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D E C I S I O N
of 28 September 2004

Case Number: T 0144/03 - 3.2.1

Application Number: 89112397.8

Publication Number: 0353489

IPC: B67D 5/02, G05D 9/12

Language of the proceedings: EN

Title of invention:
Automated chemical storage and chemical feed system

Applicant:
NALCO CHEMICAL COMPANY

Opponent:
-

Headword:
-

Relevant legal provisions:
EPC Art. 56

Keyword:
"Inventive step - no"

Decisions cited:
-

Catchword:
-

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Case Number: T 0144/03 - 3.2.1

D E C I S I O N
of the Technical Board of Appeal 3.2.1
of 28 September 2004

Appellant: NALCO CHEMICAL COMPANY
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Illinois 60563-1198 (US)

Representative: Hartmann, Günter, Dr. Dipl.-Chem.
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Decision under appeal: **Decision of the Examining Division of the European Patent Office posted 20 June 2002 refusing European application No. 89112397.8 pursuant to Article 97(1) EPC.**

Composition of the Board:

Chairman: S. Crane
Members: J. Osborne
S. U. Hoffmann

Summary of Facts and Submissions

I. The appeal is directed against the decision of the Examining Division posted 20 June 2002 refusing European patent application No. 89 11 2397.8 (EP-A-0 353 489).

II. The Examining Division found that the subject-matter of the single claim on file was obvious in the light of the following prior art:

D5: EP-A-0 161 844

D6: US-A-4 659 459

D8: EP-A-0 138 718

D9: US-A-4 648 521.

III. The appellant requests that the impugned decision be set aside and that a patent be granted on the basis of a single claim filed with a letter of 30 October 2002. The Board summoned the appellant to oral proceedings to be held on 28 September 2004. The appellant did not attend and the oral proceedings were held in its absence in accordance with Rule 71(2) EPC.

IV. The single claim according to the appellant's request reads:

"An automated chemical supply and chemical feed system for a use station to chemically treat and monitor a process at a use station where the process is being run, comprising

1) one or more stationary chemical supply base tanks (10) at the use station storing chemicals intermittently or continuously feeding the chemicals to the process (11);

2) an electrically responsive level sensor (13) in each of said base tanks (10) continually monitoring the chemical level,

3) a pump means (12) for feeding said chemical from the base tank (10) to the process (11) at an adjustable flow rate;

4) an electrically responsive flow rate sensor (30) in the feed line (24) in order to measure the flow rate in that line;

5) electrically responsive sensors (20) for determining the chemical condition of the process (11) and for measuring the flow of the liquid system in the process (11);

6) a control and processing unit (14) receiving the outputs from the sensors (13, 20, 30) to process the flow and chemical condition values, and to provide control for the feed flow rate,

7) a radio-telemetry system (16) receiving the outputs from the control and processing unit (14) communicating with a remotely located supply and monitoring station;

8) means at the remote supply and monitoring station for reading out the outputs from the control and processing unit (14) and controlling the chemical feed flow rate, whereby a determination can be made at the remote supply and monitoring station whether to adjust the feed rate to match the process requirements and to order replenishment of the chemical to be shipped from the supply station to the use station for replenishing the chemical in the base tank (10); and

9) a portable refill tank (40) for transferring and completely emptying that chemical to the stationary base tank(s) (10), that portable refill tank (40) having upstanding side wall means, a top wall (25) including fill means and pressure fitting and a bottom wall (45) including outlet means (46), wherein
a) the top wall (25) comprises a sealable pressure fitting connected to a pressurized gas supply (42) for pressure emptying the contents of the refill tank (40) into the base tank (10) at the use station;
b) the bottom is a dish-shaped bottom (45) having an outlet (46) at the lowest point connectable to a discharge line (47) that may be connected to the top of the base tank (10) for unloading the refill tank unit (40) under a gas pressure of about 15 psi and
c) the refill tank (40) being sized so that it can easily be transported at ground level to the use station on a hand truck (41) and manoevered through relatively standard size doorways."

V. The arguments of the appellant may be summarised as follows:

The closest prior art for considering inventive step is that known from D5. The subject-matter of claim 1 differs therefrom by the features that the base tank comprises an electrically responsive level sensor, the communication between the use station and the remote supply and monitoring station is by radio telemetry and the system comprises a refill tank as defined in section 9 of the claim. Particularly the features relating to the radio telemetry and the refill tank are not known from the cited prior art. Indeed, D5 contains no information as regards replenishing the supply of

chemicals in the base tank. Moreover, the combination of the features relating to the level sensor and the radio telemetry minimises costs for replenishing the supply as the result of a combination effect which exceeds the sum of the effects of the individual features.

Reasons for the Decision

1. The application generally relates to a process plant in which chemicals to be used in the process are stored in base tanks at the use station. According to the description it has been customary to provide one or more refill tanks which are stored local to the use station and which are used to refill the base tanks. When the refill tanks have been emptied they are replaced by full ones and are taken away to be refilled. Previously personnel from either the process plant or the supplier of the refill tanks have been responsible for determining when it is necessary for the base tanks to be refilled and this has been found to be unsatisfactory.

