Paper No. 16

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte S. JOE QIN

Appeal No. 1997-1111
Application No. 08/105,899

ON BRIEF

Before THOMAS, RUGGIERO, and LEVY, Administrative Patent Judges.

LEVY, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on appeal under 35 U.S.C. § 134 from the examiner's final rejection of claims 1-19[1], which are all of the claims pending in this application.

[1] Concurrent with the filing of the brief, appellant filed an amendment canceling claim 19 (Paper No. 11, filed April 10, 1996). The amendment has been entered by the examiner (answer, page 2). In addition, the examiner (brief, pages 1 and 2) has withdrawn the rejection of claims 12 and 13. Accordingly, claims 1-11 and 14-18 remain before us for decision on appeal.

BACKGROUND

The appellant's invention relates to a method and apparatus for fuzzy logic control with automatic tuning. An understanding of the invention can be derived from a reading of exemplary claim 1, which is reproduced as follows:

1. A method of automatically tuning a fuzzy logic controller used to control a process in a predetermined manner, said process producing at least one process variable and having at least one control action input connected to said fuzzy logic controller, said method comprising:

determining from said process a plurality of dynamic process characteristics for tuning a proportional integral derivative controller;

calculating fuzzy control parameters as functions of said dynamic process characteristics for tuning said fuzzy logic controller; and

tuning said fuzzy logic controller using said fuzzy control parameters for controlling the process.

The prior art references of record relied upon by the examiner in rejecting the appealed claims are:

Hägglund et al. (Hägglund)	4,549,123	Oct. 22, 1985
Kraus	4,602,326	Jul. 22, 1986
Mega et al. (Mega)	5,231,335	Jul. 27, 1993

Ueda 5,241,651 Aug. 31, 1993
(§ 102(e) date Nov. 23, 1990)

Ying et al., "Fuzzy Control Theory: A Nonlinear Case", Automatica, Vol. 26, No. 3 (1990), pp 513-520.

Claims 1, 9, 10 and 14 stand rejected under 35 U.S.C. § 102(e) as being unpatentable over Mega.

Claims 1, 9, 10 and 14 stand rejected under 35 U.S.C. § 102(e) as being unpatentable over Ueda.

Claims 2-5, 8 and 15-17 stand rejected over 35 U.S.C. § 103 as unpatentable over Mega in view of Hägglund.

Claims 2-5, 8 and 15-17 stand rejected over 35 U.S.C. § 103 as unpatentable over Ueda in view of Hägglund.

Claims 6 and 18 stand rejected under 35 U.S.C. § 103 as unpatentable over Mega.

Claim 7 stands rejected under 35 U.S.C. § 103 as unpatentable over Mega in view of Kraus.

Claim 7 stands rejected under 35 U.S.C. § 103 as unpatentable over Ueda in view of Kraus.

Claim 11 stands rejected under 35 U.S.C. § 103 as unpatentable over Ueda in view of Ying.

Claim 11 stands rejected under 35 U.S.C. § 103 as unpatentable over Mega in view of Ying.

Rather than reiterate the conflicting viewpoints advanced by the examiner and the appellant regarding the above-noted rejections, we make reference to the examiner's answer (Paper No. 13, mailed July 19, 1996) for the examiner's complete reasoning in support of the rejections, and to the appellant's brief (Paper No. 12, filed April 10, 1996) and reply brief (Paper No. 14, filed September 23, 1996) for the appellant's arguments thereagainst. Only those arguments actually made by the appellant have been considered in this decision. Arguments which the appellant could have made but chose not to make in the briefs have not been considered. See 37 CFR 1.192(a).

OPINION

In reaching our decision in this appeal, we have carefully considered the subject matter on appeal, the

rejections advanced by the examiner, and the evidence of anticipation and obviousness relied upon by the examiner as support for the rejections. We have, likewise, reviewed and taken into consideration, in reaching our decision, the appellant's arguments set forth in the briefs along with the examiner's rationale in support of the rejections and arguments in rebuttal set forth in the examiner's answer. As a consequence of our review, we make the determinations which follow.

