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Datasheet for the decision of 7 August 2017

Case Number: T 2188/12 - 3.2.05

Application Number: 05744419.2

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IPC: F16K31/02

Language of the proceedings: EN

Title of invention:
Fluid flow control device

Patent Proprietor:
Norgren Limited

Opponent:
Festo AG & Co. KG

Relevant legal provisions:
EPC 1973 Art. 54, 56

Keyword:
Novelty - yes
Inventive step - no (all requests)

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Case Number: T 2188/12 - 3.2.05

D E C I S I O N
of Technical Board of Appeal 3.2.05
of 7 August 2017

Appellant II: (Patent Proprietor)	Norgren Limited P.O. Box 22 Eastern Avenue Lichfield Staffordshire WS13 6SB (GB)
Representative:	Christopher William Range Withers & Rogers LLP 4 More London Riverside London SE1 2AU (GB)
Appellant I: (Opponent)	Festo AG & Co. KG Ruiter Strasse 82 73734 Esslingen (DE)
Representatives:	Patentanwälte Magenbauer & Kollegen Partnerschaft mbB Plochinger Straße 109 73730 Esslingen (DE)
Decision under appeal:	**Interlocutory decision of the opposition division of the European Patent Office posted on 30 July 2012 concerning maintenance of the European Patent No. 1749163 in amended form.**

Composition of the Board:

Chairman	M. Poock
Members:	H. Schram
	M. Blasi

Summary of Facts and Submissions

I. Appellant I (opponent) and appellant II (patent proprietor) each lodged appeals, on 8 and 9 October 2012, respectively, against the interlocutory decision of the opposition division posted on 30 July 2012 concerning the maintenance of European patent No. 1 749 163 in amended form. The respective statements setting out the grounds of appeal were filed on 30 November 2012 and 6 December 2012.

The opposition had been filed against the patent as a whole on the basis of Article 100(a) EPC (lack of novelty, Article 54 EPC, and lack of inventive step, Article 56).

The opposition division held that the subject-matter of claim 1 of the main request (claim 1 as granted) and of claim 1 of auxiliary request 1 was not new (see Reasons, points 15.2 and 16.2.2), but that the grounds of opposition under Article 100(a) EPC did not prejudice the maintenance of the patent on the basis of claims 1 to 23 received as auxiliary request 2 on 1 June 2012, see Reasons, points 17.2.3 and 17.3.4.

II. Appellant I requested that the decision under appeal be set aside and that the patent be revoked in its entirety. As an auxiliary request it was requested that oral proceedings be appointed.

Appellant II requested that the decision under appeal be set aside and that the patent be maintained in amended form on the basis of the set of claims filed with the statement of grounds as main request, or on the basis of any of the sets of claims filed on 11 April 2013 as auxiliary requests 1 and 2. Oral

proceedings were requested, should the board contemplate any outcome other than the grant of the main request.

III. In a communication dated 10 May 2017 pursuant to Article 15(1) of the Rules of Procedure of the Boards of Appeal as preparation of the oral proceedings scheduled for 7 August 2017, the board stated its preliminary view that the sets of claims of the main request and of auxiliary requests 1 and 2 seem to meet the requirements of Article 123 EPC, but that the subject-matter of claims 1 of said requests did not seem to involve an inventive step, cf points 6.4 and 7.4.

IV. Neither party filed any substantive response to the board's communication. Appellant II and appellant I informed the board on 9 and 21 June 2017, respectively, that it will not attend the oral proceedings. Subsequently, the scheduled oral proceedings were cancelled by the board.

V. The documents referred to in this decision include the following:

D8 US 6,107,692.

