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D E C I S I O N
of 3 June 2003

Case Number: T 0462/01 - 3.2.1
Application Number: 95900870.7
Publication Number: 0726875
IPC: B67D 5/378, B01D 53/22
Language of the proceedings: EN

Title of invention:

Method and apparatus for reducing hydrocarbon emissions from a fuel storage tank

Patentee:

Marconi Commerce Systems Inc.

Opponent:

GKSS-FORSCHUNGSZENTRUM GEESTHACHT GMBH

Headword:

-

Relevant legal provisions:

EPC Art. 56, 87, 89
RPBA Art. 11(5)

Keyword:

"Priority - same invention (yes)"
"Inventive step (no)"
"Closure of the debate - opportunity to file an amended request (no)"

Decisions cited:

G 0002/98

Catchword:

-



Case Number: T 0462/01 - 3.2.1

D E C I S I O N
of the Technical Board of Appeal 3.2.1
of 3 June 2003

Appellant:
(Opponent)

GKSS-FORSCHUNGSZENTRUM
GEESTHACHT GMBH
Max-Planck-Strasse
D-21502 Geesthacht (DE)

Representative:

Niedmers, Ole, Dipl.-Phys.
Patentanwalt
Van-der-Smissen-Strasse 3
D-22767 Hamburg (DE)

Respondent:
(Proprietor of the patent)

Marconi Commerce Systems Inc.
7300 West Friendly Avenue
P.O. Box 22087
Greensboro
North Carolina 27420 (US)

Representative:

Fitchett, Stuart Paul
Marconi Intellectual Property
Marrable House
The Vineyards
Gt. Baddow
Chelmsford Essex CM2 7QS (GB)

Decision under appeal:

**Decision of the Opposition Division of the
European Patent Office posted 6 March 2001
rejecting the opposition filed against European
patent No. 0 726 875 pursuant to Article 102(2)
EPC.**

Composition of the Board:

Chairman: S. Crane
Members: J. Osborne
G. E. Weiss

Summary of Facts and Submissions

- I. The appeal is directed against the decision of the Opposition Division to reject the opposition against European patent No. 0 726 875 resulting from an application which was filed on 16 November 1994, claiming priority of 16 November 1993.
- II. In the opposition it was argued that the claim to priority for claim 1 of the patent was not valid and that as a result the subject-matter of the claim lacked novelty. In the alternative it was argued that the subject-matter of the claim lacked inventive step. The appellant/opponent cited *inter alia* the following evidence:
- D1: WO-A-95/26314 published 5 October 1995, claiming priority of 26 March 1994 and designating the EPO as a designated office
- D2: DE-A-42 25 170 published 3 February 1994
- D4 WO-A-93/22031
- D6: DE-A-3 806 107
- D8: the priority document for the contested patent (US patent application 08/153 528 filed 16 November 1993).

The following technical article filed by the respondent/patent proprietor as corresponding to a disclosure cited in the patent specification also played a role:

D9: K. Ohlrogge, "Volatile organic compound control technology by means of membranes".

In the opinion of the Opposition Division the claim to priority was valid and the subject-matter of claim 1 was both novel and involved an inventive step.

III. In oral proceedings held 3 June 2003 the appellant requested that the decision under appeal be set aside and that the patent be revoked. The respondent requested that the appeal be dismissed and that the patent be maintained as granted. After closure of the debate on inventive step the respondent requested to file an amended claim.

IV. Claim 1 of the patent as granted reads:

"A fuel dispensing system comprising a fuel storage tank (3) from which fuel is dispensed to a vessel; and vapour recovery means for returning to the fuel storage tank vapours displaced from the vessel by the dispensed fuel, characterised in further comprising apparatus (1) for reducing hydrocarbon emissions from the fuel storage tank (3), the apparatus comprising a chamber (9) having:

an inlet for receiving gases and vapours from the tank (3);

a first outlet;

a filter element (14) comprising a membrane (17) having the property of permitting hydrocarbon vapours to permeate therethrough; and

a second outlet (11), partitioned from the inlet and first outlet by the membrane (17), for receiving vapours permeated through the membrane (17)."

V. The arguments of the appellant can be summarised as follows:

Claim 1 of the patent relates to a filter in which the vapour is separated from the air by permeation through a membrane. The disclosure of D8, on the other hand, clearly teaches the skilled person that the filter operates to condense the vapours. Condensation and permeation are totally different processes which are mutually incompatible. In converting the content of D8 into the application on which the contested patent is based references to condensation have been changed to refer to permeation and the definition of the problem to be solved also differs between D8 and the contested patent. The principle of filtration by means of permeable membranes is so well known that the references in D8 to condensation are of particular significance and cannot be merely replaced by the references to permeation. The opinion G 2/98 (OJ EPO 2001, 413) sets out that the concept of the "same invention" is to be interpreted narrowly when considering a right to priority. As regards the references in both D8 and the patent specification to D9, the skilled person faced with the teaching of D8 would have been unable to arrive at the subject-matter of present claim 1 without the subsequently introduced references to permeation.