We begin with the rejection of claims 1, 9, 10 and 14 under 35 U.S.C. § 102(e) as unpatentable over Mega.

A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference. Verdegaal Bros. Inc. v. Union Oil Co., 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987).

The examiner's position (answer, pages 3 and 4) is that

> As per claims 1 and 14, appellant's determining step is taught by Mega's disclosure that the difference (A-B), the integral value of the difference and the differential value of the difference are calculated (see column 5, lines 10-16). These are characteristic of values normally used for tuning PID controllers. The appellant's calculation step and tuning step are

> taught by the input of these value [sic] into the fuzzy inference portion 51. Membership values are obtained by calculation through fuzzy MIN and MAX arithmetic operations.

Appellant asserts (brief, page 7), inter alia, that Mega does not teach or suggest calculating fuzzy control parameters for tuning the fuzzy logic controller, and that (reply brief, page 2) "[n]owhere does Mega tune the fuzzy logic controller using fuzzy control parameters." We agree. We find that in Mega (col. 4, line 40 et seq.), the inputs I_1, I_2 and I_3 to the fuzzy inference portion 51 are the differences between the deviation signals (A-B), the integral value of the difference (A-B), and the differential value of the differences (A-B), respectively. However, we find that the input of the values I_1, I_2 and I_3 into the fuzzy inference portion, and the subsequent calculation of membership values do not tune the fuzzy inference unit as required by independent claims 1 and 14. We find that Mega discloses (col. 4, line 64 - col. 5, line 28) that the values I_1, I_2 and I_3 are input into three membership value arithmetic circuits 55, which read out membership functions stored in antecedent membership function memory 56, and obtain membership values by calculating through

fuzzy MIN arithmetic operations, which results in the output of membership values to fuzzy output arithmetic circuit 57. The fuzzy inference circuit is based on a rule format (col. 4, lines 52 and 53). Rules R1-R10 (col. 5, lines 1-10) utilize an IF-Then format. Fuzzy output arithmetic circuit 57 reads out rules R1-R10 stored in rule memory 58 and membership functions stored in a consequent membership function memory 59. Fuzzy arithmetic output circuit 57 then obtains fuzzy output K_1 through a fuzzy max arithmetic operation.

From our review of Mega, we find no tuning of the fuzzy inference circuit, and are in agreement with appellant (reply brief, page 2) that "careful inspection of the Mega reference indicates that these values do not tune the fuzzy controller, but rather are simply the inputs that determine the outputs of the fuzzy logic controller." We therefore find that Mega does not anticipate claim 1. With regard to claim 14, we additionally find that Mega does not disclose the claimed "tuning module." Accordingly, the rejection of claims 1 and 14 under 35 U.S.C. § 102(e) as unpatentable over Mega is reversed. As claims 9 and 10 depend from claim 1, the

rejection of claims 9 and 10 under 35 U.S.C. § 102(e) as unpatentable over Mega is also reversed.

With regard to the rejection of claims 2-5, 8 and 15-17 under 35 U.S.C. § 103 as unpatentable over Mega in view of Hägglund, we have also reviewed the Hägglund reference but find nothing therein which makes up for the deficiencies of Mega as discussed above. Accordingly, the examiner's rejection of claims 2-5, 8 and 15-17 under 35 U.S.C. § 103 as unpatentable over Mega in view of Hägglund is reversed.

With regard to the rejection of claims 6 and 18 under 35 U.S.C. § 103 as unpatentable over Mega in view of the admitted prior art found on page 8 of the specification, as these claims depend from claims 1 and 14 respectively, the rejection of claims 6 and 18 under 35 U.S.C. § 103 is reversed.

With regard to the rejection of claim 7 under 35 U.S.C. § 103 as unpatentable over Mega in view of Kraus, we have also reviewed the Kraus reference but find nothing therein which makes up for the deficiencies of Mega as discussed above. Accordingly, the examiner's rejection of claim 7 under 35

U.S.C. § 103 as unpatentable over Mega in view of Kraus is reversed.

