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**Datasheet for the decision
of 26 September 2024**

Case Number: T 1951/22 - 3.2.05

Application Number: 13777637.3

Publication Number: 2839169

IPC: F15B11/10, G01M3/26, F15B19/00,
F15B15/28, G01M3/28

Language of the proceedings: EN

Title of invention:
Actuator predictive system

Patent Proprietor:
Bimba LLC

Opponent:
Festo SE & Co. KG

Relevant legal provisions:
EPC Art. 100(c), 54(1), 56, 114(2)
RPBA 2020 Art. 12(1)(a), 12(2), 12(3), 12(4), 12(5), 12(6)

Keyword:

Grounds for opposition - added subject-matter (yes)

Novelty (first auxiliary request: yes)

Inventive step (first and fifth auxiliary requests: no;
eleventh auxiliary request: yes)

Late-filed auxiliary requests - admitted (second, third,
fourth, sixth auxiliary requests: no; eleventh auxiliary
request: yes)

Late-filed document - admitted (no)

Decisions cited:

G 0003/89, G 0011/91, G 0007/93, T 0640/91



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Case Number: T 1951/22 - 3.2.05

D E C I S I O N
of Technical Board of Appeal 3.2.05
of 26 September 2024

Appellant I:

(Opponent)

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Appellant II:

(Patent Proprietor)

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Decision under appeal:

**Interlocutory decision of the Opposition
Division of the European Patent Office posted on
22 June 2022 concerning maintenance of the
European Patent No. 2839169 in amended form.**

Composition of the Board:

Chairman

P. Lanz

Members:

T. Vermeulen

B. Burm-Herregodts

Summary of Facts and Submissions

- I. Both the opponent and the patent proprietor filed an appeal against the interlocutory decision of the opposition division finding that European patent No. 2 839 169 as amended according to auxiliary request 1.9 met the requirements of the European Patent Convention.
- II. The patent results from European patent application No. 13777637.3, filed as International patent application No. PCT/US2013/037393 which was published as WO 2013/159008 A1.
- III. The opposition had been filed against the patent as a whole on the basis of the grounds for opposition under Article 100(a) together with Article 54(1) EPC (lack of novelty) and Article 56 EPC (lack of inventive step), under Article 100(b) EPC and under Article 100(c) EPC.
- IV. In the decision under appeal, the opposition division came to the following conclusions:
- the subject-matter of claim 11 of the patent as granted extended beyond the content of the application as originally filed,
 - the subject-matter of claim 11 of auxiliary request 1 lacked clarity and extended beyond the content of the application as originally filed,
 - auxiliary requests 1.1, 1.2, 1.4 to 1.7 and 1.9 were admitted into the proceedings,
 - the subject-matter of claim 11 of auxiliary request 1.1 was clear but extended beyond the content of the application as originally filed,

- the subject-matter of claim 11 of auxiliary request 1.2 extended beyond the content of the application as originally filed,
- the subject-matter of claim 1 of auxiliary request 1.4 was not new with respect to document D26,
- the subject-matter of claim 1 of each of auxiliary requests 1.5, 1.6 and 1.7 lacked clarity and extended beyond the content of the application as originally filed,
- the subject-matter of claim 1 of auxiliary request 1.9 fulfilled the requirements of Article 123(2) and (3) EPC and Rule 80 EPC, it was novel and involved an inventive step with respect to the available prior art, in particular document D26 in combination with the common general knowledge or with one of documents D24 and D8.

V. The documents considered in the decision under appeal are the following.

D8: DE 103 55 250 A1
D24: JP 11-270513 A and its translation (D24a)
D26: WO 03/016851 A1

VI. Together with its statement of grounds of appeal, the opponent (appellant I) filed the following document.

D30: Goharrizi and Sepehri, "A Wavelet-Based Approach to Internal Seal Damage Diagnosis in Hydraulic Actuators", IEEE Transactions on Industrial Electronics, Vol. 57, No. 5, May 2010

VII. With its statement of grounds of appeal, the patent proprietor (appellant II) filed six auxiliary requests. With its reply to the opponent's (appellant I's)

statement of grounds of appeal, it filed four further auxiliary requests.

- VIII. In a communication pursuant to Article 15(1) of the Rules of Procedure of the Boards of Appeal (RPBA) issued on 26 July 2024, the parties were informed of the board's provisional opinion on the issues of the appeal.
- IX. By letter dated 12 August 2024, appellant II filed an eleventh auxiliary request.
- X. Oral proceedings before the board were held on 26 September 2024. During the oral proceedings, appellant II reordered its auxiliary requests.
- XI. Appellant I (opponent) requested that the decision under appeal be set aside and that the patent be revoked. It was also requested not to admit auxiliary request 1.9, admitted by the opposition division during oral proceedings, and not to admit the second, third, fourth and sixth auxiliary requests into the appeal proceedings.

Appellant II (patent proprietor) requested that the decision under appeal be set aside and the patent be maintained as granted (main request) or, alternatively, the patent be maintained in amended form on the basis of the claims of one of the first to sixth auxiliary requests filed with the statement of grounds of appeal or, alternatively, on the basis of the claims of the eleventh auxiliary request filed with letter dated 12 August 2024 or, further alternatively, on the basis of the claims of one of the seventh to tenth auxiliary requests filed in reply to the opponent's statement of

grounds of appeal. It was also requested not to admit document D30 into the appeal proceedings.

In the following, appellants I and II will be referred to as the opponent and the patent proprietor, respectively.

XII. Independent claims 1 and 11 of the patent as granted (corresponding to the patent proprietor's main request) have the following wording (the feature numbering used by the board appears in square brackets):

"[1.a] An actuator system comprising: [1.b] a piston-cylinder arrangement including a piston (40) that is movable with respect to a cylinder (17); [1.c] a first flow path in fluid communication with the piston-cylinder arrangement; [1.d] a second flow path in fluid communication with the piston-cylinder arrangement; [1.e] a control system (30) operable to fluidly connect the first flow path to a source of high-pressure fluid and to connect the second flow path to a drain to move the piston (40) in a first direction; [1.f] a pressure sensor (20) fluidly connected to the first flow path and operable to measure sufficient pressure data during the movement of the piston (40) to generate a pressure versus time curve, [1.g] the control system (30) operable to compare the generated pressure versus time curve to a known standard pressure versus time curve stored in the control system (30) to determine the condition of the piston-cylinder arrangement, [1.h] characterised by the actuator system further comprising a second pressure sensor (25) in fluid communication with the second flow path and operable to measure a second set of pressure data during movement of the piston (40), [1.i] and the control system (30) being operable to compare the second set of measured pressure

data to a second known standard to determine the condition of the system."

