

In the Matter of

**CERTAIN
PRESSURE
TRANSMITTERS**

Investigation No. 337-TA-304
(Commission Decision of
October 22, 1990)



USITC PUBLICATION 2417

AUGUST 1991

**United States International Trade Commission
Washington, DC 20436**

UNITED STATES INTERNATIONAL TRADE COMMISSION

COMMISSIONERS

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Washington, DC 20436**

UNITED STATES INTERNATIONAL TRADE COMMISSION
Washington, D.C. 20436

In the Matter of)
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CERTAIN PRESSURE TRANSMITTERS)
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Inv. No. 337-TA-304

NOTICE OF COMMISSION DECISION TO REVIEW AND VACATE PORTIONS OF
AN INITIAL DETERMINATION AND NOT TO REVIEW THE REMAINDER OF THE INITIAL
DETERMINATION; REQUEST FOR WRITTEN SUBMISSIONS

AGENCY: U.S. International Trade Commission

ACTION: Notice

SUMMARY: Notice is hereby given that the U.S. International Trade Commission has determined to review and vacate portions of the initial determination (ID) issued by the presiding administrative law judge (ALJ) on July 2, 1990, in the above-captioned investigation and not to review the remainder of the ID. The Commission's determinations mean that it has found a violation of section 337 of the Tariff Act of 1930 (19 U.S.C. § 1337) in this investigation.

ADDRESS: Copies of the nonconfidential version of the ID and all other non-confidential documents filed in connection with this investigation are available for inspection during official business hours (8:45 a.m. to 5:15 p.m.) in the Office of the Secretary, U.S. International Trade Commission, 500 E Street SW., Washington, DC 20436, telephone 202-252-1000.

FOR FURTHER INFORMATION CONTACT: Jean Jackson, Esq., Office of the General Counsel, U.S. International Trade Commission, telephone 202-252-1104. Hearing-impaired individuals are advised that information on this matter can be obtained by contacting the Commission's TDD terminal on 202-252-1810.

SUPPLEMENTARY INFORMATION: On September 15, 1989, Rosemount, Inc. (Rosemount) of Eden Prairie, Minnesota filed a complaint with the Commission alleging violations of section 337 of the Tariff Act of 1930 in the importation and sale of certain pressure transmitters made by processes covered by claims 1-4 of U.S. Letters Patent 3,800,413, owned by Rosemount. Pressure transmitters are devices use to measure flow rates in industrial processes. The Commission instituted an investigation of Rosemount's complaint on October 20, 1989. 54 Fed. Reg. 43145. The Commission's notice of investigation named SMAR Equipment of Sao Paulo, Brazil and SMAR International of Ronkonkoma, New York

as respondents. A motion for temporary relief, filed concurrently with the complaint, was denied by the Commission on March 19, 1990. 55 Fed. Reg. 11451 (March 28, 1990).

On July 2, 1990, the ALJ issued an ID finding a violation of section 337. Having examined the record in the investigation, the Commission determined to review and vacate the portion of the ID that concerns infringement of claim 4 of the patent in controversy under the doctrine of equivalents and to review and vacate the appendix to the ID. The Commission determined not to review the remainder of the ID. Under Commission interim rule 210.53(h) (19 C.F.R. § 210.53(h)), the unreviewed portions of the ID have become the Commission's determination. The Commission also determined to affirm ALJ Order No. 13 and to deny respondents' request to designate the investigation more complicated.

WRITTEN SUBMISSIONS: In connection with the final disposition of this investigation, on or before October 20, 1990, the Commission may issue (1) an order that could result in the exclusion of the subject articles from entry into the United States, and/or (2) a cease and desist order that could result in a respondent being required to cease and desist from engaging in unfair acts in the importation and sale of such articles. Accordingly, the Commission is interested in receiving written submissions that address the form of remedy, if any, that should be ordered.

When the Commission contemplates some form of remedy, it must consider the effects of that remedy upon the public interest. The factors that the Commission will consider include the effect that an exclusion order and/or cease and desist order have on (1) the public health and welfare, (2) competitive conditions in the U.S. economy, (3) U.S. production of articles that are like or directly competitive with those that are subject to investigation, and (4) U.S. consumers. The Commission is therefore interested in receiving written submissions that address the aforementioned public interest factors in the context of this investigation.