With regard to the rejection of claim 11 under 35 U.S.C. § 103 as unpatentable over Mega in view of Ying, we have also reviewed the Ying reference but find nothing therein which makes up for the deficiencies of Mega as discussed above. Accordingly, the rejection of claim 11 under 35 U.S.C. § 103 as unpatentable over Mega in view of Ying is reversed.

Turning next to the rejection of claims 1, 9, 10 and 14 under 35 U.S.C. § 102(e) as unpatentable over Ueda, the examiner's position (answer, page 4) is that

> As per claims 1 and 14, the appellant's determining step is taught by the determination of K1, K2 and K3 disclosed in figure 8 and column 5. The appellant's calculation and tuning steps are taught by Ueda's deciding all membership functions which are set in the inference unit 11 (see figure 7).

Appellant asserts (brief, page 9) that the values K1, K2, and K3 do not appear to be dynamic characteristics. We agree. However, from our review of Ueda, we find that Ueda discloses determining from the process a plurality of dynamic process characteristics for tuning the fuzzy logic controller. Ueda discloses (col. 5, lines 29-32 and 51-53) that from the

manipulated variable U and the controlled variable Y, the process characteristics of maximum slope R, dead time L, and steady gain K are measured. Appellant asserts (brief, page 9) that in appellant's invention, the determining step is determined, for example, based on values relating to an amplitude and period of an input waveform. According to appellant (id.) "the determining steps of the processes differ, and Ueda does not meet the claim limitations of the present invention."

As stated by the court in In re Hiniker Co., 150 F.3d 1362, 1369, 47 USPQ2d 1523, 1529 (Fed. Cir. 1998) "[t]he name of the game is the claim." Claims will be given their broadest reasonable interpretation consistent with the specification, and limitations appearing in the specification are not to be read into the claims. In re Etter, 756 F.2d 852, 858, 225 USPQ 1, 5 (Fed. Cir. 1985). Neither claim 1 nor claim 14 recite determining dynamic process characteristics based on the amplitude and period of an input waveform.

Appellant further asserts (brief, page 10) that the "values of a maximum slope, R, [sic[2]] and dead time L . . . . do not appear to be dynamic process characteristics of a PID controller." We find that Ueda (col. 5, lines 31-33) specifically refers to R, L, and K as "characteristics of the process." In addition, we find that the plurality of process variables R, L, and K to be dynamic in view of the disclosure of Ueda (col. 5, lines 34-44) that the tuning parameters K_1, K_2, and K_3[3] are determined by the following equations: $K_1=C_1 \cdot R \cdot L$; $K_2=C_2 \cdot R$, and $K_3=C_3 \cdot K$ where C_1, C_2, and C_3 are constants which do not change regardless of the process. In addition, Ueda discloses (col. 5, lines 62 et seq.) that when the tuning factors K_1, K_2, and K_3 are decided, all of the membership functions which are set in the fuzzy inference unit 11 are corrected in dependence upon the K_1, K_2, and K_3 decided, and that since the parameters K_1, K_2, and K_3 represent width along the horizontal axis (a fuzzy variable) the peak position and

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[2] We construe appellant's statement to refer to the values R, K, and L; see page 9 of the brief.

[3] Both appellant and the examiner refer to the tuning parameters K_1, K_2, and K_3 as K1, K2, and K3. For the accuracy of the record, we shall refer to the tuning parameters in the manner set forth by Ueda.

slope of each membership function are varied in dependence on K_1, K_2, and K_3.

Accordingly, we find that Ueda meets the claim limitation of calculating fuzzy control parameters of said dynamic process characteristics for tuning said fuzzy logic controller. In addition, as the fuzzy control parameters K_1, K_2, and K_3 are outputted from system identification unit 12 to fuzzy inference unit 11 as tuning variables for controlling the process, we find that Ueda meets the claim limitation of tuning said fuzzy logic controller using fuzzy control parameters for controlling the process. Accordingly, we find that Ueda anticipates claim 1. With respect to claim 14, we additionally find the system identification unit 12 of Ueda to be a tuning module as the system identification unit 12 measures the dynamic process control characteristics and calculates the fuzzy control parameters K_1, K_2, and K_3 which tune the process. We therefore find that Ueda anticipates claim 14.