"[11.j] A method of predicting a failure in an actuator system, the method comprising: [11.k] porting a high-pressure fluid to a first side (50) of a piston-cylinder arrangement; [11.l] draining a low-pressure fluid from a second side (55) of the piston-cylinder arrangement to allow the piston (40) to move with respect to the cylinder toward the second side (55); [11.m] taking a plurality of pressure measurements of the fluid adjacent the first side during the movement of the piston (40); [11.n] taking a plurality of measurements of the fluid adjacent the second side during movement of the piston (40); [11.o] comparing the plurality of pressure measurements to a known set of pressure values; and [11.p] determining if a failure is likely based on the comparison of the plurality of pressure measurements to the known set of pressure values."

- XIII. The wording of claim 1 of each of the first, third, fourth and fifth auxiliary requests is identical to that of claim 1 of the patent as granted.
- XIV. Independent claim 11 of the second auxiliary request has identical wording compared to claim 11 of the patent as granted.
- XV. The sixth auxiliary request has, in addition to independent claim 1, a second independent claim relating to an actuator system.
- XVI. The eleventh auxiliary request has a single independent claim with, compared to claim 1 of the patent as granted, the following additional feature.

"[1.j] comprising a piston seal (60) coupled to the piston (40) to inhibit fluid flow between the piston (40) and the cylinder (17), the control system (30) operable to predict a failure of the piston seal (60) based on the comparison of the generated pressure versus time curve to the known standard pressure versus time curve stored in the control system (30)."

XVII. The opponent essentially argued as follows.

Main request - Ground for opposition under Article 100(c) EPC

The subject-matter of independent claim 11 of the patent as granted extended beyond the content of the application as filed. The term "pressure" did not appear in feature 11.n. At the same time, the wording of feature 11.n was not ambiguous and did not require any interpretation. It did not involve an obvious error either. Given that paragraph [0045] of the published application as filed also referred to additional sensors, it was incorrect to read the term "pressure" into the term "measurements" of feature 11.n. Claim 17 of the application as filed only provided basis for taking pressure measurements. When assessing the disclosure of the application as filed as a whole, the skilled person would only ever find a reference to pressure measurements and not to the more general "measurements". Therefore, feature 11.n was not originally disclosed. The patent proprietor's argument that the skilled person would exclude technically illogical interpretations was not objected to; it actually supported the decision of the opposition division in respect of an inadmissible broadening of the technical expression "pressure measurement". That

viscosity measurements were technically illogical was an unsubstantiated assertion by the patent proprietor.

First auxiliary request

- *Novelty*

The subject-matter of claim 1 of the first auxiliary request was not novel over the disclosure of document D26. As regards features 1.e and 1.g, the control system of document D26 was formed by the valves 13 controlling the actuator 3 and by the evaluation unit 6 designed as a PLC controller. The patent proprietor was wrong in asserting that, in the absence of a functional or structural connection, these had to be separate control systems. The broad wording of claim 1 of the first auxiliary request also included a control system with two subsystems. Figure 1 of the patent, for example, illustrated a control system 30 without any connection to the valve 70. Furthermore, the patent proprietor's argument that features 1.g and 1.i were not disclosed by document D26 could not be understood. It followed from page 10, lines 30 to 31 of document D26 that the prior art actuator was a double-acting cylinder. Therefore, the condition of the pressure lines 1, 2 shown in Figure 4 of document D26 also allowed conclusions to be drawn on the pressure in the two piston chambers of the actuator with which they were connected. Given that claim 1 of the first auxiliary request was a device-type claim and that the prior art system of document D26 was operable to determine the condition in every possible mode of operation (see page 6, last paragraph of document D26), it did not matter whether the pressure lines were connected to the high-pressure or low-pressure side of the actuator. Moreover, it had to be taken into account

that feature 1.i did not refer to the actuator *per se* but to the actuator system.

- *Inventive step*

It would have been obvious to unite the control systems of document D26 into one control system. Therefore, the subject-matter of claim 1 of the first auxiliary request did not involve an inventive step.

Second to sixth auxiliary requests

The second, third, fourth and sixth auxiliary requests were not subject of the oral proceedings held before the opposition division; they were filed for the first time in the appeal proceedings. However, they could have easily been filed in the oral proceedings held before the opposition division. In addition, the problems of added subject-matter concerning independent claim 11 as granted were not resolved in the second auxiliary request. The second, third, fourth and sixth auxiliary request should therefore not be admitted into the appeal proceedings.

The fifth auxiliary request corresponded to auxiliary request 1.4 submitted before the opposition division. Claim 1 of the fifth auxiliary request was not new compared to document D26 for the same reasons as presented in the context of the first auxiliary request.

Eleventh auxiliary request

- *Admittance into the appeal proceedings*

The eleventh auxiliary request, which was identical to auxiliary request 1.9 underlying the decision under appeal, must be rejected as an inadmissible late submission. The opponent disagreed with the opposition division's conclusion that claim 1 of auxiliary request 1.9 contained a foreseeable amendment. In all auxiliary requests filed throughout the opposition proceedings, the patent proprietor had pursued protection for a system that aimed to determine the condition of the piston-cylinder arrangement without, however, explicitly naming the component involved. When the patent proprietor filed auxiliary request 1.9 containing the limitation to *piston seal* at 17:35 during the oral proceedings before the opposition division, it had come as a surprise. Also, the filing of auxiliary request 1.9 could not be regarded as a reaction to the opposition division's reconsideration of novelty over document D26, since this had been discussed in the context of auxiliary request 1.4. The patent proprietor had been allowed three attempts to respond to this change of view. In none of these attempts it had included the aspect of the *piston seal* in independent claim 1. Therefore, the patent proprietor had been in a position to file auxiliary request 1.9 at a much earlier stage. The patent proprietor should not have been allowed to first file a number of auxiliary requests with amendments based on features taken from the description, which therefore had a lower chance of success, and, only after all of these attempts had failed, to combine original claims 1

and 2 of the patent as granted in auxiliary request 1.9.

