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D E C I S I O N
of 4 May 2006

Case Number: T 0318/04 - 3.2.02

Application Number: 97105131.3

Publication Number: 0798394

IPC: C22C 38/00

Language of the proceedings: EN

Title of invention:
Martensitic steel for line pipe having excellent corrosion resistance and weldability

Applicant:
JFE Steel Corporation

Opponent:
-

Headword:
-

Relevant legal provisions:
EPC Art. 123(2)

Keyword:
"New subject-matter (no) - after amendment"

Decisions cited:
-

Catchword:
-

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Case Number: T 0318/04 - 3.2.02

D E C I S I O N
of the Technical Board of Appeal 3.2.02
of 4 May 2006

Appellant: JFE Steel Corporation
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Decision under appeal: **Decision of the Examining Division of the European Patent Office posted 29. September 2003 refusing European application No. 97105131.3 pursuant to Article 97(1) EPC.**

Composition of the Board:

Chairman: T. K. H. Kriner
Members: R. Ries
A. Pignatelli

Summary of Facts and Submissions

I. This appeal is against the decision of the examining division dated 29 September 2003 to refuse European patent application No. 97 105 131.3

The ground of refusal was that claim 1 was objectionable under Article 123(2) EPC.

II. On 17 October 2003 the appellant (applicant) lodged an appeal against the decision and paid the prescribed fee on the same day. On 9 February 2004 a statement of the grounds of appeal was filed.

III. Oral proceedings were held on 4 May 2006. The appellant requested that the decision under appeal be set aside and a patent be granted on the following version:
Claim 1 according to the main request or
according to the first auxiliary request filed on 4 April 2006 or
according to the second auxiliary request filed during the oral proceedings.

Claim 1 of the main request reads as follows:

"1. A line pipe made of a martensitic steel having excellent corrosion resistance and weldability, said steel comprising:

0.02 wt% or less of C,	0.50 wt% or less of Si
0.2 to 3.0 wt% of Mn,	10 to 14 wt% of Cr,
0.2 to 7.0 wt% of Ni,	0.2 to 5.0 wt% of Mo,
0.1 wt% or less of Al,	0.07 wt% or less of N,

at least 0.016 wt% of Nb as well as at least 0.052 wt% of V so as to satisfy the equation:

$0.03 \leq 0.8(Nb\%) + (V\%) \leq 0.12$ wt%

optionally comprising at least one element from the group consisting of:

0.2 to 0.7 wt% of Cu,
0.15 wt% or less of Ti,
0.15 wt% or less of Zr,
0.15 wt% or less of Ta,

and further optionally comprising:
0.006 wt% or less of Ca;

the balance being Fe and incidental impurities;
the steel composition satisfying the following equations:
$(Cr\%)+(Mo\%)+0.1(N\%)+3(Cu\%)-3(C\%) \geq 12.2$,
$(Cr\%)+3.5(Mo\%)+10(N\%)+0.2(Ni\%)-20(C\%) \geq 14.5$, and
$150(C\%) + 100(N\%) - (Ni\%) - (Mn\%) \leq 4$."

The single claim according to the first auxiliary request reads:

" 1. A line pipe made of a martensitic steel having excellent corrosion resistance and weldability, said steel comprising:

0.02 wt% or less of C, 0.50 wt% or less of Si
0.2 to 3.0 wt% of Mn, 10 to 14 wt% of Cr,
0.2 to 7.0 wt% of Ni, 0.2 to 5.0 wt% of Mo,
0.1 wt% or less of Al, 0.07 wt% or less of N,
appropriate amount of Nb as well as of V as to satisfy the equation:

$0.03 \leq 0.8$ (Nb%) + (V%) ≤ 0.12 wt%, wherein the appropriate amounts are selected from the following groups:

0.010 wt% of Nb and 0.062 wt% of V,
0.016 wt% of Nb and 0.052 wt% of V,
0.038 wt% of Nb and 0.042 wt% of V,
0.042 wt% of Nb and 0.050 wt% of V,
0.023 wt% of Nb and 0.074 wt% of V,
0.043 wt% of Nb and 0.066 wt% of V,
0.057 wt% of Nb and 0.047 wt% of V,
0.007 wt% of Nb and 0.064 wt% of V,
0.035 wt% of Nb and 0.026 wt% of V,
0.020 wt% of Nb and 0.066 wt% of V,
0.018 wt% of Nb and 0.120 wt% of V,
0.076 wt% of Nb and 0.066 wt% of V, or
0.007 wt% of Nb and 0.044 wt% of V,

optionally comprising at least one element from the group consisting of:

0.2 to 0.7 wt% of Cu,
0.15 wt% or less of Ti,
0.15 wt% or less of Zr,
0.15 wt% or less of Ta,

and further optionally comprising:
0.006 wt% or less of Ca;

the balance being Fe and incidental impurities;
the steel composition satisfying the following equations:
(Cr%)+(Mo%)+0.1(N%)+3(Cu%)-3(C%) $\geq$ 12.2,
(Cr%)+3.5(Mo%)+10(N%)+0.2(Ni%)-20(C%) $\geq$ 14.5, and
150(C%) + 100(N%) - (Ni%) - (Mn%) $\leq$ 4."

The single claim of the second auxiliary request reads:

" 1. A line pipe made of a martensitic steel having excellent corrosion resistance and weldability, said steel comprising:

0.02 wt% or less of C, 0.50 wt% or less of Si
0.2 to 3.0 wt% of Mn, 10 to 14 wt% of Cr,
0.2 to 7.0 wt% of Ni, 0.2 to 5.0 wt% of Mo,
0.1 wt% or less of Al, 0.07 wt% or less of N,

at least one element from the group consisting of:
0.2 to 0.7 wt% of Cu,
0.15 wt% or less of Ti,
0.15 wt% or less of Zr,
0.15 wt% or less of Ta,
0.006 wt% or less of Ca;

and Nb plus V in the following amounts:
0.016 wt% of Nb and 0.052 wt% of V, or
0.038 wt% of Nb and 0.042 wt% of V, or
0.042 wt% of Nb and 0.050 wt% of V, or
0.023 wt% of Nb and 0.074 wt% of V, or
0.043 wt% of Nb and 0.066 wt% of V,
so as to satisfy the equation:
$0.03 \leq 0.8(Nb\%) + (V\%) \leq 0.12$ wt%

the balance being Fe and incidental impurities;
the steel composition satisfying the following equations:
$(Cr\%)+(Mo\%)+0.1(N\%)+3(Cu\%)-3(C\%) \geq 12.2$,
$(Cr\%)+3.5(Mo\%)+10(N\%)+0.2(Ni\%)-20(C\%) \geq 14.5$, and
$150(C\%) + 100(N\%) - (Ni\%) - (Mn\%) \leq 4$."

IV. The appellant essentially argued as follows:

The amended lower limits for niobium and vanadium featuring in claim 1 of the main request found support in **one** specific example (example 3 in Table 3) of the present invention. The application further disclosed on page 9, lines 49, 50 of the A1 publication that the high temperature strength improved with the addition of appropriate amounts of Nb and V which meant that both elements should be comprised in the claimed martensitic steel. From this technical disclosure, the skilled person concluded that a lower limit for both Nb and V was to adhere to in order to improve the alloy's properties. Given that example 3 in Table 3 disclosed the lowest total of (0.8Nb%+V%) of all examples, the lower limits of "at least 0.016% Nb and at least 0.052% V" in claim 1 of the main request were supported by the application as originally filed and thus satisfied the requirements of Article 123(2) EPC.

In claim 1 according to the first auxiliary request, the lower limits of "at least 0.016% Nb and at least 0.052% V" were replaced by the specific embodiments 1, 3, 6, 7, 9, 10, 12, 13, 15, 17 to 20 disclosed Table 3. Claim 1 of the first auxiliary request was therefore supported by the application as originally filed, as required by Article 123(2) EPC.

Reasons for the Decision

1. The appeal is admissible.

2. *Main request*

Apart from the correction of minor clerical errors, claim 1 of the main request corresponds with claim 1 underlying the impugned decision. The single ground of refusal was that this claim was objectionable under Article 123(2) EPC.

