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Datasheet for the decision of 9 March 2020

Case Number: T 1266/15 - 3.5.02

Application Number: 04795574.5

Publication Number: 1673745

IPC: G08B1/08, B60Q1/00

Language of the proceedings: EN

Title of invention:
Monitoring system for a mobile storage tank

Patent Proprietor:
Praxair Technology, Inc.

Opponent:
L'AIR LIQUIDE, S.A.
pour l'étude et l'exploitation
des procédés Georges Claude

Relevant legal provisions:
EPC Art. 100(a), 56

Keyword:
Inventive step - (no)

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Case Number: T 1266/15 - 3.5.02

D E C I S I O N
of Technical Board of Appeal 3.5.02
of 9 March 2020

Appellant: (Patent Proprietor)	Praxair Technology, Inc. 10 Riverview Drive Danbury, CT 06810 (US)
Representative:	Schwan Schorer & Partner mbB Patentanwälte Bauerstrasse 22 80796 München (DE)
Respondent: (Opponent)	L'AIR LIQUIDE, S.A. pour l'étude et l'exploitation des procédés Georges Claude 75 quai d'Orsay F-75321 Paris (FR)
Decision under appeal:	**Decision of the Opposition Division of the European Patent Office posted on 16 April 2015 revoking European patent No. 1673745 pursuant to Article 101(3)(b) EPC.**

Composition of the Board:

Chairman	R. Lord
Members:	C.D. Vassoille
	J. Hoppe

Summary of Facts and Submissions

I. The appeal of the patent proprietor (in the following: appellant) lies against the decision of the opposition division to revoke European patent no. 1 673 745 for lack of inventive step.

II. The following documents are relevant for the present decision:

D3: EP 1 191 276 A2
D24: "Hoyer invests in liquid helium containers" retrieved from the internet (http://bulktransporter.com/archive/hoyer-invests-liquid-helium-containers)

III. The parties were summoned to oral proceedings. In a communication under Article 15(1) RPBA 2007 annexed to the summons, the board set out their preliminary observations on the appeal, concluding that the subject-matter of claim 1 of the patent as granted did not seem to involve an inventive step in the sense of Articles 100(a) and 56 EPC.

IV. Oral proceedings before the board took place on 9 March 2020 in the presence of both parties.

The appellant (patent proprietor) requested that the decision under appeal be set aside and the patent be maintained as granted.

The respondent (opponent) requested that the appeal be dismissed.

V. Claim 1 of the patent as granted reads as follows (feature numbering added in accordance with pages 1 and 2 of the reply to the grounds of appeal of 11 December 2015):

"A remote monitoring system (1) for a mobile storage tank (2) having a product container (3) for storing a liquefied gas at cryogenic temperatures, said remote monitoring system comprising:
(feature a1)) a sensor system (14; 20) to generate level signals referable to a liquid level of a liquid phase of said liquefied gas and
(feature a2)) pressure signals referable to vapor pressure of a vapor phase of said liquefied gas within said product container (3);
characterized in that said remote monitoring system further comprises:
(feature b)) a global positioning system (36) connected to said mobile storage tank (2) to generate global position signals referable to a global position of said mobile storage tank (2) in global latitude and longitude coordinates; and
(feature c)) a remote telemetry unit (10) on board said mobile storage tank (2) and responsive to said level signals, pressure signals and global position signals to store data records containing data referable to the liquid level and vapor pressure within said product container (3) and the global latitude and longitude coordinates and to effect a wireless transmission of said data records and a unique remote telemetry unit identification in a standard message structure."

VI. The arguments of the appellant as far as they are relevant for the present decision are as follows:

The subject-matter of claim 1 was new and involved an inventive step in view of document D24.

In particular, feature c) of claim 1 of the patent as granted was not disclosed in document D24. From the terms "tracking" and "tracing" used in D24 it could not be inferred that data was transmitted via telemetry from the container to a remote control station. Rather, a customer could check a data record relating to the development of pressure and temperature in the container during shipping retrospectively. Furthermore, D24 was to be understood in the sense that only a GPS receiver was provided and a remote telemetry unit according to claim 1 was therefore not disclosed in D24.

There was also no direct and unambiguous disclosure in D24 that a remote telemetry unit was on board the tank. In particular, the first line of D24 referred to "rolling stock of special containers", which thus implied the presence of a truck and a driver. The sensors could thus be provided within the driver's cab of the truck carrying the container and not on the container itself. Additionally, a remote telemetry unit according to feature c) was not directly and unambiguously derivable from D24, because a plausible alternative would be that the driver had a transmission device and effectuated wireless transmission of data records without requiring a remote telemetry unit on board said mobile storage tank.

