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**D E C I S I O N**  
of 7 November 1997

**Case Number:** T 1009/95 - 3.2.4

**Application Number:** 88114403.4

**Publication Number:** 0313768

**IPC:** A47J 39/00

**Language of the proceedings:** EN

**Title of invention:**  
Parameter control system for an oven

**Patentee:**  
Food Automation-Service Techniques, Inc.

**Opponent:**  
Firma Rational GmbH

**Headword:**  
-

**Relevant legal provisions:**  
EPC Art. 54, 56 and 123

**Keyword:**  
"Novelty (yes)"  
"Inventive step (yes)"

**Decisions cited:**  
T 0002/83, T 0005/81

**Catchword:**  
-



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Boards of Appeal

Chambres de recours

Case Number: T 1009/95 - 3.2.4

**D E C I S I O N**  
of the Technical Board of Appeal 3.2.4  
of 7 November 1997

**Appellant:**  
(Opponent)                      Firma Rational GmbH  
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**Representative:**                      Goddar, Heinz J., Dr.  
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**Respondent:**  
(Proprietor of the patent)      Food Automation-Service Techniques, Inc.  
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**Decision under appeal:**              Interlocutory decision of the Opposition Division  
   of the European Patent Office posted 24 November  
   1995 concerning maintenance of European patent  
   No. 0 313 768 in amended form.

**Composition of the Board:**

**Chairman:**      C. A. J. Andries  
**Members:**      R. E. Gryc  
                            M. Lewenton

## Summary of Facts and Submissions

I. The appellant (opponent) lodged an appeal, received at the EPO on 20 December 1995, against the interlocutory decision of the Opposition Division, dispatched on 24 November 1995, which maintained the patent No. 0 313 768 in an amended form on the basis of two independent claims 1 and 6.

The appeal fee was paid simultaneously and the statement setting out the grounds of appeal was received at the EPO on 22 March 1996.

II. Opposition was filed against the patent as a whole and based on Article 100(a)EPC. The Opposition Division held that the grounds for opposition cited in Article 100(a)EPC did not prejudice the maintenance of the patent in an amended version, in particular having regard to the following documents:

E2: US-A-4 601 004

E6: Prospectus "Allround-System; Allround-System Rondair®" of 1983 of the firm H. Maurer+Söhne, Rauch-und Wärmetechnik Gmbh & Co. KG (AS 0583/2D) and

E7: Prospectus of the firm H. Maurer+Söhne, Rauch-und Wärmetechnik Gmbh & Co. KG entitled "Maurer-MC: Individuell Programmierbare Computersteuerungen" (05/83/D).

III. In his statement setting out the grounds of appeal, the appellant contended that an oven computer controlled system of the kind described in the precharacterising portions of independent claims 1 and 6 was already known before the priority date from prospectuses E6 and E7 published in 1983.

E7 providing further information on the computer control system disclosed in E6, the appellant was of the opinion that the two prospectuses should be considered as a single document E6/E7.

The appellant alleged that the features of paragraph (a) in the characterising portion of Claim 1 were also known in combination from E6/E7.

Moreover, he took the view that a combination of the rest of the characteristics described in paragraph (b) of Claim 1 was disclosed in E2 and that the skilled person would not feel hindered to apply the teaching of E2 to the system of E6/E7. Consequently, he considered that the subject-matter of Claim 1 was not inventive.

In relation with the subject-matter of Claim 6, the appellant pointed out that product selection keys were already known from E2. Nevertheless, he admitted that E2 did not teach to actuate twice the same product selection key.

He alleged also that, when seeking to optimise the cooking process, the skilled person would necessarily look for the most appropriate oven location for the given product and would automatize that search; in order to simplify the keyboard, he would also be inclined to keep the number of keys as low as possible

and therefore would be guided to use multifunctional keys. The person skilled in the art would thus arrive at the invention without an inventive step, just by combining the teaching of E2 with common general knowledge.

The appellant contended also that the range of application of the appliance known from E6/E7 covers the range of application of the device according to the invention and that the way to use the prepared meals after they have been cooked cannot influence the technology of the device disclosed in E6/E7. Also, none of the devices is limited to the size as disclosed in the prior art documents and variations in size do not change their technological content.