Turning now to claims 9 and 10, the examiner's position (answer, page 4) is that "[a]s per claims 9 and 10 the appellant's scaling factors and specifically error scaling

factor, change in control scaling factor and change in control action scaling factor are anticipated by Ueda's error (e), rate of change (delta e) and its rate of change (delta U). Note how the values are scaled in figures 5a, 5b and 5c." Appellant asserts (brief, page 10) that Ueda's tuning parameters K_1, K_2, and K_3 tune membership functions having values between $-K_1$, K_2, and K_3 and $+K_1$, K_2, and K_3, whereas appellant's invention uses values that are scaled to values between -1 and +1. Appellant further asserts (brief, page 11) that "[n]owhere does Ueda disclose use of any scaling factors, and certainly not the specific factors of Appellant's invention."

Claim 9 recites "The method of claim 1, said fuzzy control parameters including scaling factors for said fuzzy logic controller." Claim 10 recites "The method of claim 9, said scaling factors including control error scaling factor, change in control error scaling factor, and change in control action scaling factor."

We find that Ueda discloses (col. 5, line 67 through col. 6, line 4) "[s]ince the parameters K_1, K_2, K_3 represent width along the horizontal axis (a fuzzy variable), the peak

position and slope of each membership function (where the peak position of the function ZR is invariable) are varied in dependence upon K_1, K_2, K_3 just as if the horizontal axis were shortened or lengthened." We additionally find that Figures 4a-4c of Ueda show the tuning factors K_1, K_2, and K_3 to be scaled between $-K_1$ to $+K_1$; $-K_2$ to $+K_2$, and $-K_3$ to K_3, respectively. Additionally, we find that the tuning factors K_1, K_2, and K_3 of Ueda, which are scaled between $-K_1$ to $+K_1$; $-K_2$ to $+K_2$, and $-K_3$ to K_3, respectively, include scaling factors for control error e (Fig. 4a); change in control error ^{a}e (Fig. 4b), and change in control action ^{a}U (Fig. 4c). In addition, as stated by the examiner, the values of e, ^{a}e, and ^{a}U are scaled as shown in Figures 5a, 5b, and 5c. While we are in agreement with appellant that the tuning factors K_1, K_2, and K_3 of Ueda are not scaled to values between -1 and +1, we find that neither claim 9 nor claim 10 recite the specific ranges of the scaling factors as asserted by appellant. Accordingly, we will affirm the rejection of claims 9 and 10 under 35 U.S.C.
§ 102(e).

Turning now to the rejection of claims 2-5, 8, and 15-17 under 35 U.S.C. § 103 as unpatentable over Ueda in view of Hägglund, we will begin with claim 2.

In rejecting claims under 35 U.S.C. § 103, it is incumbent upon the examiner to establish a factual basis to support the legal conclusion of obviousness. See In re Fine, 837 F.2d 1071, 1073, 5 USPQ2d 1596, 1598 (Fed. Cir. 1988). In so doing, the examiner is expected to make the factual determinations set forth in Graham v. John Deere Co., 383 U.S. 1, 17, 148 USPQ 459, 467
(1966), and to provide a reason why one having ordinary skill in the pertinent art would have been led to modify the prior art or to combine prior art references to arrive at the claimed invention. Such reason must stem from some teaching, suggestion or implication in the prior art as a whole or knowledge generally available to one having ordinary skill in the art. Uniroyal, Inc. v. Rudkin-Wiley Corp., 837 F.2d 1044, 1051, 5 USPQ2d 1434, 1438 (Fed. Cir.), cert. denied, 488 U.S. 825 (1988); Ashland Oil, Inc. v. Delta Resins & Refractories, Inc., 776 F.2d 281, 293, 227 USPQ 657, 664 (Fed. Cir. 1985), cert. denied, 475 U.S. 1017 (1986); ACS Hosp. Sys., Inc. v.

