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D E C I S I O N
of 15 May 1997

Case Number: T 0953/95 - 3.2.1

Application Number: 91918796.3

Publication Number: 0554316 (WO 92/08056)

IPC: F15B 15/06, F16K 31/163

Language of the proceedings: EN

Title of invention:
Hydraulic actuator for isolators

Applicant:
WES TECHNOLOGY INC.

Opponent:
-

Headword:
-

Relevant legal provisions:
EPC Art. 56

Keyword:
"Inventive step (no)"

Decisions cited:
T 0084/82, T 0142/84, T 0640/91

Catchword:
-

Case Number: T 0953/95 - 3.2.1

D E C I S I O N
of the Technical Board of Appeal 3.2.1
of 15 May 1997

Appellant: WES TECHNOLOGY INC.
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Decision under appeal: Decision of the Examining Division of the
European Patent Office posted 20 July 1995
refusing European patent application
No. 91 918 796.3 pursuant to Article 97(1) EPC.

Composition of the Board:

Chairman: F. Gumbel
Members: S. Crane
G. Davies

Summary of Facts and Submissions

- I. European patent application No. 91 918 796.3 was refused by a decision of the Examining Division posted on 20 July 1995.
- II. The decision was based on amended claims 1 to 4 filed on 6 June 1995 in response to a communication of the Examining Division dated 5 December 1994.

Claim 1 reads as follows:

"A hydraulic actuator for an isolator, comprising a casing (1) having opposite ends and having a flange (1a) intermediate said opposite ends to be mounted to the isolator to be driven, a pair of identical double acting cylindrical rams (3) housed in said casing and each having first and second ends, and a double ended lever arm assembly (2) articulated at each end thereof to a respective one of said first ends of said identical double acting cylindrical rams (3), said second end of each of said identical rams being respectively articulated to a respective one of said opposite ends of the casing remote from the said flange, wherein the said identical rams are arranged to operate in opposite directions, the radial load exerted by one ram being equal in magnitude but opposite in direction to the radial load exerted by the other ram."

Claim 2 relates to an isolator with a closure member and a shaft, the shaft being rotatably driven by an actuator as defined in claim 1. Dependent claims 3 and

4 relate to preferred features of the isolator according to claim 2.

The reason given for the decision was that the subject-matter of the claims lacked inventive step with respect to documents D1 and D2.

III. An appeal against this decision was filed on 13 September 1995 and the fee for appeal paid one day later.

The statement of grounds of appeal was filed on 14 November 1995. In this statement the appellants (applicants) conceded that the claims on which the decision was based were in substance the same as those referred to in the communication of the Examining Division and that the reason given for refusing them was also the same. They nevertheless argued that there had been a substantial procedural violation in that the Examining Division had refused the application after having issued only a single communication. In this respect they relied on decision T 640/91, OJ EPO 1994, 918). They therefore requested that the case be remitted to the Examining Division for further examination.

IV. In a communication dated 15 July 1996 the Board drew a distinction between the circumstances dealt with in decision T 640/91 and those of the present case and pointed to the well-established case law of the Boards of Appeal, for example, decision T 84/82 (OJ EPO 1983, 451) that there is no general obligation on an Examining Division to invite further observations from

an applicant after the reply to its first communication.

- V. The appellants replied to this communication on 20 August 1996 and requested oral proceedings, which were held on 15 May 1997.
- VI. At the oral proceedings the appellants requested that the decision under appeal be set aside and a patent granted on the basis of claims 1 to 4 filed on 6 June 1995.
- VII. In support of their requests the appellants put forward the following arguments:

The reasoning advanced by the Examining Division for their combining documents D1 and D2 to arrive at the subject-matter of claim 1 was defective in several respects and tainted by ex-post-facto considerations.

As was confirmed by the statutory declaration of the inventor dated 22 April 1997 the actuator disclosed in document D2 was clearly not of the "same generic construction" of that disclosed in document D1, as alleged in the contested decision. In fact, it was apparent from the drawings of document D2 that the actuator disclosed there was of relatively small size and not intended for producing the high output torques necessary for rotating the shaft of an isolator, which would normally carry a valve closure member of an area of a square metre or more. Furthermore, the cranked shaft of the actuator was supported by its own bearings in the casing of the actuator which was not the case in

document D1.

Again, the decision was incorrect in stating that document D2 taught the use of a pair of rams for the purpose of suppressing the unwanted overhung bending movement. In fact, document D2 "taught" nothing at all but was merely a description of a piece of apparatus without any indication of what benefits might be associated with its construction. Certainly, there was nothing to suggest that this construction had been adopted to overcome the technical problems with which the claimed invention was concerned. In any case, the actuator of document D2 did not use rams and comprised instead pistons moving in cylinders defined by the casing.