1.1 The application proposes a system wherein the level of chemicals in the base tanks is monitored and a corresponding signal is transmitted to a remote location. A base tank is refilled using a tank of a particular construction. According to the apparatus as defined in present claim 1 of the application the determination of whether to order replenishment of the chemical at the use station is not automatic and still relies on the action of personnel (see section 8 of the claim "whereby a determination can be made").

2. In the Board's opinion the closest prior art is known from D6 which relates generally to computerised control of the introduction of chemicals into a system and in the described embodiment of adding chemicals to the water circulated through a cooling tower. A co-pending application which forms the priority right for D5 discloses a similar system and is included by reference in D6.

According to D6 chemicals stored in base tanks are introduced into the water by being pumped (column 3, lines 27 to 32) under the control of a system computer which receives signals in respect of the measured conductivity and flow rate of the water and determines the amount of chemical to be added. The system computer may be coupled with a further computer via a modem and telephone lines at a remote location and senses the chemical feed flow rate by measuring the time that the chemical needs to travel between two points in the feed line. The level of the chemicals in the base tanks is periodically sensed by the system computer using a pressure transducer, thereby acting as a level sensor. D5 discloses that the system computer includes a display and printer for providing a readout of the system conditions.

2.1 The subject-matter of claim 1 essentially differs from that of D6 by the following features:

– an electrically responsive level sensor in each of the base tanks continually monitors the chemical level;

– the pump means is suitable for feeding the chemicals at an adjustable flow rate under the control of the control and processing unit;

– the communication with the computer is by a radio-telemetry system; and

– the portable refill tank is as defined in section 9 of claim 1.

2.1.1 The level of the chemicals in the base tanks in D6 is only intermittently monitored by a single sensor used in combination with all of the base tanks. However, it is well known in the art, as from D8 reference sign 80 for example, to provide an electrical level sensor in combination with an individual tank.

2.1.2 Both D5 and D6 concern the recharging of chemicals in a cooling water tower system following blowdown. In such a system the primary control parameter is the quantity of the chemical added and its rate of introduction is of secondary importance. However, control of the rate of flow falls within the normal sphere of knowledge of the skilled person and would be provided according to circumstances.

2.1.3 Radio telemetry is well known in the art and, as set out in the application as originally filed (page 9, lines 7 to 14), it is only one amongst the various types of telemetry suitable for the purpose.

2.1.4 D6 concerns itself exclusively with the process plant itself and is silent as regards equipment used for refilling the base tanks. Nevertheless, it is clearly

implicit that provision must be made for refilling them and the skilled person is at liberty to choose any suitable and convenient means of doing so. Indeed, the form of refill tank as specified in section 9 of present claim 1 has no influence on the operation of the plant itself and concerns an unrelated problem relating to efficient delivery of the chemicals to the base tanks. Moreover, every feature of the tank itself is well known in itself and the Board can recognise no effect resulting from their combination. The main advantage explained by the appellant, that of complete discharge of the contents, results from the single feature of positioning the outlet at the lowest part of the tank.

2.1.5 D8 discloses a cylindrical refill tank transported on a cart for delivering chemicals to a base tank of a process plant. A supply of gas at about 15 psi pressurises the refill tank to expel the chemicals, the upper end of the tank has both a pressure fitting and a fill means and, as is common with pressurised tanks, the ends are dish shaped. The chemicals are expelled through a dip tube which reaches into a well in the lower end of the tank. D8 is silent regarding the dimensions of the tank and its transport cart but these are merely a matter of choice according to such factors as the desired capacity of the tank and available access. The refill tank as specified in section 9 of present claim 1 essentially differs from that of D8 only in that the outlet is at the lowest point. However, this is a normal feature in containers from which the totality of the contents are to be discharged under gravity, see D9 for example, and its application in a

container from which the contents are discharged by pressure brings no new effect.

2.2 The various features listed under 2.1 solve different problems and, contrary to the assertions of the appellant, exhibit no combinatorial effect. According to established case law the features therefore are to be considered separately for inventive step. For the reasons given above each of the features alone involves no inventive step and this conclusion therefore applies also to the entire claim. In particular, the Board cannot accept the appellant's argument that the combination of the features relating to the level sensor and the radio telemetry minimises costs for replenishing the supply as the result of a combination effect which exceeds the sum of the effects of the individual features. The appellant bases its arguments on the notion of a reduced inventory and increased reliability in ordering new supplies of chemicals. However, neither of these alleged advantages derives from the features in the claim. Moreover, even if the claim had been formulated differently whereby such a result would be achieved, it would have represented no more than the concept of just-in-time supply which was already well known at the priority date of the application.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar: The Chairman:

A. Vottner S. Crane