Montefiore Hosp., 732 F.2d 1572, 1577, 221 USPQ 929, 933 (Fed. Cir. 1984). These showings by the examiner are an essential part of complying with the burden of presenting a prima facie case of obviousness. Note In re Oetiker, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992). If that burden is met, the burden then shifts to the applicant to overcome the prima facie case with argument and/or evidence. Obviousness is then determined on the basis of the evidence as a whole. See id.; In re Hedges, 783 F.2d 1038, 1039, 228 USPQ 685, 686 (Fed. Cir. 1986); In re Piasecki, 745 F.2d 1468, 1472, 223 USPQ 785, 788 (Fed. Cir. 1984); and In re Rinehart, 531 F.2d 1048, 1052, 189 USPQ 143, 147 (CCPA 1976).

The examiner's position (answer, page 7) is that "Ueda does not specifically disclose the limitations disclosed by appellant." To overcome this deficiency in Ueda, the examiner relies upon Hägglund. The examiner's position is that Hägglund discloses, within a PID tuning system, the use of controlled self oscillation for tuning a controller. The examiner takes the position (answer, page 13) that the modification would have been obvious because both Ueda and Hägglund disclose use of the Ziegler-Nichols method of tuning. Appellant asserts

(brief, page 17) that Hägglund does not suggest using a signal generator with a fuzzy logic controller, and that (reply brief, page 5) the fact that both Ueda and Hägglund mention the Ziegler-Nichols method does not suggest the claimed steps of appellant's method.

We find that Hägglund discloses the use of a non-linear circuit to provide a controlled induced oscillation for tuning a PID. However, in Hägglund (col. 3, lines 5-11) the system is brought into self oscillation by disconnecting the integrating and derivative units I and D of the regulator, and increasing the amplification of the proportional control unit P, by manually moving adjusting means 9. Hägglund further discloses (col. 4, lines 39-47) completely disconnecting the PID controller. In addition, Hägglund discloses (col. 4, lines 64 and 65) that "[a]lso the I- and D-units can be connected individually or in combination-also with the P-unit." We are in general agreement with the examiner that PID controllers and fuzzy controllers are both well known in the art and that the Ziegler-Nichols method of tuning is used in both PID and fuzzy controllers. However, we find no suggestion to combine the teachings of Hägglund with Ueda for

the reasons which follow. In Hägglund (col. 3, lines 12-19), the amplitude and frequency of the self oscillation are measured "by means of a measuring unit 10 the system output variable y. The quantity values resulting from said measuring are used for calculating the parameters k, T_I and T_D which are adjusted by means of the adjusting means 9_p, 9_i, and 9_d of the control function units P-, I- and D, respectively." In addition, in Hägglund (col. 3, lines 10 and 11), the adjusting means 9_p adjusts the amplitude of the proportional control unit P up to a point of self-oscillation.

We find no suggestion of how the system identification unit of Ueda would have functioned to increase the amplitude of a
non-linear signal inputted into the fuzzy inference unit 11 up to a point of self-oscillation, and the examiner has not provided any convincing line of reasoning in support of such modification. We therefore find that it would not have been obvious for the artisan to have combined the teachings of Hägglund with the teachings of Ueda to arrive at the claimed invention. Accordingly, the rejection of claim 2 under 35 U.S.C. § 103 as unpatentable over Ueda in view of Hägglund is

reversed. As claims 3-5 depend from claim 2, the rejection of claims 3-5 under 35 U.S.C. § 103 as unpatentable over is reversed. Turning to claims 15-17, claim 15 contains similar limitations as claim 2. Claims 16 and 17 depend from claim 15. Accordingly, the rejection of claims 15-17 under 35 U.S.C. § 103 is therefore reversed.