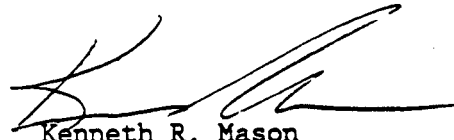
If the Commission orders some form of remedy, the President has 60 days to approve or disapprove the Commission's action. During this period, the subject articles would be entitled to enter the United States under a bond of the Treasury. The Commission is therefore interested in receiving submissions concerning the amount of the bond that should be imposed. The parties to the investigation, interested government agencies, and any other interested persons are encouraged to file written submissions on remedy, the public interest, and bonding. Rosemount and the Commission investigative attorney are also requested to submit a proposed exclusion order and/or proposed cease and desist order(s) for the Commission's consideration. Written submissions from the parties, including any proposed orders, must be filed by August 27, 1990, and reply submissions from the parties must be filed by September 4, 1990.

Persons filing written submission must file with the Office of the Secretary the original document and 14 copies thereof on or before the deadlines stated above. Any person desiring to submit a document to the

Commission containing confidential information must request confidential treatment unless the information has already been granted such treatment during the proceedings. All such requests should be directed to the Secretary of the Commission and must include a full statement of the reasons the Commission should grant such treatment. See 19 C.F.R. § 201.6. All nonconfidential written submissions will be available for public inspection at the Office of the Secretary.

AUTHORITY: This action is taken under the authority of section 337 of the Tariff Act of 1930 (19 U.S.C. § 1337) and sections 210.53(h), 210.54(b), 210.55, and 210.56(c) of the Commission's Interim Rules of Practice and Procedure (19 C.F.R. §§ 210.53(h), 210.54(b), 210.55, and 210.56(c)).

By order of the Commission.



Kenneth R. Mason
Secretary

Issued: August 17, 1990

UNITED STATES INTERNATIONAL TRADE COMMISSION
Washington, D.C. 20436

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U.S. INTERNATIONAL TRADE COMMISSION

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In the Matter of)
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CERTAIN PRESSURE TRANSMITTERS) Inv. No. 337-TA-304
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NOTICE OF LIMITED EXCLUSION ORDER

AGENCY: U.S. International Trade Commission

ACTION: Notice

SUMMARY: Notice is hereby given that the U.S. International Trade Commission has issued a limited exclusion order under subsection (d) of section 337 of the Tariff Act of 1930 (19 U.S.C. § 1337(d)) to prevent the unauthorized importation and sale of pressure sensors and pressure transmitters which are manufactured abroad by SMAR Equipment of Sao Paulo Brazil using a process that is covered by claims 1-4 of U.S. Letters Patent 3,800,413.

ADDRESS: Copies of the limited exclusion order and all other non-confidential documents filed in connection with this investigation are available for inspection during official business hours (8:45 a.m. to 5:15 p.m.) in the Office of the Secretary, U.S. International Trade Commission, 500 E Street SW., Washington, DC 20436, telephone 202-252-1000.

FOR FURTHER INFORMATION CONTACT: Jean Jackson, Esq., Office of the General Counsel, U.S. International Trade Commission, telephone 202-252-1104.

Hearing-impaired individuals are advised that information on this matter can be obtained by contacting the Commission's TDD terminal on 202-252-1810.

SUPPLEMENTARY INFORMATION: On September 15, 1989, Rosemount, Inc. (Rosemount) filed a complaint with the Commission alleging a violation of section 337 in the importation and sale of certain pressure transmitters covered by claims 1-4 of U.S. Letters Patent 3,800,413, owned by Rosemount. Pressure transmitters are devices use to measure flow rates in industrial processes. On October 20, 1989, the Commission published notice of an investigation based on Rosemount's complaint and named SMAR Equipment of Sao Paulo, Brazil and SMAR International Corp. of Ronkonkoma, New York as respondents. 54 Fed. Reg. 43145.

On July 2, 1990, the presiding administrative law judge (ALJ) issued an initial determination (ID) finding a violation of section 337 in the above-captioned investigation. The Commission adopted the ID with minor modifications. 55 Fed. Reg. 34627 (August 23, 1990). Having determined that there was a violation of section 337, the Commission requested that the parties and interested members of the public file submissions on the issues of remedy, the public interest, and bonding. Id. Complainant, respondents, and the Commission investigative attorney filed submissions.