VI. Claim 1 of the main request reads as follows:

"A fluid flow control device (1) comprising at least one valve, the or each valve including an input port (11), an outlet port (31), and an exhaust outlet (14), the valve being controlled by an electrically-operable actuator (32), a control means (27) for controlling the actuators (32) and a communication means (28) to provide signals for the control means (27), wherein:

the device includes an electrical power generation means (5) to generate electricity from the flow of fluid from the exhaust outlet (14) to operate one or more of the actuators (32), the control means (27) and the communication means (28);

the device being configured to receive fluid from a fluid flow supply line;

the device further including a selection valve (12) that has two inputs (9, 13) and one output (15) to the power generation means (5), the first input (9) receives fluid flow from the fluid flow supply line (8) and a second input (13) receives fluid from the exhaust (14) of the at least one valve,

the selection valve (12) being adapted to select which of the inputs (9,13) is in communication with the power generation means (5).”

Claim 1 of auxiliary request 1 differs from claim 1 of the main request in that the expression “the selection valve (12) being biased so that by default the fluid flow supply line (8) is in communication with the power generation means (5)” has been added at the end of the claim.

Claim 1 of auxiliary request 2 differs from claim 1 of auxiliary request 1 in that the expression “the selection valve (12) further being actuated by a solenoid (29) that is supplied with power from the power generation means (5)” has been added at the end of the claim.

VII. The arguments of appellant I, in writing, can be summarised as follows:

Lack of novelty over document D8

Claim 1 of the main request corresponded to claim 1 of auxiliary request 1 filed during opposition proceedings. The opposition division held that the subject-matter of said claim was not new with respect to document D8 (cf point 16.2.1 of the Reasons). With respect to the last feature of claim 1 of the then auxiliary request 1, viz "the selection valve (12) being adapted to select which of the inputs (9,13) is in communication with the power generation means (5)", the opposition division held that also in document D8 (see column 3, lines 41 to 46) fill valve 20 was adapted to select which of the inputs is in communication with the power generation means. In said passage it was clearly and unambiguously stated that the fill valve 20 was "accessible by either the reclaimed air from the brake cylinder 24 or the brake pipe 12 to be used at specific times as needed" and that "fill valve 20 may be of any suitable type to dispense the pressurized air from either the brake valve 14 or the brake pipe 12 to the accumulator 18". Appellant II had submitted that the wording "in communication" in the last feature of claim 1 of the present main request implied a direct communication between the selection valve and the power generation means. However, there the wording of said claim was not restricted to a direct communication between the selection valve and the power generation means, ie also an indirect communication, as eg via interposition of an accumulator as was the case in document D8, was encompassed by the wording of said claim. The subject-matter of claim 1 of the main request was therefore not novel over document D8.

The additional feature of claim 1 of auxiliary request 1, namely "the selection valve (12) being biased so

that by default the fluid flow supply line (8) is in communication with the power generation means (5)", was implicitly known document D8. This document disclosed in column 1, lines 49 to 53, the following: "Briefly, the generator is coupled to and actuated by air from at least an air pipe of the freight car. The generator operates somewhat like a turbine when the air system on the freight car is being charged prior to use" (emphasis added). This passage described the normal operating condition of the generator. In a case where the freight cars had not been in use and sat for several months, the batteries could have lost their charge over time and needed to be replaced or recharged before operating the freight car (see column 1, lines 24 to 30), this was not possible without supplying electrical power to the selection valve from a power source such as a portable battery. From the passage in column 1, lines 62 to 65, reading "The invention takes advantage of the pressurized brake pipe by using the air pressure to actuate the generator and recharge the freight car batteries and/or power accessories, if needed" (emphasis added), it was clear that the power generating system of document D8 was designed to use in the first place the pressurized air from the brake pipe, cf the passage in column 3, lines 29 to 37: "With respect to the brake pipe 12, it should be appreciated that a normal condition of the brake pipe 12 is to have the brake pipe pressurized. This normally pressurized brake pipe 12 is coupled to a brake valve 14 through a coupling 16. In addition, the brake pipe 12 has a coupling 22 directed toward an accumulator 18. As shown in FIG. 1, a fill valve 20 is interposed between the coupling 22 and the accumulator 18 for regulating the supply of air from the brake pipe 12 to the accumulator 18. The fill valve 20 additionally controls the supply of reclaimed air from the brake cylinder 24 to the

accumulator 18" (emphasis added). The subject-matter of claim 1 of auxiliary request 1, which corresponded to the claim on the basis of which the opposition division intended to maintain the patent, was therefore not novel over document D8.