Turning now to claim 8, the examiner‘s position is that Ueda does not disclose the claimed ultimate gain or ultimate period. The examiner asserts (answer, pages 6 and 7) that Hägglund discloses the claimed variables and that “[i]t would have been obvious to . . . employ Hagglund’s use of the Ziegler Nichols method as discussed above in claim 2.” Appellant ASSERTS (brief, pages 15-17)that “Hagglund does not calculate control parameters for tuning a fuzzy logic controller. [Appellant’s claim 1 from which claim 8 depends].” ([]original). We note that Hägglund was not applied against claim 1, and that claim 8 is directed to the inclusion of ultimate gain and ultimate period in the dynamic process characteristics. The decision of the examiner to reject claim 8 under 35 U.S.C. § 103 is affirmed since the appellant has not challenged this rejection with any reasonable specificity,

thereby allowing claim 8 to fall with claim 1 from which it depends. See In re Nielson, 816 F.2d 1567, 1572, 2 USPQ2d 1525, 1528 (Fed. Cir. 1987).

Turning to the rejection of claim 7 under 35 U.S.C. § 103 as unpatentable over Ueda in view of Kraus, the examiner acknowledges (answer, page 8) that Ueda does not disclose a pattern recognition method. To overcome this deficiency of Ueda, the examiner relies upon Kraus. The examiner's position (id.)is that "Kraus, however, discloses a pattern recognizing self tuning PID controller. Kraus also notes that pattern recognition is a known technique for controller tuning (see column 1, lines 30-44)." The examiner concludes (id.) that "[i]t would have been obvious to .... combine the pattern recognizing PID controller with Ueda's . . . ." Appellant asserts (brief, page 19) that "Kraus does not teach or suggest use of dynamic process characteristics determined by a pattern recognition method to tune a fuzzy logic controller." Appellant additionally asserts (id.) "[n]or does Ueda teach or suggest use of a pattern recognition method to tune the fuzzy logic controller of its system."

In the rejection, the examiner has not relied upon Ueda for a teaching of a pattern recognition system. Nor has the examiner relied upon Kraus for a teaching of a fuzzy logic controller.

As to the argued deficiencies of each reference on an individual basis, we note that nonobviousness cannot be established by attacking the references individually when the rejection is predicated upon a combination of prior art disclosures. See In re Merck & Co. Inc., 800 F.2d 1091, 1097, 231 USPQ 375, 380 (Fed. Cir. 1986).

We find that Ueda discloses (col. 7, lines 12-17) use of the step response method in system identification. Ueda notes, (id.) that the identification method is not limited to this method and that system identification can be carried out in the same manner by using another method. We find that Kraus teaches the use of a pattern recognizing self tuning controller, and teaches (col. 1, lines 33-36) that pattern recognition is a known technique for manually tuning the operating parameters of a controller. Kraus further teaches (col. 8, lines 45-47) that the Ziegler-Nichols ratios are adjusted based upon the pattern shape of the signal 32. From

these teachings of Ueda and Kraus, we conclude that one of ordinary skill in the art would have been taught to have used a pattern recognition method for determining the dynamic process characteristics. Accordingly, we will affirm the rejection of claim 7 under 35 U.S.C. § 103 as unpatentable over Ueda in view of Kraus.

Turning to the rejection of claim 11 under 35 U.S.C. § 103 as unpatentable over Ueda in view of Ying, the examiner states (answer, page 9) that Ueda does not disclose the claimed critical gain and integral time constant. To overcome this deficiency in Ueda, the examiner turns to Ying. The examiner's position (answer, page 9) is that "Ying discloses the appellant's proportional gain and integral gain change with error and rate (see equation 14)." The examiner concludes (id.) that "[i]t would have been obvious . . . to employ such values in the system of Ueda because this allows for the optimal operation of the fuzzy controller due to fuzzification and
defuzzification. . . ." Appellant asserts (brief, page 20) that Ueda does not "teach or suggest the critical gain and integral time constant as specific values of the dynamic

process characteristics." The examiner argues (answer, page 14) that "[a]s disclosed in equation 14 two gain factors are employed for the purpose of correcting for the fuzzification and defuzzification routines." In response (reply brief, page 5) appellants state "[o]n further consideration of Ying, Appellant agrees with the examiner that Ying discusses gain; however, Ying does not teach or disclose the integral time constant required by Appellant's claim 11."