The appellant was also of the opinion that the disturbances which may occur during a cooking cycle do not influence the conception of the electronic system of the device. He also argued that everybody, not only skilled persons, knows that the parameters "temperature" and "duration of time interval" are usually linked together and that they are the most critical factors for cooking and that furthermore to use multifunctional keys was commonly used in the field of computers and typing machines.

Therefore, the appellant does not see any inventive step in the subject-matter of both independent claims 1 and 6.

IV. The respondent (proprietor of the patent) counterargued that the system of E6 is intended for use in industrial cooking establishments and designed to be undisturbed after a cooking cycle is programmed and activated. He contended that E2 does not even suggest a programmed means for varying the duration of each of a plurality of time intervals, let alone varying the duration of an

interval in accordance with a predetermined cooking curve. According to the respondent, E2 did not even suggest that such a time variation could be desirable in a device other than a fryer.

The respondent also pointed out that none of the cited references even suggested that product selection keys could possess two functions i.e. one for establishing cooking parameters for a particular product and one for indicating the oven location of the product and that indicating oven locations could be even desirable.

V. Oral proceedings took place on 7 November 1997

The respondent filed two new requests i.e. a main request comprising in particular an amended description and two modified independent claims 1 and 6 and an auxiliary request which differs from the main request only in that Claim 6 is made dependent of the preceding claims.

No objection against the respondent's new submissions was made by the appellant with regard to the requirements of Article 123 EPC.

The respondent explained that the system as claimed in Claim 1 is designed for commercial kitchen environments in which ovens are subject to frequent disturbances and that, according to the invention, in order to keep a uniform and optimal quality for the products despite these disturbances, a specific cooking time is attributed to each product, each cooking time is divided in several time intervals, in each of said intervals, one or more parameters are controlled with reference to their corresponding cooking curves, and the duration of any of said time intervals is varied in response to the measured temperature value.

The appellant however was of the opinion that E2 described the closest state of the art since it disclosed the technical concept of the invention in so far as it is limited to the temperature as parameter and to one time interval which is the cooking time. In his opinion, to consider more parameters and more intervals is only a software measure which did not involve an inventive step since the skilled person would determine easily which parameter should be taken into consideration.

The respondent counterargued that the system of E2 only monitored the temperature deviations, did not use algorithms, and disclosed therefore a passive monitoring without any closed loop control.

- VI. The appellant requested that the decision under appeal be set aside and the patent No. 0 313 768 be revoked.

The respondent requested that the decision under appeal be set aside and that the patent be maintained on the basis of one of the requests filed during the oral proceedings.

- VII. The wording of the independent claims 1 and 6 of the main request reads as follows:

**Claim 1:**

"A parameter control system in an oven for heating a food product, comprising means for controlling as a first parameter the temperature and as further parameters at least one of the volumetric flow rate (V), the humidity (H) and the circulation (R) of a heating medium, comprising:

- (a) parameter control algorithm means (10) for controlling parameters within each of a plurality of time intervals of a cooking cycle for the food product, each interval programmed for a predetermined value of each controlled parameter (50, 51, 52, 53), in which said algorithm means (10) receives data from parameter monitors to deliver command signals to corresponding parameter control devices to control each parameter to its corresponding predetermined value;
- (b) programmed means for varying the duration of any of said time intervals according to a predetermined cooking curve (Figure 6) in response to the measured value of at least said temperature and, if applicable, one of said further parameters."

**Claim 6:**

"A parameter control system in an oven for heating a food product, comprising means for controlling a first parameter of a heating medium, characterized by a plurality of product selection keys (11) which upon one actuation of a first key selects at least one heating parameter for a given product and which upon another actuation of the first key indicates an oven location for the given product."



## Reasons for the Decision

### 1. *Admissibility of the appeal*

After examination the appeal has been found to be admissible.

### 2. *Main request*

#### 2.1 Modifications (Article 123 EPC)

Independent claim 1 has been rewritten with respect to claim 1 as maintained by the first instance in order to incorporate more characteristics clarifying the relation "parameters-time intervals-cooking cycle". Each of the amendments has a support in the application as filed. New Claim 6 corresponds to Claim 4 as granted. The description has been amended accordingly. After examination, the modifications made before the Board have been found to comply with the requirements of Article 123 EPC and therefore to be admissible.

Since this has not been disputed by the Appellant during the oral proceedings, there is no need for further detailed substantiation.

