was the main driver, e.g. Italy) and in others a threshold is legislated based on concerns over cost-effectiveness for SMEs (e.g. Germany).

### **5.4. Should Stage II be applied to existing stations and if so what should the throughput cut-off be?**

This question has already been addressed in the responses to 5.2 and 5.3

### **5.5 Should SS be required to install automatic monitoring systems to ensure performance/integrity of recovery systems?**

Conventional active Stage II systems are designed with a vapour to gasoline flow ratio of between 0.95 to 1.05 to ensure that they operate with a very high vapour collection efficiency when maintained correctly. This flow ratio can be tested (and adjusted if necessary) by the pump maintenance contractor using a 'dry-test' which electronically simulates the liquid flow and measures the air sucked in.

The effectiveness of Stage II systems can be impaired by component failure. Poor operational experience with first generation Stage II equipment resulted in the design of a complex automatic monitoring system which measures the flows and provides alarms and shut-downs. However, experience with the current generation of Stage II systems has shown that they have a high level of stability and reliability, with over 90% remaining within the required flow limits.

The best practice for ensuring effective Stage II operation is a combination of the routine dry-test, regular visual inspection by the service station personnel and the installation of a 'fault code' system. Such systems check that the equipment is working properly e.g. that the vapour pump is functional and that the vapour control valves are operating within defined limits. This system is approximately one tenth of the cost of the automatic monitoring system.

It is perhaps worthwhile here making a comment on the 'CleanAir' in-pump VR system discussed in the ENTEC report. This relatively new system is very different to 'vapour return' systems which have been widely applied in Europe. This is an in-situ vapour recovery, not vapour capture system. This will likely require different rules, as both conventional Stage II type approval and routine testing procedures may not be appropriate.

### **5.6 As part of ensuring good air quality for benzene in ambient air, should Stage II be mandated for all SS built underneath or as part of residential dwellings irrespective of volume?**

A CONCAWE report, about to be published, on worker exposure to benzene within the Downstream Oil Industry concludes: that in certain circumstances, the contribution of uncontrolled refuelling emissions to ambient benzene concentrations can be significant in terms of the current AQLV for benzene. The report also concludes that refuelling emissions can result in general population exposures, at least during certain peak periods, above the AQLV. The case of service stations that are below residential buildings is one of the circumstances in which this situation can occur. The report recommends that service stations in such locations should be assessed for the advisability of introducing Stage II controls.

Given this recommendation, CONCAWE believes a 'no cut-off' approach in this situation would be advisable. This is also consistent with the no cut-off provision in the Stage I Directive for Service Stations in this situation.