After considering the submissions, the Commission determined that the public interest considerations listed in subsection (d) of section 337 do not preclude issuance of a limited exclusion order and that while the order is under review by the President pursuant to subsection (j) of section 337 (19 U.S.C. § 1337), the excluded articles will be entitled to enter the United States under a bond in the amount of 38 percent of their entered value.

This action is taken under authority of section 337 of the Tariff Act of 1930 (19 U.S.C. § 1337) and sections 210.53-58 of the Commission's interim rules (19 C.F.R. §§ 210.53-.58).

By order of the Commission.



Kenneth R. Mason
Secretary

Issued: October 22, 1990

UNITED STATES INTERNATIONAL TRADE COMMISSION
Washington, D.C. 20436

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In the Matter of)
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) Investigation No. 337-TA-304
CERTAIN PRESSURE TRANSMITTERS)
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ORDER

Having determined that there is a violation of section 337 of the Tariff Act of 1930 (19 U.S.C. § 1337) in the unauthorized importation and sale of pressure sensors and pressure transmitters and having determined that the public interest factors listed in subsection (d) of section 337 (19 U.S.C. § 1337(d)) do not preclude the remedy ordered in paragraph 2, it is hereby **ORDERED** that--

1. This investigation is terminated with a finding that there is a violation of section 337 of the Tariff Act of 1930.
2. Pressure sensors and pressure transmitters which are manufactured using a process covered by claims 1, 2, 3, or 4 of U.S. Letters Patent 3,800,413 by or on behalf of respondent SMAR Equipment of Sao Paulo, Brazil, or any successors, assigns, affiliated persons or companies, subsidiaries or other related business entities are excluded from entry into the United States for the remaining term of the patent except under license of the patent owner.
3. The articles ordered to be excluded from entry into the United States shall be entitled to entry under bond in the amount of 38 percent of the entered value of the imported articles from the day after this Order is received by the President pursuant to subsection (j) of section 337 of the Tariff Act of 1930 (19 U.S.C. § 1337(j)) until such time as the President notifies the Commission that he approves or disapproves this Order, but, in any event, not later than 60 days after receipt thereof.


4. The motion of respondents SMAR Equipment and SMAR International Corp. for reconsideration of the Commission's determination to adopt the presiding administrative law judges's determination that there has been a violation of section 337 is denied.

5. The motion of complainant Rosemount, Inc. for early relief in this investigation is denied.

6. The motion of complainant Rosemount, Inc. to strike the affidavit of Mr. Basilio Selli is denied.

7. The Secretary shall serve copies of this **Order** and the Commission Opinion to be issued in support thereof on each party of record to this investigation and on the Department of Health and Human Services, the Department of Justice, the Federal Trade Commission, and the Secretary of the Treasury, and publish notice thereof in the Federal Register.

By **order** of the Commission.



Kenneth R. Mason
Secretary

Issued: October 22, 1990

UNITED STATES INTERNATIONAL TRADE COMMISSION
Washington, D.C. 20436

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In the Matter of))
)) Investigation No. 337-TA-304
CERTAIN PRESSURE TRANSMITTERS))
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COMMISSION OPINION ON REMEDY, THE PUBLIC INTEREST, AND BONDING

INTRODUCTION

On August 16, 1990, the Commission affirmed the presiding administrative law judges (ALJ's) finding that there has been a violation of section 337 of the Tariff Act of 1930 (19 U.S.C. § 1337) in Inv. No. 337-TA-304, Certain Pressure Transmitters. The Commission adopted, with minor modifications, the ALJ's initial determination (ID) which found U.S. Letters Patent 3,800,413 (the '413 patent) not invalid and infringed by the respondents. 55 Fed. Reg. 34627 (August 23, 1990). The Commission must now consider the issues of remedy, the public interest, and bonding.

PROCEDURAL HISTORY

On September 15, 1989, Rosemount Inc. (Rosemount) filed a complaint and a motion for temporary relief with the Commission alleging violations of section 337 in the importation and sale of certain pressure transmitters,

which are devices used to measure the rate of fluid flow in pipelines. Rosemount alleged that the pressure transmitters at issue were made abroad by means of a process covered by claims 1, 2, 3, and 4 of the '413 patent, owned by Rosemount. Claims 1-3 of the '413 patent cover methods for manufacturing pressure sensors, the main component of a pressure transmitter, and claim 4 covers a method for making the entire pressure transmitter.