We note that appellant's specification (pages 11 and 16) refers to dynamic process characteristic K_c as "proportional gain" and (page 15) as "critical gain." We agree with appellant that although Ying discusses gain, Ying is silent as to integral time constant, as required by claim 11. We find that Ueda discloses (col. 7, lines 17-20) "[t]he expressions for determining the parameters K_1, K_2 also are not limited to those using R and L. It is possible to determine the parameters based on other identified values, e.g., time constant or steady gain." However, Ueda's disclosure of determining parameters based upon time constant is not the same as providing an integral time constant.

The initial burden of establishing that Ueda and Ying suggest the claim language of "critical gain and integral time constant" rests with the examiner. We find that the examiner has failed to establish that the references suggest an integral time constant. Nor has the examiner advanced a line of reasoning to establish that either the time constant of Ueda or the teachings of Ying would have rendered obvious the claimed integral time constant. The examiner's statement (answer, page 9) that providing Ueda with the claimed values would allow "optimum operation of the controller" is not a substitute for evidence. Accordingly, the rejection of claim 11 under 35 U.S.C. § 103 as unpatentable over Ueda in view of Ying is reversed.

CONCLUSION

To summarize, the decision of the examiner to reject claims 1, 9, 10, and 14 under 35 U.S.C. § 102(e) as unpatentable over Mega is reversed. The decision of the examiner to reject claims 6 and 18[4] under 35 U.S.C. § 103 as

[4] We note that claims 6 and 18 were rejected under 35 U.S.C. § 103 as unpatentable over Mega in view of appellant's admitted prior art found on page 8 of the specification. However, in all other claims on appeal, the

(continued...)

unpatentable over Mega is reversed. The decision of the examiner to reject claims 2-5, 8, and 15-17 under 35 U.S.C. § 103 as unpatentable over Mega in view of Hägglund is reversed. The decision of the examiner to reject claim 7 under 35 U.S.C. § 103 as unpatentable over Mega in view of Kraus is reversed. The decision of the examiner to reject claim 11 under 35 U.S.C. § 103 as unpatentable over Mega in view of Ying is reversed. The decision of the examiner to reject claims 1, 9, 10, and 14 under 35 U.S.C. § 102(e) as unpatentable over Ueda is affirmed. The decision of the examiner to reject claims 2-5, and 15-17 under 35 U.S.C. § 103 as unpatentable over Ueda in view of Hägglund is reversed. The decision of the examiner to reject claim 7 under 35 U.S.C. § 103 as unpatentable over Ueda in view of Kraus is affirmed. The decision of the examiner to reject claim 8 under 35 U.S.C. § 103 as

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[4](...continued)
rejections over Mega (alone or in view of additional prior art) included parallel rejections over Ueda (alone or in view of additional prior art). The examiner may wish to consider a rejection of claims 6 and 18 under 35 U.S.C. § 103 as unpatentable over Ueda in view of the admitted prior art found on page 8 of the specification. The examiner may consider Ueda's teaching that other methods for determining system identification may be used in a similar manner (col. 7, lines 11-16), and the teaching of the admitted prior art (specification, page 8) that "[t]he model matching tuning method is known to those of skill in this technology."

unpatentable over Ueda in view of Hägglund is affirmed. The decision of the examiner to reject claim 11 under 35 U.S.C. § 103 as unpatentable over Ueda in view of Ying is reversed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR § 1.136 (a).

AFFIRMED-IN-PART

JAMES D. THOMAS Administrative Patent Judge	)
JOSEPH F. RUGGIERO Administrative Patent Judge	) BOARD OF PATENT APPEALS AND INTERFERENCES
STUART S. LEVY Administrative Patent Judge	)

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