- Admittance of document D30 into the appeal proceedings

The restriction to the aspect of the piston seal in claim 1 of auxiliary request 1.9 had been surprising to the opponent, at the time it was filed at the oral proceedings before the opposition division. Since it was no longer possible for the opponent, in view of the late hour, to react appropriately during these oral proceedings, document D30 should be admitted in the appeal proceedings. This prior-art publication filed at the outset of the appeal proceedings was not purely theoretical but dealt with the function monitoring of concrete actuator systems. In line with the background described in paragraph [0002] of the patent, page 1755, first column, first paragraph of document D30 referred to condition monitoring of hydraulic systems and to early detection of faults. This implied a failure prediction. As was clear from Figures 1 and 2 of document D30, an experimental test rig was disclosed, which comprised an actuator in the form of a double-acting working cylinder, two fluid paths and a control system in the form of a high-speed PC. Further reference was made to the abstract on page 1755, to page 1756, second column, third paragraph, to page 1757, second column, second paragraph mentioning the piston seal, to Figure 5 according to which so-called 'baseline' pressure-versus-time curves were recorded for both piston chambers, to Figure 7 which showed an internal leakage signal, to Figure 8 which showed pressure-versus-time curves recorded during the internal leakage originating from a leaking piston seal, and to page 1760, left column, second paragraph

regarding the comparison of the curves. In this way, document D30 explicitly disclosed a function monitoring system for a piston-cylinder arrangement in which it was possible to predict the failure of a piston seal and, thus, prima facie opposed the maintenance of claim 1 according to the eleventh auxiliary request.

- *Inventive step*

The subject-matter of claim 1 of the eleventh auxiliary request did not involve an inventive step. Starting from document D26, feature 1.j was a further distinguishing feature resulting in the objective technical problem of providing an actuator prediction system with which a fault prediction on a specific component of a piston-cylinder arrangement was possible. The skilled person would have arrived at the claimed actuator system either in view of common general knowledge alone or in combination with document D24 or document D8.

As shown by Figure 4 of document D26, the piston-cylinder arrangement had a cylinder housing in which a piston connected to a piston rod was movably guided, hereby separating two pressure chambers A and B from each other. Not only the pressure in the supply lines but also the pressure inside the piston chambers was monitored. It would have been obvious to the skilled person that, if no or only little pressure had built up on the inlet side and the actuating piston did not move, this was not necessarily due to a leak in the pressure line, but possibly also to a faulty piston seal. On page 7, lines 19 to 25 of document D26 it was explicitly stated that further parameters could be included in the monitoring profile. Thus, the skilled person would have taken the suggestion from document

D26 to extend the function monitoring to the piston-cylinder arrangement and, in particular, to include the piston seal.

Alternatively, the skilled person would have taken document D24 into consideration as it also disclosed a double-acting actuator with a function monitoring system. In lines 25 to 27 of document D24a, the prediction of the deterioration of a fluid actuator was mentioned. In Figures 1 and 3 of document D24, a piston seal 26a was shown, see also line 112 of document D24a. The control system 10 of document D24 was operably connected to both the pressure sensors 14A, 14B and the control valve 50. Figures 5 to 9 of document D24 showed pressure-versus-time curves. In line 198 of document D24a, reference was made to the worn state of the piston seal. The expression "wind force" corresponded to the pressure while also taking into consideration the fluid flow, similarly as in document D26. As a consequence, the skilled person would have found suggestions in document D24 to use a single control system and to predict also the failure of the piston seal. Applying this to the piston-cylinder arrangement of document D26, which implicitly comprised a piston seal in order to prevent fluid from leaking in between the chambers, would have resulted in the claimed subject-matter.

Furthermore, document D8 was concerned with a method for determining leakage in an actuator system with a piston cylinder. As Figure 2 of document D8 in particular disclosed, the piston cylinder had a piston 3 which separated two pressure chambers 10, 11 from each other. It would have been obvious to the skilled person in view of the teaching of document D8 to apply

the function monitoring described in document D26 also to the piston cylinder.

XVIII. The patent proprietor essentially argued as follows.

Main request - ground for opposition under Article 100(c) EPC

The subject-matter of independent claim 11 of the patent as granted did not extend beyond the content of the application as originally filed. It was established jurisprudence that the skilled person interpreted a claim with a mind willing to understand and that technically illogical interpretations should be excluded. A reading of feature 11.n in the sense that it encompassed measurements of a general kind, and not specifically pressure measurements, was technically illogical. The subsequent mentions of measurements in features 11.o and 11.p specifically referred to pressure measurements and relied on pressure measurements being taken on both sides of the piston. The skilled person would realise that it did not make technical sense to take measurements which were not used subsequently in the method and would, as a result, never interpret the claim in this way. Otherwise the taking of measurements adjacent the second side of the piston would be for apparently no reason at all. The technical teaching of the disclosure as a whole was specific in that a comparison of pressure curves enabled the determination of the condition of the actuator. There was, however, no teaching in the patent as to how a comparison of viscosity measurements could be used to determine the condition of the actuator, nor for that matter any other kind of measurements. It was obvious that feature 11.n contained a typographical error and should read "pressure measurements". That

this had always been intended followed from points 5 and 6 of the applicant's letter dated 11 July 2016. Source of the error was probably the mention of "second sensor" in paragraph [0030] of the published application as filed. The wording used in paragraph [0044] of the application as filed clearly demonstrated that other measurements were only considered in addition to the pressure measurements. Feature 11.n could thus not be understood in the sense that the temperature or viscosity were measured adjacent the second side of the piston. As such, basis for claim 11 as granted was provided by original claim 18 in combination with paragraph [0036] of the application as filed, which described taking pressure measurements adjacent first and second sides of the piston, as well as paragraphs [0050] to [0055] of the application as filed, which provided a detailed explanation of a comparison of pressure measurements taken adjacent both sides of the piston being compared and used to determine a condition of the system.

First auxiliary request

- *Novelty*

The subject-matter of independent claim 1 of the first auxiliary request was novel over document D26, which failed to disclose features 1.g, 1.h and 1.i. Firstly, claim 1 of the first auxiliary request required a single system to be responsible for both controlling and evaluating the operation of the actuator. It was clear from the claim wording that any subsystem which performed the comparison and determination steps must have some kind of functional or structural link with another subsystem that had a role in controlling the actuator. Otherwise, they could not logically be

described as forming part of the same control system. Document D26, however, provided a separate purpose-built evaluation unit 6 which had no connection whatsoever to the mechanisms which controlled the piston's movement. The two control systems of document D26 did not share any data or have any common processing or logic. It therefore did not make technical sense to describe the evaluation unit 6 as forming part of the control system of feature 1.e. Secondly, the skilled person would understand from the wording of features 1.g and 1.i that the control system itself had to be operable to determine the condition of the actuator system. The functionality of the control system was described throughout the published application as filed (see paragraphs [0030] to [0033], [0048] and [0062]). The idea that an individual be charged with watching an output monitor displaying graphs of output data and using that information to determine the condition of the actuator system was nonsensical. In reality, the control system of the present invention would be employed to monitor many tens if not hundreds of actuators in a factory setting, which were each operated many times a minute, sometimes over 24 hours. Document D26 did not disclose a system which determined a condition of the actuator system itself. Instead it disclosed a system which determined the presence of leaks in supply lines connected to an actuator system (see, for example, page 1, lines 4 to 9 and page 6, lines 24 to 29 of document D26). Thirdly, document D26 did not explain how the actuator was controlled to operate in the reverse direction. Sensors 4 and 5 were used to detect preload and operating pressures, respectively. This would be on the high-pressure side of the piston. It was unclear whether the sensors were operable to measure pressure on the low-

pressure side of the piston, as required by feature 1.h.