Lack of inventive step over document D8

The subject-matter of claim 1 of auxiliary request 1 also lacked an inventive step. The technical effect of the additional feature of claim 1 of auxiliary request 1 was that it allowed the fluid flow control device to be restarted without user intervention, see paragraph [0032] of the patent in suit. Starting from document D8, it was therefore obvious to the person skilled in the art to bias the selection valve, which was an electrically actuated valve (cf column 4, lines 7 to 11 and Figure 4), so that by default the fluid flow supply line was in communication with the power generation means.

No submissions were made with respect to auxiliary request 2.

VIII. The arguments of appellant II, in writing, can be summarised as follows:

Novelty over document D8

A direct communication between selection valve and power generation means was an implicit requirement of claim 1 of the main request. Any technically sensible interpretation of said claim required the selection valve to be adapted to select which of the inputs is in direct communication with the power generation means. Any broader interpretation of claim 1 of the main

request would result in the terms "selection valve" and "adapted to select" being stripped of all useful meaning. Document D8 disclosed a fill valve 20 that regulated the supply of air from the brake pipe 12 to the accumulator 18. The fill valve 20 additionally controlled the supply of reclaimed air from the brake cylinder 24 to the accumulator 18 (see column 3, lines 34 to 40). A control valve 40 was positioned on an output side of the accumulator 18 and selectively applied pressurised air to drive the generator 10. Thus, the system of document D8 required that an accumulator is provided between the fill valve 20 and the generator 10. As a result of this arrangement, reclaimed air and brake pipe air became mixed inside the accumulator, before being supplied to the generator 10. Thus, the fill valve 20 could not correspond to the selection valve as specified in claim 1 of the main request, because it could not fulfil the requirement of selecting which of the inputs (the fluid flow supply line or the exhaust fluid) was in communication with the power generation means. Therefore, claim 1 of the main request was novel over document D8.

Inventive step over document D8

Claim 1 of the main request was directed to the limitation that the device included a selection valve that was adapted to choose between two inputs, so as to select which input was in communication with the power generation means. The technical effect of the selection valve was that it allows fluid flow from the fluid supply line to be used when exhaust fluid was not yet available, while the remainder of the time, exhaust fluid (which would otherwise be wasted) was used.

By contrast, in the system described in document D8, the generator 10 was supplied by air from an accumulator 18, which itself contained air from either or both of the brake cylinder 24 or the brake pipe 12. Additional valves had to be provided to regulate flow from the accumulator to the power generator (eg control valve 40 of document D8), as well as pressure sensors to monitor the pressure levels within the accumulator, and connections to allow communication between the additional valves and pressure sensors, and the car control device. Therefore, the technical problem to be solved by claim 1 of the main request could be considered as the provision of a more compact and easily-installed system (see eg paragraphs [0002] and [0003] of the patent in suit). By contrast, document D8 was concerned with the need to provide more reliable on-board electric power in railroad cars, avoiding the problems associated with loss of battery charge over time, and the difficulties of voltage generation from axle motion (see column 1: Background to the Invention). Document D8 did not in any way consider the problem of providing a compact system, and in any case, this would not seem to be an issue in the field of railroad cars. Therefore, document D8 did not concern itself in any way with the problem to be solved by claim 1 of the main request, nor did it provide any indication that alternatives were available to the provision of an accumulator. Thus, document D8 did not contain any teaching that could lead the skilled person towards the invention defined in claim 1 of the main request. The subject-matter of said claim therefore involved an inventive step over document D8.

Auxiliary requests 1 and 2

Claim 1 of the auxiliary request 1 differed from claim 1 of the main request in that the feature "*the selection valve (12) being biased so that by default the fluid flow supply line (8) is in communication with the power generation means (5)*" had been added at the end of the claim. As correctly pointed out by the opposition division in the interlocutory decision under appeal (cf point 17.3.2 of the Reasons), the device of document D8 was already configured to rely on two different power sources, namely battery 50 and accumulator 18, and so there was no objective need for the provision of a further back-up system through a fill valve having a default bias. On this basis, the opposition division reached their conclusion that the additional feature of claim 1 of auxiliary request 1 provided said claim 1 with novelty and inventive step.