Furthermore, D24 did not disclose a remote telemetry unit, which was responsive to level signals, pressure signals and global position signals, in the sense that the remote telemetry unit becomes active (for storing

and transmitting the data) depending on or triggered by the measured values.

The subject-matter of claim 1 further involved an inventive step in view of a combination of D24 and D3. Document D3 was concerned with a fixed installation of a container and corresponded to the prior art described in paragraph [0008] of the patent under appeal. With the tank of document D3 being fixed, there was no motivation for the person skilled in the art to provide for data records that include data referable to the liquid level, the vapor pressure and the position of the tank and to provide for a wireless transmission of such data records, responsive to the level signals and position signals.

VII. The arguments of the respondent as far as they are relevant for the present decision are as follows:

The subject-matter of claim 1 was not new in the sense of Article 54 EPC. Document D24 did not explicitly mention the generation of a liquid level signal among the data. Nonetheless, the vague wording of the feature in question justified the broadest reasonable interpretation of feature a1), which was as a consequence also disclosed by D24. In particular, feature a1) ("to generate level signals referable to a liquid level") was included in a measured pressure signal according to D24, which was thus also "referable" to a liquid level in the sense of claim 1.

D24 stated that "due to the expensive equipment and the high product price, all helium containers are equipped with satellite tracking systems" and "Customers can control all data on the Internet". D24 thus directly and unambiguously disclosed the wireless transmission

of data records, which could be checked by the customers on the Internet. Otherwise, control, tracking and the related announced benefits would be impossible in the event, for example, that the tank was lost. Checking the data after transport was not of interest for the customer. In this case, it would be sufficient to download the data directly from the telemetry unit to the user without making a transfer via the Internet (which in fact required wireless data transmission).

The wording "responsive to the signals" did not imply a causal link between the nature or generation of the signals on the one hand and the transmission of data on the other.

Furthermore, the skilled person would have understood from the term "satellite tracking system" in D24 a receiving and transmitting system to continuously monitor the object under surveillance.

The subject-matter of claim 1 at least did not involve an inventive step in view of D24 in combination with D3. The skilled person would have implemented the generation of a liquid level signal in order to improve the monitoring of the container contents, in particular for helium, which was a relatively expensive product. In the context of liquefied helium, the liquid level was an important parameter, which was for example known from document D3 (see in particular the abstract and paragraphs [0004] and [0030]), which explicitly disclosed the generation of a level signal referable to a liquid level.

Reasons for the Decision

1. The appeal is admissible.

2. Inventive step (Articles 100(a) and 56 EPC)

2.1 Document D24 does not disclose feature a1) of claim 1 of the patent as granted.

The board shares the opposition division's conclusion in the decision under appeal that the sole fact that document D24 at least implicitly discloses the presence of a pressure sensor does not necessarily imply the presence of a system which is adapted to generate a level signal referable to a liquid level on the basis of a pressure signal.

Claim 1 according to feature a1) explicitly requires a sensor system, which is at least adapted to generate a level signal referable to a liquid level. D24 does not mention a liquid level and from the mere presence of a pressure signal and the theoretical possibility to deduce from the pressure signal a liquid level, it cannot be concluded that a sensor system of D24 is also adapted to generate a corresponding level signal referable to a liquid level.

Feature a1) is therefore not disclosed, in particular not implicitly disclosed in document D24.

2.2 The board considers feature c) to be disclosed in document D24. The relevant passage of document D24 reads as follows:

"*Due to the expensive equipment and the high product price, all helium containers are equipped with*

satellite tracking systems. Location, temperature, and pressure can be traced by GPS (global positioning system). Customers can control all data on the Internet at www.hoyer-group.com."

2.3 The skilled person would have understood the above passage to mean that a remote telemetry unit is provided on board the mobile storage tank, since D24 explicitly discloses that the containers themselves and not the transportation means are equipped with satellite tracking systems. For similar reasons it is not plausible that in D24 a manual data transmission is carried out by a driver of the transportation means.

2.4 Contrary to what was argued by the appellant, D24 discloses "a remote telemetry unit ... responsive to said level signals ..." (emphasis added). The central argument of the appellant in this respect is that a narrow interpretation of the wording "responsive to" has to be applied in the sense that the remote telemetry unit "becomes active (for storing and transmitting the data) depending on or triggered by the measured values".

The board does not find this argument convincing. Claim 1 does not contain any definition regarding *when* or *how* wireless transmission is actually effected by the remote telemetry unit. Furthermore, claim 1 contains nothing that would lead the skilled person to believe that the expression "responsive to" is to be interpreted restrictively as seen by the appellant, contrary to its general meaning.