#### 2.2 Novelty of the subject-matter of claims 1 and 6 (Article 54 EPC)

After having examined the citations introduced in the course of the appeal proceedings, the Board is satisfied that none of them discloses a system comprising in combination all the features described respectively in independent Claims 1 or 6 as filed during the oral proceedings (main request).

Since this has also not been disputed by the Appellant, there is no need for further detailed substantiation and the subject-matter as set forth in said claims is to be considered as novel within the meaning of Article 54 EPC.

2.3 The closest state of the art:

E6 and E7 concern the same technical field and a type of oven for baking, steaming or roasting a product as the one according to the invention. They describe also, in such an oven, a computer controlled system comprising means for controlling the temperature, the volumetric flow rate, the humidity and the circulation of the heating medium used for heating each specific food product. Therefore, the Board considers that due to the general wording of claim 1 the state of the art closest to the invention is disclosed in E6 and E7 considered as forming a single disclosure E6/E7.

Documents E6/E7 however are not unequivocally clear with respect to the control systems used, i.e. open loop control system (Steuerung) or closed loop control system (Regelung).

The subject-matter of Claim 1 therefore differs from said closest state of the art at least in that, the cooking cycle of each food product being divided in a plurality of time intervals and each interval being programmed for a predetermined value of each controlled parameter, parameter control algorithm means controlling each cooking parameter to its corresponding predetermined value within each of said intervals, i.e. during the complete cooking cycle, and in that it

comprises programmed means for varying the duration of any of said time intervals according to a predetermined cooking curve in response to the measured value of at least the temperature and, if applicable, one of the other parameters.

The subject-matter of Claim 6 differs from said closest state of the art in that the product selection keys are such that upon successive actuations of one and the same key, said key successively selects at least one cooking parameter and then indicates an oven location for the given product.

#### 2.4 Problems and solutions

In view of the aforementioned closest state of the art, the problem to be solved as regards to Claim 1 appears to be to improve the control system of E6/E7 for precisely controlling the cooking parameters in the oven with said parameters being easily and repeatably set (see the description filed at the oral proceedings: column 2, lines 3 to 5 and 21 to 28).

To provide the system of E6/E7 with algorithm means for closed-loop controlling cooking parameters within each of a plurality of time intervals of the cooking cycle and with programmed means for varying the duration of any of said time intervals as claimed in claim 1 appears to bring an effective solution to the objective determined problem.

With regard to Claim 6, the problem appears to be to optimise the use of the oven. By providing keys having two functions, one of these being to indicate the most appropriate location for the given product, this problem appears to be solved effectively.

2.5 Inventive step (Article 56 EPC)

2.5.1 The questions to be answered as regards the inventive step are not only whether the skilled person examining the prior art in the light of his general common knowledge would be provided with enough indications so that he could arrive at the solution claimed in Claim 1, but moreover whether, starting from the control system disclosed in E6/E7, he would be incited by a particular teaching, a hint, or clue of the prior art to modify such a system in the direction of the invention in expectation of the improvement he was searching (see Decision T 2/83, OJ EPO 1984, 265).

2.5.2 Prospectuses E6/E7 describe an oven installation for use in industrial cooking plants (see E6: page 2, left hand column and all the photos of the prospectus) comprising a computer control system for heating food products (see E6: page 8, left hand column and E7).

From these prospectuses, the skilled person learns that, with the system as disclosed, parameters such as cooking time, temperature and humidity during the cooking cycle are to be preprogrammed and that the oven installation shows permanently the actual values of said parameters (see E6: page 9, end of the central column; and E7: page 3, last paragraph of the left hand column). The required functions such as heating, cooling, damping, air circulation etc... are completely preprogrammed and are called manually by pressing a key (see E7: page 2, paragraph 4), the operator having always the possibility of intervening easily in the programs in progress (see E6: page 9, central column, third last paragraph and E7: page 2, paragraph 6).

It appears from the description given by these prospectuses that, with this system, the parameters are preprogrammed before the start of the cooking cycle and that, during the cycle, they are only monitored and not closed-loop controlled since E6/E7 do not describe clearly either explicitly or implicitly that algorithm means are provided, which deliver command signals to corresponding parameter control devices to adjust each parameter to its corresponding predetermined value, said adjustment appearing to be done manually by pressing a key to call the required function (see above).