Claim 1 of the auxiliary request 2 differed from claim 1 of auxiliary request 1 in that the feature "*the selection valve (12) further being actuated by a solenoid (29) that is supplied with power from the power generation means (5)*" had been added at the end of the claim. Document D8 was entirely silent on the internal structure of fill valve 20, and in no way taught or suggested a valve having the configuration required by claim 1 of auxiliary request 2. Therefore, claim 1 of auxiliary request 2 was novel and inventive in its own right.

Reasons for the Decision

1. The appeals are admissible.

2. *Need for appointing oral proceedings - no*

2.1 Article 116(1) EPC 1973 stipulates that oral proceedings shall take place either at the instance of the European Patent Office if it considers this to be expedient or at the request of any party to the proceedings.

According to jurisprudence of the boards, the statements of appellants I and II (see point IV) that they will not attend the oral proceedings are tantamount to a withdrawal of their respective auxiliary requests for oral proceedings, see Case Law of the Boards of Appeal of the EPO, 8th edition 2016, III.C.2.3.1, page 562ff.

2.2 Consequently, this case can be decided without appointing oral proceedings.

MAIN REQUEST

3. *Objection of lack of novelty, Article 54 EPC 1973*

3.1 Interpretation of claim 1 of the main request

The last feature of claim 1 of the main request reads: "the selection valve (12) being adapted to select which of the inputs (9,13) is in communication with the power generation means (5)".

Said claim corresponds to claim 1 of auxiliary request 1 in the opposition proceedings, which was held to lack novelty with respect to document D8, see point I above. The opposition division stated in point 16.2.2 of the Reasons:

> "The fact that air originating from brake cylinder 24 and air from brake pipe 12 will become mixed in

the accumulator 18 before arriving at generator 10 does not contradict the fact that fill valve 20 is nevertheless "adapted to select which of the inputs is in communication with said generator". There is no restriction in the wording of claim 1 that there is a **direct** communication between selection valve and power generation means, i.e. also an indirect communication, as e.g. via interposition of an accumulator as is the case in D8, is encompassed by the wording of claim 1."

The penultimate feature of claim 1 of the main request reads: "the device further including a selection valve (12) that has two inputs (9, 13) and one output (15) to the power generation means (5), the first input (9) receives fluid flow from the fluid flow supply line (8) and a second input (13) receives fluid from the exhaust (14) of the at least one valve".

In the judgment of the board, the person skilled in the art would understand the last feature of claim 1 of the main request in view of the penultimate feature of said claim and in the light of the patent specification (see in particular paragraphs [0014] and [0015]) that the selection valve is adapted to select *either* the first input 9 *or* the second input 13 as the fluid flow to be used to generate electricity in the device (cf. "which ... is in communication with the power generation means").

3.2 Document D8 discloses the features of the initial part of claim 1 of the main request, viz "A fluid flow control device (1) comprising ... for the control means (27), wherein: the device includes ... and the communication means (28)". Since this has not been contested by appellant II, there is no need for further

substantiation. The brake valve 14 shown in Figure 1 of document D8 corresponds to (slice) valve 2 shown at the right-hand side of Figure 1 of the patent.

The next feature of said claim, namely "the device being configured to receive fluid from a fluid flow supply line", is known from document D8 as well, since brake pipe 12 connects to brake valve 14, see Figure 1.

The penultimate feature of claim 1 of the main request is present in the system for generating electrical power known from document D8, since fill valve 20 ("selection valve") has two inputs (the line coming from coupling 22 of brake pipe 12 ("first input"), and the cylinder exhaust line 32 ("second input")) and one output (the line to the accumulator 18), see Figure 1. Fill valve 20 controls the supply of reclaimed air from the brake cylinder 24 to the accumulator 18, see column 3, lines 39 to 41. The accumulator 18 is a container of a predetermined size which stores air from light periods of duty cycle in the brake pipe 12 and from exhausted brake cylinder air, see column 3, lines 52 to 55.