The Commission instituted an investigation of Rosemount's complaint and provisionally accepted Rosemount's motion for temporary relief at the Commission meeting on October 17, 1989. The notice of investigation was published in the Federal Register on October 20, 1989. 54 Fed. Reg. 43145. The notice named SMAR Equipment of Sao Paulo, Brazil, and its wholly owned subsidiary, SMAR International of Ronkonkoma, New York, as respondents (collectively, SMAR).

On December 29, 1989, after holding a four-day evidentiary hearing, the ALJ issued an ID granting Rosemount's motion for temporary relief. On January 24, 1990, the Commission published notice that it was designating the temporary relief phase of the investigation "more complicated" and extending the time for completion of that phase by 60 days because of the complex issues raised by the ID concerning Commission temporary relief standards.¹ The Commission invited comments from the public on specified issues relevant to the standards for issuance of temporary relief.

On March 19, 1990, the Commission denied Rosemount's motion for temporary relief, vacating the ALJ's ID on temporary relief except for its

¹ The permanent relief phase of the investigation was not designated "more complicated."

findings of fact and patent validity analysis. On April 2, 1990, the Commission issued its own opinion on temporary relief. Rosemount immediately filed a notice of appeal of the Commission's determination on temporary relief with the U.S. Court of Appeals for the Federal Circuit (Federal Circuit). On August 6, 1990, the Federal Circuit affirmed the Commission's determination to deny temporary relief to Rosemount. Rosemount v. U.S.I.T.C., 910 F.2d 819 (Fed. Cir. 1990).

Meanwhile, the permanent relief phase of the investigation continued. The ALJ incorporated the record from the temporary relief phase into the permanent relief proceedings and held an additional two-day evidentiary hearing--on May 7 and 8, 1990--to hear new evidence. The ALJ issued her final ID on July 2, 1990, finding all four of the '413 patent claims at issue literally infringed and claim 4 additionally infringed under the doctrine of equivalents. Petitions for review were filed on July 12, 1990, by complainant Rosemount and respondents SMAR. The Commission Investigative Attorney (IA) did not file a petition for review. On July 19, 1990, all parties filed responses. After considering the petitions and the responses, the Commission determined to vacate that portion of the ID concerning infringement of claim 4 under the doctrine of equivalents because that finding was superfluous and inconsistent with the ID's determination that claim 4 was literally infringed. The Commission also determined to vacate the appendix to the ID in which the ALJ set forth certain views on temporary relief under section 337(e). The Commission adopted the rest of the ID.

On August 17, 1990, the Commission issued a Federal Register notice advising of its action on the ID and calling for briefing on the issues of

remedy, the public interest, and bonding. Briefs were filed by complainant Rosemount, respondents SMAR, and the IA.

DISCUSSION

I. Form of Remedy

The Commission may issue either a general exclusion order, which would prevent importation of any and all infringing pressure sensors and pressure transmitters, or a limited exclusion order, which would prohibit the importation of infringing pressure sensors and pressure transmitters manufactured by the foreign respondent, SMAR Equipment. 19 U.S.C. § 1337(d). Instead of, or in addition to, an exclusion order the Commission may issue cease and desist orders prohibiting the unfair acts found to exist. 19 U.S.C. § 1337(f). Complainant Rosemount has requested both a limited exclusion order directed against the importation of infringing pressure transmitters manufactured by SMAR Equipment and a cease and desist order directed against SMAR International, prohibiting it from marketing or selling in the United States infringing pressure transmitters manufactured abroad by SMAR Equipment.

Rosemount concedes that it is unable to make the showing necessary for issuance of a general exclusion order.² Accordingly, Rosemount argues that it is entitled to only a limited exclusion order against infringing pressure

² The showings necessary to support the issuance of a general exclusion order are set forth in Certain Airless Spray Pumps and Components Thereof, Inv. No. 337-TA-90, U.S.I.T.C Pub. No. 1199 at 17-19. Those showings include a widespread pattern of unauthorized use of the patented invention by foreign manufacturers and certain business conditions that would facilitate entry of imports into the U.S. market. Id.

transmitters manufactured by SMAR Equipment. The IA agrees that the Commission should issue a limited exclusion order against infringing pressure transmitters, in assembled or unassembled form, manufactured by SMAR Equipment.