- *Inventive step*

The subject-matter of claim 1 of the first auxiliary request involved an inventive step. The pressures measured by the evaluation unit 6 of document D26 were constantly compared to threshold values. In the last two paragraphs on page 13 of document D26, it was explained that the purpose of the unit 6 merely was to look at a screen. There would be no efficiency gain in combining the valve control and the monitoring action of document D26. Furthermore, it was not clear which data or logic would need to be shared between the operation of the valves and the pressure measurements. It followed from paragraph [0031] of the patent that the control system of the invention also served to more directly control the operation of the actuator. The skilled person would not have been motivated to carry out such a change in the actuator system of document D26.

Second to sixth auxiliary requests

Independent claim 1 of the second auxiliary request was amended to reflect that the control system was operable to determine the condition of the actuator system. Independent method claims 11 of the third and fourth auxiliary requests were further amended in order to comply with Article 123(2) and 84 EPC.

The fifth auxiliary request comprised the apparatus claims of the main request. Method claims 11 to 13 were deleted. The arguments presented for claim 1 of the

main request therefore also applied to the fifth auxiliary request.

The sixth auxiliary request comprised claim 1 as maintained in opposition proceedings, corresponding to claim 1 in combination with dependent claim 2 as granted. A new independent apparatus claim 2 was added consisting of independent claim 1 in combination with dependent claim 3 as granted. Method claims 11 to 13 were deleted.

Eleventh auxiliary request

- Admittance into the appeal proceedings

The eleventh auxiliary request should be admitted into the appeal proceedings. It was identical to auxiliary request 1.9 on the basis of which the patent was maintained by the opposition division. This request, therefore, was not a novel or unforeseen development in the appeal process. Auxiliary request 1.9 had resulted from a combination of claim 1 with dependent claim 2 as granted, and was therefore a request which could have easily been anticipated by the opponent. Furthermore, it had been filed in reaction to the reconsideration of the opposition division's preliminary opinion. It was established jurisprudence of the Boards of Appeal of the EPO that opponents should be prepared for amendments in which an independent claim as granted was limited by the features of a dependent claim as granted. Actually, the opponent had already taken the opportunity to challenge claim 2 as granted in its notice of opposition. The opponent thus came into oral proceedings before the opposition division pre-armed with attacks to auxiliary request 1.9. It was therefore clearly absurd to suggest that the opponent could not

have anticipated this request. In addition, auxiliary request 1.5, which had been submitted prior to the Rule 116(1) EPC deadline, related to the same subject-matter as auxiliary request 1.9, namely to predicting/identifying a failure of the piston seal. Auxiliary request 1.9 had only been the patent proprietor's second opportunity to address a surprise finding of lack of novelty of claim 1 in the context of auxiliary request 1.4. Auxiliary request 1.5 was rejected based on the formal issues of added subject-matter and lack of clarity that were first presented to the patent proprietor very late in the day during the oral proceedings. Accordingly, it was only fair that the patent proprietor was given the opportunity to react to a surprise change of mind by the opposition division.

- *Admittance of document D30 into the appeal proceedings*

Document D30 should not be admitted into the appeal proceedings. Auxiliary request 1.9 was based on a combination of claims 1 and 2 as granted. Thus, the opponent would readily have anticipated the subject-matter of auxiliary request 1.9 and ought to have conducted all searching for prior art to attack this claim prior to filing the notice of opposition. The opponent therefore had had multiple opportunities to submit document D30 during first-instance proceedings and had not fulfilled its obligation to submit all facts and arguments as early and completely as possible. Furthermore, as several features of claim 1 of the eleventh auxiliary request were missing from document D30, it failed in meeting the threshold of prima facie relevance. The paper merely verified whether, based on wave decomposition in response to a pressure pulse, a value of the pressure signal fell

below a threshold. The pressure-versus-time curve was thus not related to the movement in a first direction as required by feature 1.g. According to the abstract of document D30, the pressure was only measured at one side of the actuator, contrary to the requirement of feature 1.i. And there was no disclosure in document D30 of identifying or predicting an actual failure; merely the response to any kind of generated leakage signal was detected. Also feature 1.j was thus not disclosed. In conclusion, it was evident that document D30 was less relevant than other documents already relied on during the opposition proceedings, such as document D26.

- *Inventive step*

The subject-matter of claim 1 of the eleventh auxiliary request involved an inventive step.

Feature 1.j required that failure of the piston seal was predicted based on the comparison of the generated pressure-versus-time curve with the known standard pressure-versus-time curve stored in the control system. This would not have been obvious for the skilled person starting from document D26. Even if document D26 described how parameters other than pressure additionally enabled monitoring of the connected unit, this was not connected to a comparison of pressure-versus-time curves. Regardless of whether the skilled person would have monitored the piston-cylinder arrangement of document D26, there was no teaching in document D26 which would have motivated the skilled person to diagnose a particular fault as occurring at a specific component, specifically, the piston seal. The opponent did not provide any reasoning as to how the skilled person minded to use the method

to assess the condition of the cylinder, might have been able to actually identify specific problems with the piston seal.

Document D24 disclosed a method for detecting abnormalities of a fluid actuator in which pressure was measured in first and second ports. Volume flow rate of fluid flowing into the first and second ports was also measured using a flow meter. The measured pressures and the flow velocity were then integrated to obtain a value proportional to the force applied to the fluid actuator, see lines 67 to 74 of document D24a. This calculated value, referred to at various points as the "wind force", was then used to indicate defects in the system. Thus, in document D24 there was no comparison of pressure values as required by claim 1. The skilled person attempting to identify defects in the actuator would therefore not have had any reason to combine documents D26 and D24. If at all, the skilled person, after having consulted document D24, would have attempted to identify defects occurring specifically in the actuator by comparing a calculated wind force.