Since the claim to priority for claim 1 is not valid, D1 and D2 form prior art according to Article 54(3) and 54(2) EPC respectively and destroy novelty of the subject-matter of the claim.

If, on the other hand, the claim to priority were to be considered valid, then the subject-matter of claim 1 lacks an inventive step. It was already known from D4 to control emissions during the transfer of fuel to a vessel and it was obvious for the skilled person to use a filter according to either D6 or D9 in order to control further emissions from the vent pipe.

VI. The respondent countered essentially as follows:

It is clear to the skilled person when reading D8 that the references to condensing the vapour have no relevance to the remainder of the content of the document. Claim 1 of D8 states that the fuel is transported through the membrane and exits through the drain which, as may be seen from D8 Figure 2 is located in the core of the membrane. It follows that the fuel must permeate the membrane irrespective of whether it is condensed. Moreover, D8 and the patent specification contain identical wording when describing a preferred form of the membrane and referring to D9. Claim 1 of the contested patent therefore is entitled to its priority claim.

Since the claim to priority is valid, D1 and D2 are not prior art within the meaning of Article 54 EPC and so cannot destroy novelty of the subject-matter of claim 1 of the contested patent.

As regards inventive step, it was known in the prior art to provide a system for vapour recovery adjacent the fuel dispenser because they were provided by the same manufacturer. Generally, in such systems displaced vapour is recovered by being drawn together with air into the storage tank which is equipped with a vent pipe. D4 discloses an improved arrangement employing a membrane filter, in which the separated air is passed directly to the vent pipe and only the vapour is returned to the tank. In this way it is possible to maintain the vapour in the tank at a high concentration and to subject it to minimum turbulence. As a result, there is no need for a filter on the vent pipe in the system of D4, although a system adapted in this way is not excluded by the subject-matter of contested claim 1. Moreover, the vent pipe is a safety item which therefore is normally maintained free of any restrictions. The more complex arrangement of D6 relates to tank farms where the vent pipe is the only possible location for a filter and is not applicable to the arrangement of D4.

Reasons for the Decision

1. *Priority right and novelty of claim 1*
- 1.1 The subject-matter of contested claim 1 includes apparatus for reducing hydrocarbon emissions from the fuel storage tank, which comprises a filter membrane having the property of permitting hydrocarbon vapours to permeate therethrough. The only aspect of the right to priority which has been challenged is that relating

to the property of permeability to hydrocarbons of the filter membrane and so the Board need consider only this aspect.

- 1.2 The relevant disclosure of D8 (the priority document) begins on page 4 under the heading "Summary of the Invention". Here it is explained that a chamber containing a fractionating membrane is mounted in the vent line of a fuel storage tank and that a mixture of air and fuel vapour in the vent line passes into the chamber. Air is allowed to pass through the chamber and the vapour is drawn through and captured by the membrane. In the preferred embodiment the membrane is configured as a cylinder having an aperture therein disposed axially from end to end, within which is located a perforated drain pipe through which condensed vapour is returned to the tank. In claims 1 and 7 of D8 the membrane is described as being capable of transporting the vapour therethrough whereby fuel exits through the drain whilst air passes across the membrane. In the description of the preferred embodiment the membrane is disclosed as being preferably a fractionating membrane developed by GKSS-Forschungszentrum Gesthacht GmbH (sic) and described in two papers presented at conferences by Mr K. Ohlrogge (cf. D9), which papers are incorporated by reference. As can be derived from the above summary, it is clear upon reading D8 that the vapour passes through from one side of the membrane to the other and therefore that it permeates the membrane. However, throughout D8 there is also reference to condensation of the vapour by the membrane, whereby the fuel returns in liquid form to the tank. Moreover, in the sentence bridging pages 7 and 8 it is stated that the membrane "will capture or collect ... hydrocarbons ... while allowing air to pass

through" which, in the appellant's view is a disclosure that the membrane allows only air to permeate. The appellant therefore considers that the disclosure of D8 when taken as a whole cannot be regarded as a disclosure of a membrane which allows permeation of vapour.