The accumulator is in communication with the power generation means. The fluid flow used to generate electricity in the device according to document D8 is thus a mixture of two fluid flow inputs 12, 32, whereas in the invention either the first input 9 or the second input 13 is used to generate electricity in the device, see point 2.1 above. The last feature of claim 1 of the main request is therefore not known from document D8.

It follows that the subject-matter of claim 1 of the main request is new vis-à-vis document D8.

MAIN REQUEST, AUXILIARY REQUEST 1 AND 2

4. *Objection of lack of inventive step, Article 56 EPC 1973*

4.1 Main request

The subject-matter of claim 1 of the main request differs from the fluid flow control device known from document D8 in that

> "the selection valve (12) being adapted to select which of the inputs (9,13) is in communication with the power generation means (5)".

In the fluid flow control device known from document D8 an accumulator 18 and a control valve 40 are located between the output of fill valve 20 and the air powered auxiliary generator 10.

The board is of the opinion that the person skilled in the art, starting from document D8, would readily recognise that the accumulator and the control valve can be omitted with a view to reduce the complexity of the system and hence arrive at the subject-matter of claim 1 of the main request.

It follows that the subject-matter of claim 1 of the main request does not involve an inventive step.

4.2 Auxiliary request 1

The additional feature of claim 1 of auxiliary request 1 reads: "the selection valve (12) being biased so that by default the fluid flow supply line (8) is in communication with the power generation means (5)".

In column 1, lines 24 to 30, of document D8 the following is stated:

> "A problem arises when the freight cars are not in use and they sit for several months. The batteries may lose their charge over time and need to be replaced or recharged before operating the freight car. In colder climates, this problem becomes worse since the batteries lose their charge delivering capacity faster at lower temperatures."

The solution to this problem is described as follows (see column 1, lines 47 to 65):

> "Accordingly, the present invention is directed to an inventive generator and system for implementing that generator as an alternative to the known systems. Briefly, the generator is coupled to and actuated by air from at least an air pipe of the freight car. The generator operates somewhat like a turbine when the air system on the freight car is being charged prior to use. Air passes through the generator thereby hitting the rotor blades and spinning a shaft. A polarized magnetic disc attached to the shaft creates an electromagnetic field producing an electrical current in stator windings of the generator. This current, once regulated, can be used to charge an on-board battery or provide power directly to electronic devices.
>
> Normally, freight cars are left in railroad yards with their brake pipe pressurized to allow quick assembly of the train. The invention takes advantage of the pressurized brake pipe by using

the air pressure to actuate the generator and recharge the freight car batteries and/or power accessories, if needed."

In view of this disclosure, in particular the last paragraph thereof, it is obvious to the skilled person, starting from document D8, to use the input coming from the brake pipe as a default input line for the fill valve, since that input is pressurised when freight cars are left in railroad yards. In contrast, the cylinder exhaust line 32 coming from the brake valve is not.

It follows that the subject-matter of claim 1 of auxiliary request 1 does not involve an inventive step.

4.3 Auxiliary request 2

The additional feature of claim 1 of auxiliary request 2 reads: "the selection valve (12) further being actuated by a solenoid (29) that is supplied with power from the power generation means (5)".

It is implicit that fill valve 20 in document D8 is an electrically controllable valve, ie a solonoid valve, see column 4, lines 7 to 11, and Figure 1, which shows a dashed line from car control device 54 to fill valve 20. Since the car control device 54 is supplied with power from the air powered auxiliary generator 10, the additional feature of claim 1 of auxiliary request 2 is already known from document D8.

It follows that the subject-matter of claim 1 of auxiliary request 2 does not involve an inventive step for the same reasons as those set out for auxiliary request 1.

Order

For these reasons it is decided that:

1. The decision under appeal be set aside.

2. The patent is revoked.

The Registrar: The Chairman:

D. Meyfarth M. Poock

Decision electronically authenticated