Document D8 disclosed a method for leak detection in an actuator which involved measuring pressure and volume flow in one of two supply lines during movement of a moving element of the actuator. The measured pressure and volume flow were used to calculate the position and speed of the moving element for the leak-free condition using a specific equation in which the coefficients were calculated by modelling the system in the leak-free initial condition. Deviations between the calculated position and speed of the moving element were used to determine leakage. It was, however, not clear how the skilled person would have combined the disclosures of documents D26 and D8. Any combination

would have altered the principle of operation of document D26. For instance, document D8 taught to measure different parameters to those in document D26. Document D8 further relied on the use of physical relationships to model different variables and involved the calculations of several parameters and coefficients. There was no suggestion in document D8 that leakage could be identified within the cylinder by comparing a measured pressure curve with a standard pressure curve. The skilled person trying to adapt the method of document D26 to enable detection of leakage in the cylinder, as in document D8, would thus have been forced to implement the methodology of document D8, contrary to what was specified in claim 1. Furthermore, it was noted that the opponent did not even attempt to assert that the skilled person could have specifically identified a failure of the piston seal.

Reasons for the Decision

Main request - ground for opposition under Article 100(c) EPC

1. In the proceedings before grant, the independent method claim of the application as filed was amended by the addition of feature 11.n. As a consequence, the method of claim 11 of the main request (which has identical wording to claim 11 of the patent as granted) has the additional step of

"taking a plurality of measurements of the fluid adjacent the second side during movement of the piston (40)".

2. Several passages of the application as filed (reference is made hereinafter to the PCT-publication WO 2013/159008 A1) disclose the step of measuring the fluid in connection with the second side of the piston-cylinder arrangement. However, the measurement is always restricted to *pressure* data and carried out by a *pressure* sensor. This is also the case for dependent claim 17 where the second set of measured pressure data is compared to a second known standard to determine a condition or a failure. Paragraphs [0030] and [0036] of the application as filed explicitly refer to a second pressure sensor 25 that measures pressure within the second chamber 55. Paragraphs [0044] and [0045] of the application as filed mention the possibility of measuring time duration and number of strokes, but only *in addition to* measurements taken by first and second pressure sensors 20, 25. By the same token, the magnetic sensors 160 of paragraph [0047] and Figure 10 of the application as filed must be understood as measuring the angle or position of the piston in addition to the pressure measurements by sensors 20, 25. Also paragraphs [0050] to [0055] of the application as filed unequivocally refer to pressure measurements taken at both sides of the piston.
3. The patent proprietor argued that it would be technically illogical to understand feature 11.n in the sense that it encompassed measurements other than pressure measurements. The board disagrees. The wording of feature 11.n may be general but it imparts a clear, credible technical teaching. And it does make technical sense to measure other parameters of the fluid in connection with the second chamber, such as viscosity or temperature. Thus, the skilled person reading claim 11 of the main request with a mind willing to understand would recognise that alternative

measurements are not excluded. The mention of "*the plurality of pressure measurements*" both in the comparing step of feature 11.o and in the determining step of feature 11.p can be perfectly understood as references to the "*plurality of pressure measurements*" of feature 11.m, i.e. in relation to the fluid at the first side of the piston-cylinder arrangement. They do not impose a more restricted meaning on the "*measurements*" of feature 11.n. The board is firm in its view that the missing interaction in claim 11 between the step of feature 11.n and the other steps of the predicting method is not in itself a reason to conclude that the feature would lose its technical sense in the context of the claim.

4. Also the description cannot be used to give a different meaning to claim feature 11.n. The board rejects the circular argument that the introduction of a general term ("measurements") in a claim has basis in the application as filed because it is to be construed in a restricted manner ("pressure measurements") in view of the specific disclosure in the description.
5. The patent proprietor has not persuaded the board that feature 11.n contains an obvious error that is objectively recognisable by the skilled person using common general knowledge and that its correction would be obvious in the sense that it is immediately evident that nothing else would have been intended than what is offered as the correction (G 3/89, OJ EPO 1993, 117 and G 11/91, OJ EPO 1993, 125, points 5 and 6 of the Reasons). As set out in point 3. above, the wording of feature 11.n makes perfect technical sense. A skilled person would thus not be in a position to objectively recognise an obvious error even when using common general knowledge. Furthermore, the basis for

objectively inferring that an error has occurred is limited to the whole of the documents as filed (G 3/89, Reasons 3). In the present case, this is the application as filed. Any intention the patent proprietor may have expressed in a letter issued during the proceedings before grant cannot serve as basis for ascertaining allegedly incorrect information in claim 11 of the patent as granted.

6. In view of the above considerations, the board concurs with the opposition division that claim 11 of the patent as granted contains added subject-matter so that the ground for opposition under Article 100(c) EPC prejudices the maintenance of the patent as granted. The patent proprietor's main request is therefore not allowable.

First auxiliary request

- *Novelty (Article 54(1) and (2) EPC)*

7. The first auxiliary request corresponds to auxiliary request 1 underlying the decision under appeal. It has an independent claim 1 with the same wording as claim 1 of the patent as granted. The opposition division examined this claim under novelty only in the context of auxiliary request 1.4 underlying the decision under appeal. Considering the particularities in the case at hand, the board finds it appropriate to review the opposition division's conclusion of lack of novelty over document D26 already in the context of the first auxiliary request.
8. It is undisputed that document D26 discloses an actuator system with features 1.a to 1.f. Both

appellants agree that the pressure relief valves 13 illustrated in Figure 4 of document D26 function as a control system operable to fluidly connect a first flow path 1 to a source of high-pressure fluid generated by a pump 12 and to connect a second flow path 2 to a drain 14 in order to move the piston in a first direction. Moreover, the opponent convincingly argued by reference to page 10, lines 30 to 31 of document D26 that the piston is of the double-acting type ("*Da die Zuleitungen 1, 2 bzw. das Aggregat 3 wechselweise beaufschlagt werden (vgl. Fig. 3a, 3b)*", which is translated by the board as follows: "*As the supply lines 1, 2 and the unit 3 are alternately pressurised (see Fig. 3a, 3b)*"). Hence, the flow paths 1, 2 of Figure 4 alternately act as supply lines for transporting pressurised fluid to either side of the piston. This, in turn, means that the sensors 5 provided in each of the flow paths 1, 2 can be considered as first and second pressure sensors in the sense of features 1.e and 1.h, respectively. In the case of the piston moving in a first direction shown in Figure 3a, the sensor 5 in the first flow path 1 is operable to measure the operating pressure ("*Betriebsdruck*"). Likewise, the sensor 5 in the second flow path 2 is operable to measure the operating pressure during movement of the piston in the opposite direction shown in Figure 3b.