The wording "a remote telemetry unit ... responsive to said level signals ..." in claim 1 therefore cannot be understood as meaning exclusively that the remote

telemetry unit is activated and wireless transmission is initiated upon measuring of (level) signals. Rather, other conceivable options and in particular the two further options to initiate a wireless transmission described in the patent under appeal, namely by access from a receiving station or periodically at preset time intervals, must also be considered to fall within the meaning of claim 1 (see page 7, second paragraph of the statement setting out the grounds of appeal dated 20 August 2015).

2.5 As further regards feature c), the appellant's arguments focus on the different meanings of the terms "track" and "trace" used in the relevant passage of D24 (see point 2.2 above). While D24 discloses "satellite tracking systems", it is true that the parameters location, temperature and pressure are disclosed to be "traced by GPS". Nonetheless, from a perspective of the person skilled in the art, a strict distinction between the two expressions is not sensible. Rather, the overall context of the disclosure in question must be taken into account.

Therefore, while it is correct that in principle different meanings can be denoted to the terms "track" and "trace", as has been submitted by the appellant, the question is what the skilled person directly and unambiguously would have understood from D24. In this respect, the board shares the view of the respondent that the following wording of D24: "Customers can control all data on the Internet..." clearly implies that all data can be controlled, in the sense that they can be checked at any time on the Internet and not only upon arrival of the mobile storage tank at its destination for retrospective inspection.

In this context, the board agrees with the respondent that checking the respective parameters, i.e. location, temperature and pressure only after the transport of the mobile storage tank is not plausible in view of the clear intention expressed in document D24 to (continuously) control or monitor the expensive helium containers.

2.6 Moreover, while the board agrees with the appellant that GPS generally only implies data reception to enable position determination, the term "satellite tracking system" used in D24 is to be understood in a broader sense and in connection with the disclosed ability to check data on the Internet directly and unambiguously implies satellite communication and thus, the ability to transmit and not only to receive data.

2.7 The board therefore has come to the conclusion that the relevant passage of D24 does not allow any conclusion other than that recorded temperature, position and pressure data can be wirelessly transmitted during transport of the helium containers and the corresponding recorded data can be controlled by a customer on the Internet.

In particular, the skilled person would have understood from D24 that the GPS system described therein, notwithstanding the exact meaning of the terms "track" and "trace", is capable of storing and transmitting collected data of interest and thus corresponds to a remote telemetry unit in the sense of claim 1. Consequently, despite the different terminology used in feature c) of claim 1 ("remote telemetry unit") and D24 ("satellite tracking systems", "can be traced by GPS"), structural or functional differences cannot be identified by the board.

Document D24 thus directly and unambiguously implies the presence of a "remote telemetry unit" on board the mobile storage tank according to feature c) of claim 1 of the patent as granted. Any other understanding of the skilled person, in particular an understanding where no data transmission but only data reception is possible, is not plausible but would rather be in contradiction to the overall disclosure of D24.

2.8 The board has therefore come to the conclusion that feature a1) must be considered as the only distinguishing feature over D24.

2.9 It is not in dispute between the parties that document D24 represents the closest prior art.

Nor is it in dispute that the objective technical problem resulting from the only distinguishing feature a1) is that of how to provide an improved monitoring of the container contents.

2.10 The board considers the generation of level signals referable to a liquid level by a sensor system according to feature a1) to be obvious to the person skilled in the art when starting from document D24 in view of document D3.

The board agrees with the respondent that monitoring of the liquid level is an important aspect in the context of liquid helium transportation. Document D3, which refers to the same technical field as the present invention, in the abstract as well as in paragraphs [0004] and [0030] explicitly discloses the generation of a level signal referable to a liquid level by means

of a sensor system according to feature a1). The appellant did not contest this finding.

2.11 The board is convinced that the skilled person when being confronted with the objective technical problem of how to improve the monitoring of the container contents, in particular that of expensive liquefied helium, would have implemented in the remote monitoring system of D24, a sensor system to generate level signals referable to a liquid level of a liquid phase of the liquefied gas as disclosed in document D3 in order to solve the problem. The skilled person when combining the teaching of document D24 with that of D3 thus would directly have arrived at the claimed invention.

2.12 The board further notes that the question whether the storage tank is mobile or fixed is entirely independent of the question as to which parameters of its contents are monitored. Consequently, the fact that the storage tank of D3 is fixed would not have hindered the skilled person from transferring the teaching concerning liquid level monitoring to the remote monitoring system of D24.

The opposition division was therefore correct in their finding that the distinguishing feature a1) is obvious.

2.13 The board has therefore come to the conclusion that the subject-matter of claim 1 of the patent as granted does not involve an inventive step in the sense of Articles 100(a) and 56 EPC.

3. Final remark

Given that the subject-matter of claim 1 of the patent as granted does not fulfil the requirements of Articles 100(a) and 56 EPC and since the appellant did not file any further request, the appeal is to be dismissed.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar: The Chairman:

U. Bultmann R. Lord

Decision electronically authenticated