SMAR agrees that if relief is granted in this investigation, a limited exclusion order would be appropriate. SMAR argues, however, that any exclusion order should include only the pressure sensor component of the pressure transmitter and not the entire pressure transmitter. SMAR's argument to limit the exclusion order in this manner is based on the ALJ's initial ruling on the domestic industry issue in ALJ Order No. 4, in which she determined that a domestic industry exists for pressure sensors made by a process covered by claims 1-3 of the '413 patent. The ALJ's order did not reach the issue of whether a domestic industry also exists under claim 4, which covers a process for making an entire pressure transmitter. In her final ID, however, the ALJ found that a domestic industry relating to claim 4 also exists.

We determine that ALJ Order No. 4 does not preclude or supercede the ALJ's later ruling, adopted by the Commission, that a domestic industry exists relating to claim 4. We determine, therefore, that a limited exclusion order directed against pressure transmitters, as well as pressure sensors, made by SMAR Equipment is the appropriate remedy in this investigation.

Rosemount argues that a cease and desist order is also warranted in this investigation to prevent SMAR International from marketing and selling the infringing pressure transmitters prior to expiration of the '413 patent. According to Rosemount, it would be an unfair method of competition under

section 337 for SMAR International to market or sell in the United States pressure transmitters manufactured by SMAR Equipment, even though those transmitters would not actually be imported until after the '413 patent (and consequently the Commission's exclusion order) expires on April 2, 1991. Rosemount argues that permitting SMAR International to continue its sales activities would harm Rosemount as much as the actual importation of pressure transmitters because pressure transmitters are usually sold by bid in quantity with a long lead time before orders are filled. ³

Rosemount further contends that a cease and desist order is needed to prevent SMAR International from selling from its inventory. Rosemount does not make any specific allegations about the size of SMAR International's inventories, but merely asserts:

SMAR International imports the pressure transmitters under its own name and receives the pressure transmitters at its own place of business. SMAR International imports and then sells the pressure transmitters from this inventory. Rosemount Exhibit 22; TEO Tr. 352-356.

Rosemount Main Brief dated August 27, 1990, at 2.

The evidence and testimony cited by Rosemount do not support a finding that SMAR International maintains any significant inventory. ⁴

³ Rosemount also argues that a cease and desist order is warranted because SMAR International allegedly imports parts of pressure transmitters which it then assembles into complete pressure transmitters. This allegation, however, is unsubstantiated by the record.

⁴ Rosemount Exhibit 22 is a collection of invoices dated prior to the start of the investigation. The cited testimony is that of Mr. Selli, secretary and treasurer of SMAR International. Mr. Selli testified that SMAR International takes orders from customers through its sales
(continued...)

SMAR and the IA argue that cease and desist orders should not be issued in this investigation because the Commission has traditionally issued cease and desist orders only when significant inventories of infringing goods are present in the United States. SMAR submitted an affidavit from Mr. Selli in which he attests that SMAR International does not have an appreciable inventory of pressure transmitters in the United States.⁵ Mr. Selli further attests that SMAR International's method of doing business is to receive orders from customers and forward those orders to SMAR Equipment in Brazil to fill. Id. Six to eight weeks later SMAR International receives the pressure transmitters from SMAR Equipment and then ships the transmitters to customers. Id.

SMAR argues that the evidence relied upon by Rosemount to support its contention that inventories exist actually supports SMAR's position that only a few replacement pressure transmitters are maintained in inventory and that all new orders are shipped from Brazil. SMAR denies that it assembles any pressure transmitters in the United States. The IA contends that under Commission practice the presence of significant inventories is dispositive on

⁴(...continued)

representatives. SMAR International then sends the orders to SMAR Equipment in Brazil. SMAR Equipment sells the transmitters to SMAR International, which in turn, sells them to its customers. Mr. Selli also testified that some sales representatives maintain stock. TEO Tr. 352-356. However, at a later point in his testimony, Mr. Selli explained that stock is maintained for replacement purposes only. TEO Tr. 366-367.

⁵ Affidavit of Basilio Selli, secretary and treasurer of SMAR International, dated September 4, 1990, and attached to the reply submission of SMAR on the issues of remedy, the public interest, and bonding of September 4, 1990.

whether a cease and desist order should issue. Therefore, since there are no significant inventories of infringing goods, no cease and desist order should issue.