9. All pressure sensors 4, 5 are connected to a module 6 designated as "*Steuerung*" on page 9, lines 29 to 30 of document D26. It generates pressure-versus-time curves (" $P_I(t)$ ") and compares these to known pressure-versus-time curves stored in the unit (see claim 1 and Figures 1 and 2 of document D26). Aim of this data control system is to monitor the actuator system, in particular the pressure lines supplying fluid to both sides of the

piston-cylinder arrangement. Any faults that occur can be recognised at an early stage and corresponding warning messages are issued by an alarm device (see page 7, lines 25 to 29 of document D26). Load-dependent maintenance intervals can be derived from the data (see page 6, lines 11 to 15 of document D26). The board concurs with the opponent that, by monitoring the pressure in the supply lines 1, 2 shown in Figure 4 of document D26, conclusions can also be drawn on the (change of) pressure in the piston chambers with which the respective supply lines are connected. The module 6 is thus adapted to determine the condition not only of the actuator system in general but also of the piston-cylinder arrangement in particular, as required by features 1.g and 1.i.

10. Nevertheless, in document D26, the control system operable to fluidly connect the first flow path to a source of high-pressure fluid and to connect the second flow path to a drain (feature 1.e) is not disclosed as being the same control system as that operable to compare the generated pressure-versus-time curve to a known standard pressure-versus-time curve (feature 1.g) or as that operable to compare the second set of measured pressure data to a second known standard (feature 1.i). In fact, the valves 13 and the module 6 are illustrated and described as separate elements throughout document D26. There is no indication that the two control systems are linked in any manner, be it by means of a structural connection or through some kind of functional interaction (sharing data, common logic, etc). Moreover, nothing in document D26 suggests that they form part of one and the same control system. Even if the opposition division's view were followed and the wording of claim 1 is considered so broad that it encompasses actuator systems having a control system

with two separate subsystems controlling different parts of the actuator system, there is no direct and unambiguous disclosure in document D26 of such a single, overarching control system. It must thus be concluded that features 1.g and 1.i are not disclosed by document D26.

11. Hence, the subject-matter of claim 1 of the first auxiliary request is novel over document D26 (Article 54(1) and (2) EPC).

- *Inventive step (Article 56 EPC)*

12. Starting from document D26 and with the distinguishing features 1.g and 1.i, it would have been obvious for the skilled person to arrive at the actuator system of claim 1 of the first auxiliary request. In the board's view, there is no apparent reason why the skilled person would not have considered grouping the different controls of document D26 into one overarching control unit, all the more so since claim 1 does not require the fluid control to depend on or interact with the data control. The mere fact that a single control system is responsible for controlling the fluid connections to the piston chambers as in feature 1.e and for processing the pressure measured by the sensors as in features 1.g and 1.i does not require that they are structurally or functionally connected. The patent proprietor's argument in respect of possible data or logic sharing between the operation of the valves and the pressure measurements can therefore not be accepted. It may very well be that the patent description identifies further purposes of the control system in addition to the claimed monitoring functions. But such limitations are not reflected in the wording of the claim. Features 1.g and 1.i merely require that

the control system is operable to *compare* curves and data, respectively, in order to *determine* a condition. That is exactly what the module 6 of document D26 is designed to do.

13. It follows from the above that the subject-matter of claim 1 of the first auxiliary request does not involve an inventive step as required under Article 56 EPC. The first auxiliary request is therefore not allowable.

Second, third and fourth auxiliary requests - admittance into the appeal proceedings (Article 12(4) RPBA)

14. The claims of the second, third and fourth auxiliary requests were filed for the first time with the patent proprietor's statement of grounds of appeal. Thus, they are to be regarded as an amendment of its appeal case in the sense of Article 12(4), first sentence, RPBA, and may be admitted only at the discretion of the board (Article 12(4), second sentence, RPBA).
15. Independent claim 11 of the second auxiliary request has identical wording compared to claim 11 of the patent as granted. For the same reasons as set out in points 1. to 6. above, claim 11 of the second auxiliary request would thus also contain added subject-matter in violation of Article 123(2) EPC.
16. The wording of claim 1 of each of the third and fourth auxiliary requests is identical to that of claim 1 of the patent as granted and thus also to that of claim 1 of the first auxiliary request. Hence, claim 1 of the third and fourth auxiliary requests would not involve an inventive step under Article 56 EPC for the same reasons as set out in points 12. and 13. above.

17. In view of these findings, the board exercised its discretion under Article 12(4) RPBA not to admit the second, third and fourth auxiliary requests into the appeal proceedings.

Fifth auxiliary request - inventive step (Article 56 EPC)

18. The fifth auxiliary request corresponds to auxiliary request 1.4 underlying the decision under appeal. It has an independent claim 1 with the same wording as claim 1 of the patent as granted and thus also as claim 1 of the first auxiliary request. For the same reasons as set out in points 12. and 13. above in the context of the first auxiliary request, claim 1 of the fifth auxiliary request does not fulfill the requirements of Article 56 EPC. As a consequence, the fifth auxiliary request is not allowable.

Sixth auxiliary request - admittance into the appeal proceedings (Article 12(3) and (5) RPBA)

19. The claims of the sixth auxiliary request were filed for the first time with the patent proprietor's statement of grounds of appeal. Compared to the higher-ranking auxiliary requests, the sixth auxiliary request has, in addition to independent claim 1, a second independent claim 2 relating to an actuator system.
20. Pursuant to Article 12(3) RPBA, the statement of grounds of appeal and any reply to it must contain a party's complete case. They must set out clearly and concisely the reasons why it is requested that the decision under appeal be reversed, amended or upheld,

and should specify expressly all the requests, facts, objections, arguments and evidence relied on. The purpose of this provision is to ensure fair proceedings for all parties and to enable the board to start working on the case on the basis of each party's complete submissions ("Case Law of the Boards of Appeal of the European Patent Office", 10th edition 2022, V.A. 4.3.5). Under Article 12(5) RPBA, the board has discretion not to admit any part of a submission by a party which does not meet the requirements in Article 12(3) RPBA.