The IPEA had issued a favourable PCT Chapter II report on the patentability of the subject-matter of the present claims. Furthermore, a United States patent had been granted on claims similar to those now under consideration, after taking into account the same state of the art. This showed that at the least there was an area of doubt, the benefit of which should be given to the appellants.

In view of the case law referred to by the Board the objection that there had been a substantial procedural violation was no longer pursued.

Reasons for the Decision

1. The appeal complies with the formal requirements of Articles 106 to 108 and Rules 1(1) and 64 EPC. It is therefore admissible.

2. *Background to the claimed invention; state of the art*

The present application is concerned in general terms with an "isolator", by which is meant a large diverter valve or flap isolator for controlling the flow of hot gases in gas turbine plants.

Document D1, which is in the name of the present appellants and is mentioned in the introductory description of the present application, relates to a hydraulic actuator for such an actuator. It proposes providing a casing having a flange for mounting on the isolator and into which a shaft for a valve plate or other closure projects. A double acting hydraulic ram is pivotally attached at its first end to a crank lever keyed to the shaft. This arrangement solves a number of problems associated with previous prior art arrangements in which the first end of the ram is directly attached to the isolator frame itself.

Document D2 discloses a hydraulic actuator comprising a casing defining two parallel and opposed cylinder bores of the same diameter in which respective pistons are arranged. Each of the pistons is connected via a respective piston rod to the pivot pin of a respective crank arm formed on a shaft which is supported by bearings in the casing. The pivot pins lie diametrically opposed to each other with respect to the axis of the shaft.

3. *The claimed invention; inventive step*

According to the present application the arrangement disclosed in document D1 is deficient in that, although it can generate the required high torques, the ram also imposes a bending moment on the overhung shaft and a corresponding radial load on the shaft bearings. This problem is solved in accordance with claim 1 by the use of two identical rams and a double-ended lever arm assembly with the rams being arranged to operate in opposite directions, the radial load exerted by one ram being equal in magnitude but opposite in direction to the radial load exerted by the other ram.

In the opinion of the Board the wear of the shaft bearing caused by the radial load imposed by the hydraulic ram is something which would become apparent during normal operation of the isolator according to document D1. The person skilled in the art would also have no difficulty in identifying that radial load is the cause of the wear.

In the course of his search for a way of overcoming this technical problem the person skilled in the art would inevitably come across the document D2, since this also specifically concerns a fluid actuated device with means for converting rectilinear movement into rotary movement and therefore lies in the same technical field as the claimed invention. In this respect the appellants have objected to the finding of the Opposition Division that the actuator of document D2 is of the "same generic construction" as

that of document D1 but at least in the broad sense indicated above that finding is certainly correct. Furthermore, they have argued that the differences in size, detailed construction and intended purpose between the actuators disclosed in documents D1 and D2 would prevent the person skilled in the art from "combining" these documents. They have also argued that document D2 contains no teaching at a more abstract level which could indicate to the person skilled in the art the advantage of using two opposed piston/cylinder devices as a means of avoiding radial loading of the shaft.

The Board finds it difficult to accept those propositions. In its view, the skilled person, when considering the disclosure of document D2, would immediately recognise that the arrangement shown there avoids the application of a radial load on the shaft since the radial force exerted by one piston is equal in magnitude but opposite in direction to the radial force exerted by the other piston. The fact that this technical problem is not addressed as such in document D2 is thus not relevant, cf. decision T 142/84 (OJ EPO, 1987, 112). Furthermore, there is nothing in the nature of the actuators disclosed in documents D1 and D2, in particular the fact that the specific embodiment disclosed in document D2 is most probably, on the basis of the circumstantial evidence, not of a sufficient size in itself to drive an isolators shaft, which could have led the skilled person to believe that the arrangement of two piston/cylinder devices and two crank arms as shown in principle in document D2 could not be used to advantage in the actuator of document D1

in order to solve the technical problem identified above. The technical measures involved for doing this, ie providing a second hydraulic ram, identical to the first, which operates between the opposite end of the casing and the opposite end of a double ended lever arm assembly, do not go beyond the normal competence of the person skilled in the art.

The Board therefore comes to the conclusion that the subject-matter of claim 1 does not involve an inventive step (Article 56 EPC). It does not know what considerations led the USPTO to a different conclusion and accordingly cannot comment on them. From the PCT Chapter II report of the UK Patent Office, acting as IPEA, it would appear that its positive finding with respect to inventive step was based at least in part on the fact that document D2 did not disclose separate rams as required by claim 1 but rather two fixed cylinders defined by a common casing. It must be noted however that the basic principles of operation of an articulated ram and a fixed cylinder having a piston with an articulated piston rod are the same so that nothing of inventive significance can be seen in this distinction.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar: The Chairman:

S. Fabiani

F. Gumbel