- 1.3 The paragraph bridging columns 4 and 5 of the specification of the contested patent contains wording essentially identical to that used in D8 page 7, lines 14 to 26 and incorporates by reference the disclosures by Mr K. Ohlrogge at two conferences (cf. D9) that the membrane of the filter can be a fractionating membrane as defined in those papers. It is clear to the skilled person when considering, for instance, Figure 6 of D9, which relates to a vapour recovery system for use when dispensing petrol to motor vehicles, that the membrane allows vapour to permeate since the line 10 which is separated from the inlet to the chamber by the membrane and returns petrol to the storage tank is designated as the permeate line. For this reason alone D8 provides a clear disclosure of a hydrocarbon vapour permeable membrane. This finding is wholly consistent with the opinion G 2/88 (*supra*) since the most important disclosure in D8 of a membrane permeable to hydrocarbon vapour, the reference to the papers by Mr K. Ohlrogge, is identical to that in the contested patent and so requires no interpretation as regards identity of invention. Moreover, it is clear to the skilled person when reading D8 that the references to condensation of the vapour cannot mean that the vapour does not permeate the membrane since it otherwise could not reach the drain located in the centre of the cylindrically formed membrane which separates the drain from the inlet to the chamber. As

regards the sentence bridging pages 7 and 8 of D8 the reference to through passage of the air could relate either to passage through the membrane or to passage through the chamber and so fails to contradict the above discussed disclosure of permeation. Also, the statement that the membrane acts to "capture or collect" the vapour does not explain whether this capture or collection is outside or inside of the cylindrically arranged membrane. It follows that, contrary to the view of the appellant, also this sentence does not teach that the membrane is permeable to air rather than hydrocarbons.

- 1.4 The Board therefore finds that claim 1 does enjoy its right of priority (Article 87 EPC). As a result its effective date of filing is 16 November 1993 (Article 89 EPC), D1 and D2 do not form prior art within the meaning of Article 54 EPC and the subject-matter of the claim is novel.

2. *Inventive step*

- 2.1 As set out in the introductory description of the contested patent, fuel dispensing systems having vapour recovery means employing a vacuum pump which draws into the recovery line a volume of air/vapour mixture which is greater than the volume of fuel dispensed and in which the storage tank is provided with a vent pipe are well-known. A relatively simple system as described by the respondent during the oral proceedings is essentially a standard fuel dispensing system with additional vapour recovery means arranged between the dispenser and the storage tank. A more complex system is disclosed in D4 or D9, Figure 6, which comprises a filter having a hydrocarbon-permeable membrane

essentially as defined in contested claim 1 but wherein the inlet is connected to the vapour recovery line, the first outlet to the vent pipe of the storage tank and the second outlet to the storage tank. Whilst these known systems reduce hydrocarbon emissions during dispensing of the fuel there remains the possibility with both systems of hydrocarbon vapour escaping from the storage tank through the open vent pipe directly to atmosphere. This is particularly the case with the relatively simple system referred to above in which build-up of pressure in the storage tank may be prevented by venting the excess volume to atmosphere, thereby reducing the effectiveness of the vapour recovery. As indicated in the contested patent it had been proposed to burn off vented vapour but the danger of this technique was obvious and it was in any case not permitted in many areas. The subject-matter of contested claim 1, according to which a membrane filter is essentially arranged in the vent pipe, addresses this problem. As confirmed by the respondent during oral proceedings the subject-matter of contested claim 1 does not exclude a membrane filter also in the vapour recovery line as known from D4 or D9, Figure 6, and consideration of inventive step when starting from either of the prior art dispensing systems having vapour recovery means concerns the obviousness of reducing emissions from the vent pipe.

- 2.2 It is known from D9 that a membrane filter may be used to reduce emissions generated in petrol depots as the result of tank breathing (page 294, penultimate sentence). Although the filters in such applications have a relatively large capacity of up to 1500 m³/h, D9 also discloses that membrane filters may have a capacity as low as 1 m³/h (page 302, penultimate

sentence). The Board considers that in the light of this information it would be obvious for the skilled person faced with the need to solve the stated problem in one of the above-mentioned prior art fuel dispensing systems to provide a membrane filter in the vent pipe of the storage tank and thereby arrive at the subject-matter of contested claim 1.

- 2.3 The Board concludes that the subject-matter of contested claim 1 does not involve an inventive step (Article 56 EPC).

3. *Procedural matters*

At the conclusion of the consideration of inventive step during the oral proceedings the chairman noted that no amendments had been made to the parties' requests and declared that the debate was closed. The respondent subsequently asked for an opportunity to file an amended request. Article 11(5) RPBA explicitly states that no submissions may be made by the parties after closure of the debate unless the Board decides to re-open it. Since the Board did not re-open the debate the respondent's request was refused in accordance with Article 11(5) RPBA.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.
2. The patent is revoked.

The Registrar:

The Chairman:

S. Fabiani

S. Crane