21. The patent proprietor addressed the sixth auxiliary request in point XI of its statement of grounds of appeal. Apart from indicating that claim 1 was as maintained in opposition proceedings, it submitted that "*a new independent apparatus claim 3* [sic]" was added consisting of independent claim 1 in combination with dependent claim 3 as granted and that the method claims were deleted. No arguments in support of novelty or inventive step were submitted. The reply to the opponent's statement of grounds of appeal makes no mention whatsoever of the sixth auxiliary request. Also in its letter dated 12 August 2024 sent in reply to the board's communication under Article 15(1) RPBA, the patent proprietor chose not to present any arguments in support of the sixth auxiliary request, even though the board noted in points 34 and 35 of its communication that no proper substantiation of the sixth auxiliary request had been provided.
22. The patent proprietor has thus not given any reasons why it considered that independent claim 2 of the sixth auxiliary request was supposed to overcome the objections raised in the decision under appeal. This is all the more remarkable since this claim seems to be

based on claims 1 and 3 of the patent as granted, against which the opponent had raised objections already at the beginning of the opposition proceedings (see points IV.1 and IV.3 of the notice of opposition). In doing so, the patent proprietor has left it for the board and the opponent to speculate why the subject-matter of the independent claim 2 of the sixth auxiliary request would meet the requirements of novelty and an inventive step.

23. Since the sixth auxiliary request was not properly substantiated, contrary to what is required by Article 12(3) RPBA, the board decided to exercise its discretion under Article 12(5) RPBA not to admit the sixth auxiliary request into the appeal proceedings.

Eleventh auxiliary request

- Admittance into the appeal proceedings

24. The claims of the eleventh auxiliary request were filed with the patent proprietor's letter dated 12 August 2024. They are identical in wording to the claims of auxiliary request 1.9 which were filed during the oral proceedings held before the opposition division on 4 May 2022, admitted into the proceedings and subsequently found allowable in the decision under appeal.
25. The only independent claim of the eleventh auxiliary request is a combination of claims 1 and 2 of the patent as granted.
26. The opponent maintains that auxiliary request 1.9, and thus also the eleventh auxiliary request, should not

have been admitted by the opposition division, essentially arguing that it had come as a surprise and should have been filed at a much earlier stage.

27. Pursuant to Article 12(1)(a) RPBA, the decision under appeal - and thus also any claim request on which the decision is based - is in principle part of the appeal proceedings. This also follows from Article 12(2) RPBA, which provides that a party's appeal case shall be directed, *inter alia*, to the requests on which the decision under appeal was based. Otherwise, it would not be possible to review the decision under appeal in a judicial manner, which is the primary object of the appeal proceedings. Several decisions have concluded from these provisions that it is not possible to exclude on appeal a request underlying the impugned decision ("Case Law of the Boards of Appeal of the EPO", Tenth Edition, July 2022, hereinafter "Case Law", V.A.3.4.4).

28. The board finds it appropriate to add that the opposition division's decision to admit auxiliary request 1.9 into the proceedings was a discretionary decision. A board of appeal should only overrule the way in which a department of first instance has exercised its discretion when deciding on a particular case if it concludes that it has done so according to the wrong principles, or without taking into account the right principles, or in an unreasonable way. It is generally not the function of a board of appeal to review all the facts and circumstances of the case as if it were in the place of the department of first instance, in order to decide whether or not it would have exercised such discretion in the same way (cf. G 7/93, OJ 1994, 775 and T 640/91, OJ 1994, 918). This

also applies to reviewing a decision of an opposition division not to admit late-filed documents.

29. In point 46 of the decision under appeal, the opposition division cited Article 114(1) EPC and Rule 116 EPC and presented two reasons for admitting auxiliary request 1.9 into the proceedings: (i) claim 1 of auxiliary request 1.9 was directed to a combination of claims 1 and 2 of the patent as granted, making it a foreseeable amendment, and (ii) the claims of auxiliary request 1.9 had been filed in reaction to the reconsideration of the preliminary opinion of the opposition division in which it initially held that the subject-matter of claim 1 of the patent as granted was novel over document D26.

30. The board is satisfied that the opposition division applied the right principles in a reasonable way. Even though the claims of auxiliary request 1.9 were filed at a very late stage of the oral proceedings, it appears that the patent proprietor was confronted with a surprising turn of events in the afternoon of these oral proceedings when the opposition division departed from its previously notified opinion that the subject-matter of claim 1 of the patent as granted, which had remained unchanged also in auxiliary request 1.4, was novel over document D26 (see point 6 of the minutes of the oral proceedings and point 2.4.10 of the communication sent by the opposition division in annex to the summons). The board also notes that the claims of the further auxiliary requests 1.5, 1.6 and 1.7 had been filed during the oral proceedings at the same time as the claims of auxiliary request 1.4 (see point 5 of the minutes) so that the filing of auxiliary request 1.9 was actually the patent proprietor's first attempt to respond to the opposition division's change of view

on novelty (the board notes: no auxiliary request 1.8 was filed). It must further be taken into account that auxiliary request 1.9 resulted from a combination of claim 1 with dependent claim 2 as granted which the opponent had already taken position on in its notice of opposition.

31. Under these circumstances, the board does not see any reason not to take the eleventh auxiliary request into account.

- Admittance of document D30 into the appeal proceedings (Article 12(4) and (6) RPBA)

32. Together with its statement of grounds of appeal, the opponent filed document D30, a scientific article published before the priority date of the patent. This document is to be regarded as an amendment of the opponent's appeal case in the sense of Article 12(4), first sentence, RPBA, and may be admitted only at the discretion of the board (Article 12(4), second sentence, RPBA). Moreover, under Article 12(6), second sentence, RPBA, the board shall not admit requests, facts, objections or evidence which should have been submitted, or which were no longer maintained, in the proceedings leading to the decision under appeal, unless the circumstances of the appeal case justify their admittance.

33. As justification for filing document D30 only at the appeal stage, the opponent referred to the late hour at which auxiliary request 1.9 was filed during the oral proceedings before the opposition division and to the surprising restriction of the subject-matter of claim 1 of auxiliary request 1.9 to a piston seal. Several passages and figures from document D30 were cited to

show its prima facie relevance. The patent proprietor requested not to admit this prior art document into the appeal proceedings, essentially arguing that it should have been filed earlier and that it failed in meeting the threshold of prima facie relevance.