Moreover these documents do not clearly teach to divide the cooking cycle in a plurality of time intervals in the meaning of the present invention, let alone to program each interval for a predetermined value of each parameter and to provide means for varying the duration of any of said intervals according to a predetermined cooking curve in response to the measured value of the temperature and of any other parameter.

- 2.5.3 Document E2 relates to a microcomputer controlled cooking timer for use, in particular, in conjunction with a deep fat frying operation i.e. in a technical field which is not exactly the same as according to the invention which concerns ovens and more particularly combi-ovens.

According to this known control system, the microcomputer monitors the temperature of the cooking medium (frying oil) and compensates the preset cooking time in accordance with the preset time versus temperature curve to give the desired cooking cycle (see E2: Column 1, lines 13 to 18; column 2, lines 40 to 48; column 9, lines 48 to 53 and column 10, lines 56 to 61).

Therefore, the system of E2 comprises means for monitoring and for an open loop control of the temperature but has no means for closed loop controlling of the temperature. Indeed, in document E2 no disclosure either explicitly, or implicitly could be found, where the preset temperature (see Figures 2 and 3C: 176) is directly compared with the sensed actual temperature of the cooking medium (see Figures 2 and 3C; 120). That means that no closed loop control is available for a closed loop temperature control. Furthermore, the cooking cycle itself constitutes only one "time interval", the duration of which is varied according to a predetermined cooking curve in response to the measured value of the temperature.

In the system of E2, only the cooking time of the whole cooking cycle is controlled and there is no means for closed loop controlling the temperature or another parameter of the heating medium, let alone means for closed loop controlling parameters within each of a plurality of time intervals of the cooking cycle.

- 2.5.4 The skilled person wishing to improve the control system described in E6/E7 for precisely controlling a plurality of cooking parameters in an oven, with said parameters being easily and repeatably set (see above in section 2.4, the problem as regards to Claim 1), has a priori no reason to consult a prior art document such as E2 which relates to a fryer, the cooking process of which depends apart from the cooking time of only one parameter (i.e. the temperature of the frying oil). Even if he would consult E2, the skilled person will find neither a clear indication nor a hint to solve the above-mentioned problem since the only parameter considered in E2 (apart the cooking time) is not closed loop controlled. Moreover, he will not even have the possibility of interpreting the teaching of E2 as influenced by the problem solved by the invention since

this problem is neither mentioned nor even suggested in this document, such an approach being considered merely as the result of an ex-post facto analysis which has to be avoided (see decision T 05/81, OJ EPO 1982, 249).

Furthermore, the E6/E7 devices do not need an adaptation as suggested in E2, since in E6/E7 a procedure of opening the oven door during the cooking cycle or during a time interval of that cooking cycle is not disclosed at all, either explicitly, or implicitly. On the contrary, the information given in E6/E7 rather suggests a cooking procedure with closed doors.

2.5.5 With regard to the subject-matter of Claim 6 and its related problem, the skilled person would also find neither in E6/E7 nor in E2 any indication or hint about keys having several functions, let alone about keys which upon one actuation can select one parameter and upon another actuation indicates a location for the food product.

2.5.6 For the foregoing reasons, the Board considered that to improve the parameter control system for an oven disclosed in E6/E7 according to the teachings of Claim 1 and Claim 6 does not follow plainly and logically from the cited prior art and that the reasons brought forward by the appellant did not prejudice the maintenance of the patent in the amended version of the respondent's main request filed at the oral proceedings.

2.5.7 Starting from a device according to E2 as closest prior art, also cannot lead in an obvious way to the claimed system since E2 clearly relates to a deep fat frying operation, wherein only temperature and time are important, and wherein the cooking cycle can only be considered as one "time interval". Therefore obvious

modification of such a system could only result in an improved systems still relating to deep fat frying operations.

3. *Auxiliary request*

Since the board has acknowledged the main request as allowable, there is no need to consider the respondent's auxiliary request.

**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 with the order to maintain the patent in the following version:

**claims:** 1 to 9 of the main request as filed during the oral proceedings;

**description:** columns 1 to 9 as well as page 1a as filed during the oral proceedings;

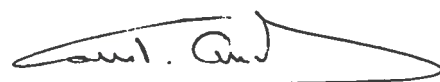
**drawings:** 1 to 10 as granted.

The Registrar:



N. Maslin

The Chairman:



C. Andries