The Board does not dispute the appellant's position that the contents of 0.016% Nb and 0.052% V featuring in claim 1 of the main request are disclosed in Table 3, example 3 of the application as originally filed. However, nothing could be found anywhere in the application as filed for concluding or implying that the claimed martensitic steel composition should comprise "at least 0.016 wt% Nb and at least 0.052 wt% V" or that these lower limits for Nb and V are preferred to improve the alloy's mechanical properties, in particular its high temperature tensile strength and corrosion resistance. To the contrary, the skilled reader is taught in a more general form that the alloy's high temperature strength could be improved by adding appropriate amounts of either Nb and/or V whereby the total of (0.8Nb%+V%) should be kept between 0.02 to 0.20% or, more preferably, between 0.03 and 0.12% which also includes the absence of either Nb or V. This finding is corroborated by the examples in Table 4, showing that the required corrosion resistance and strength are obtained by adding for instance only V (cf. e.g. samples 2, 4, and 5 in Table 3). The skilled

person is, therefore, not taught that "at least 0.016 wt% Nb and at least 0.052 wt% V" are indispensable or particularly preferred to achieve the desired properties, contrary to the appellant's allegations. The Board therefore concurs with the position of the examining division that the lower limits for Nb and V introduced into claim 1 are to be rated as arbitrary selections from the exemplified values listed in Table 3. Given that the disclosure of the application does not specify these values as preferred lower limits for Nb and V, the wording of claim 1 of the main request contravenes the requirements of Article 123(2) EPC.

3. *First auxiliary request*

The composition of the martensitic steel pipe set out in claim 1 of the first auxiliary request includes specific values for Nb and V which are supported by the examples 1, 3, 6, 7, 9, 10, 12, 13, 15, 17 to 20 given in Table 3 of the application as originally filed. It is noted that the amounts for Nb and V derived from examples 12, 13, 15 and 17 to 20 refer to "comparative" examples which either fail to meet the total of $0.03 \leq 0.8(Nb\%) + (V\%) \leq 0.12$ wt% (examples 18, 19) or do not satisfy one of the equations featuring in claim 1 (cf. also Table 3). It is, however, self-contradictory and therefore impossible to define the invention by subject matter falling outside the scope of the claim(s). Moreover, claim 1 characterizes the presence of Cu, Ti, Zr, Ta and Ca as merely "optional". Contrary thereto, claim 2 as originally filed which in the Board's view forms the basis for claim 1 of the first auxiliary request requires the presence of "at least one element"

selected from the group consisting of Cu, Ti, Zr, Ta, and Ca (see also A1 publication, page 5, lines 16 to 20).

Hence, claim 1 of the first auxiliary request is objectionable under Articles 84 EPC and 123(2) EPC.

4. *Second auxiliary request*

Claim 1 of the second auxiliary request finds support by claim 2 as originally filed. It is clearly and unambiguously derivable form the application as filed that the basic martensitic steel composition set out on page 3, lines 9 to 29 and claim 2 as filed (see A1 publication) may further comprise at least one of Nb and V (cf. page 3, lines 30 to 33 of the A1 publication) wherein the total of Nb and V should meet preferably the relationship $0.03 \leq 0.8(Nb\%) + (V\%) \leq 0.12$ wt% (cf. page 5, lines 5 to 7 of the A1 publication, claims 3 and 4 as filed). The specific amounts of Nb and V featuring in claim 1 of the second auxiliary request are derived from examples 3, 6, 7, 9 and 10 which are all according to the invention. The exemplifying compositions include at least one of Cu, Ti, Zr, Ta or Ca and satisfy the equations (2) to (4) set out in the claim and the application, page 5.

Given this situation, the single claim of the second auxiliary request satisfies the requirements of Article 123(2) EPC.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.

2. The case is remitted to the first instance department for further prosecution on the basis of claim 1 of the second auxiliary request filed during the oral proceedings.

The Registrar: The Chairman:

V. Commare T. K. H. Kriner