34. The board finds merit in the patent proprietor's case. It is difficult to conceive that the opponent would have been surprised by the subject-matter of claim 1 of auxiliary request 1.9. After all, this independent claim was a combination of claims 1 and 2 of the patent as granted, both of which the opponent had objected to in its notice of opposition. Further consideration needs to be given to the fact that claim 11 of auxiliary request 2, as filed before the time limit of Rule 116(1) EPC, and claim 1 of each of auxiliary requests 4 and 6, which were filed after that time limit but before the start of the oral proceedings, already mentioned a defective piston seal. If document D30 was indeed a reaction to auxiliary request 1.9, the opponent has not persuaded the board that it had not been in a position to provide this document D30 at an earlier stage.
35. Furthermore, the patent proprietor convincingly argued that document D30 is not prima facie relevant. Even if the title of the scientific paper refers to internal seal damage and the expression "piston seal" is mentioned in some passages, the "wavelet-based approach" presented in document D30 appears to be based on the analysis of pressure measurements taken at only one side of the actuator (see the second sentence of the abstract). At first glance, nothing indicates that pressure measurements at the second side of the actuator contribute in determining the condition of the system, as required by features 1.h and 1.i. Moreover,

the board does not share the opponent's view that it was evident that the control system of document D30 was operable to *predict* a failure of the piston seal. The title and the abstract of the paper refer to seal damage *diagnosis* and *detection* of internal leakage caused by seal damage, respectively. Even when considering the passage on page 1755, first column, first paragraph of document D30 cited by the opponent, this would merely imply that faults have already occurred at the time of detection which rather speaks against an estimation of future faults of the piston seal in accordance with feature 1.j.

36. In view of the above considerations, the board exercised its discretion under Article 12(4) and (6) RPBA and decided not to admit document D30 into the appeal proceedings.

- *Inventive step (Article 56 EPC)*

37. It was established in the context of the first auxiliary request that document D26 fails to disclose that the control system of features 1.g and 1.i is the same as the control system of feature 1.e (see points 10. and 12. above). This applies equally to claim 1 of the eleventh auxiliary request. In addition, it is common ground between the parties that feature 1.j of claim 1 of the eleventh auxiliary request is not disclosed by document D26. The board agrees. Much as the arrangement of a seal between the piston and the cylindrical bore of the actuator 3 shown in Figure 4 of document D26 is imperative, nothing indicates that the module 6 would be operable to predict a failure of this implicit piston seal based on the comparison of the generated pressure-versus-time curve to the known

standard pressure-versus-time curve stored in the control system.

38. In point 50 of the reasons for the decision under appeal, the opposition division formulated the objective technical problem solved by feature 1.j as easily predicting a failure in a piston seal of an actuator system. The board is of the view that this formulation at least partially anticipates the solution. Therefore, it runs the risk to result in an *ex post facto* view on inventive step when the state of the art is assessed in terms of that specific problem. Also the opponent's formulation - providing an actuator prediction system with which a fault prediction on a specific component of a piston-cylinder arrangement is possible - contains elements of the solution of feature 1.j. The board considers that the objective technical problem solved by feature 1.j has to be formulated in a less ambitious manner, namely as how to improve the condition monitoring of an actuator system.
39. The opponent has not demonstrated how common general knowledge would have prompted the skilled person to modify the control system of document D26 in such a way that it would predict a failure of the piston seal based on the comparison of the pressure-versus-time curves. Instead, the board shares the patent proprietor's view that there is no teaching in document D26 of diagnosing a particular fault occurring at a specific component, let alone at the piston seal which is not even mentioned in document D26. A further consideration is that module 6 is designated as "*Steuerung*" on page 9, lines 29 to 30 of document D26, but its function is effectively limited to monitoring the condition of the system by comparing generated pressure-versus-time curves (" $P_I(t)$ ") to known

pressure-versus-time curves and issuing warning messages (see page 7, lines 25 to 29 of document D26) or indicating load-dependent maintenance intervals (see page 6, lines 11 to 15 of document D26) in response thereto. How exactly the skilled person would arrive at the insight that the module 6 should be adapted and, hence, programmed to *predict* a failure, i.e. to estimate that a failure will happen at some point in the future, has not been shown by the opponent.

40. Regarding document D24, this prior-art document concerns a double-acting cylinder with a single control system 10 that is responsible both for analysing the pressure measurements of the sensors 14A, 14B and for controlling the solenoid valve 50. Nevertheless, its condition monitoring hinges on an assessment of a so-called "wind force" determined in respect of a new actuator in comparison with a used, deteriorated actuator (see lines 208 to 210 of document D24a). The "wind force" is defined as an integrated value of the flow rate measured by the flow meter 12 and the pressure measured by the pressure gauges 14A, 14B, and is expressed in Kg.cm/s (see lines 165 to 168 of document D24a). In spite of its dependence from the pressure, this parameter does not correspond to the pressure. Thus, the methodology of document D24 stands in contrast to the comparison of pressure-versus-time curves in the actuator system of document D26. To the extent that the opponent argues that the expression "wind force" takes into account the flow rate as is also suggested in document D26 (see page 11, lines 30 to 31), the board agrees that this speaks for combining documents D26 and D24. But it also means that the actuator system resulting from such a combination would base its condition monitoring on a comparison of "wind force" curves and, hence, would not comprise features

1.g and 1.i of claim 1 of the eleventh auxiliary request.

41. In the actuator system of document D8, leakage of a piston-cylinder arrangement is detected on the basis of pressure and flow rate measurements. To that end, the evaluation unit 18 illustrated in Figure 1 compares the flow rate measured by sensor 16 with a flow rate (Q) which is calculated as a function of pressure (p), rate of pressure change per time (dp/dt), total volume of the cylinder (V) and rate of volume change per time (dV/dt) (see paragraphs [0034] and [0035] of document D8). Unlike document D26, the pressure-versus-time curve established in module 17 of document D8 is thus not compared with a standard pressure-versus-time curve stored in the control system. It merely serves to determine the values 'p' and 'dp/dt' and feed them to the equation for 'Q'. A combination of the teaching of documents D26 and D8 would have led to a condition monitoring with a completely different methodology than that required by features 1.g and 1.i of claim 1 of the eleventh auxiliary request. It needs to be considered, in addition, that the actuator system of document D8 establishes leakage caused by defective piston or shaft seals. There is no mention of any failure *prediction* in document D8.

42. In sum, the subject-matter of claim 1 of the eleventh auxiliary request involves an inventive step (Article 56 EPC).

Conclusion

43. Since the eleventh auxiliary request corresponds to the request found to meet the requirements of the EPC by

the opposition division in the appealed decision, there is no reason to set aside that decision. Both the appeal of the opponent and the appeal of the patent proprietor can thus be dismissed.

Order

For these reasons it is decided that:

The appeals are dismissed.

The Registrar:

The Chairman:



N. Schneider

P. Lanz

Decision electronically authenticated