The Commission has discretion to issue cease and desist orders. Section 337(f) provides:

- (1) In addition to, or in lieu of, taking action under subsection (d) . . . of this section, the Commission may issue and cause to be served on any person violating this section . . . an order directing such person to cease and desist from engaging in the unfair methods or acts involved [unless precluded by consideration of enumerated public interest factors.]

(Emphasis Added.) ⁶

In the past, the Commission has issued cease and desist orders, in addition to exclusion orders, in patent-based cases only where significant inventories of infringing goods were present in the United States. ⁷ The Commission's

⁶ In contrast, section 337(d), concerning exclusion orders states:

If the Commission determines, as a result of an investigation under this section, that there is a violation of this section, it shall direct that the articles concerned, . . . be excluded from entry in the United States [unless precluded by consideration of enumerated public interest factors].

(Emphasis Added.)

⁷ See, e.g., Certain Compound Action Metal Cutting Snips, Inv. No. 337-TA-197, USITC Pub. 1831 (March 1986); Certain High Intensity Retroreflective Sheeting, Inv. No. 337-TA-268, USITC Pub. 2121 (September 1988); Certain Erasable Programmable Read Only Memories, Inv. No. 337-TA-276, USITC Pub. 2196 (May 1989) (while the existence of significant inventories was not conclusively proven, it could be reasonably assumed from the record that such inventories were present); Certain Crystalline Cefadroxil Monohydrate, Inv. No. 337-TA-293 (March 1990).

purpose in issuing such cease and desist orders has been to afford complete relief to complainants when infringing goods were already imported into the United States, and thus could not be reached by issuance of an exclusion order.⁸ The Commission has declined to issue cease and desist orders where inventories of infringing goods were insignificant or nonexistent.⁹

In this case, the evidence of record supports SMAR's contention that it does not maintain significant inventories in the United States. Mr. Selli's affidavit parallels his testimony during the hearing on temporary relief where he testified that SMAR International avoids keeping "inventory for sales."¹⁰ Mr. Selli further testified that all new orders for pressure transmitters are shipped from Brazil and that SMAR International's minimal inventory is used solely for replacing defective units.¹¹ Rosemount, on the other hand, has pointed to no evidence that would support a finding that significant infringing inventories exist in the United States. Indeed, Rosemount has not even alleged that SMAR International has significant inventories.

Issuance of a cease and desist order, where there are no significant infringing inventories in the United States, to prevent the marketing and sale of pressure transmitters that would not be imported until after the expiration of the '413 patent would be a significant departure from Commission practice.

⁸ See, e.g., Certain Compound Action Metal Cutting Snips, Inv. No. 337-TA-197, Commission Opinion at 5-7.

⁹ See, e.g., Certain Strip Lights, Inv. No. 337-TA-287 (October 3, 1989) (Unpublished opinion); Certain Nonwoven Gas Filter Elements, Inv. No. 337-TA-275, USITC Pub. 2129 (September 1988).

¹⁰ TEO Tr. 366.

¹¹ Id.

Rosemount has presented no compelling reason for the Commission to depart so significantly from its past practice. The Commission found during the temporary relief phase of this investigation that SMAR's sales projected during 1990 were insignificant in comparison with Rosemount's sales projected during the same period.¹² The Commission also determined that it was unlikely that SMAR would greatly increase its production in the foreseeable future because it was a small firm, with relatively few employees.¹³ Finally, the Commission determined that all of SMAR's sales would not necessarily be made at Rosemount's expense because the U.S. market contains many alternate suppliers.¹⁴ In view of the foregoing, the Commission determines not to issue a cease and desist order in this investigation.

II. The Public Interest

Before granting relief, the Commission must consider the effect that the relief would have on the public health and welfare, competitive conditions in the United States economy, the production of like or directly competitive articles in the United States, and United States consumers. 19 U.S.C. §§ 1337(d) and (f).

¹² See Certain Pressure Transmitters, Inv. No. 337-TA-304, Commission Opinion on Temporary Relief at 36, affirmed sub nom Rosemount v. U.S.I.T.C., 906 F.2d. 819 (Fed. Cir. 1990).

¹³ Id. at 34.

¹⁴ Id. at 35. The U.S. market for pressure transmitters includes two firms licensed under the '413 patent and at least twelve major firms that sell noninfringing substitutes. Id.

We are unaware of any public health or welfare concerns that would preclude issuance of a remedy in this investigation. Moreover, as Rosemount points out, competition will not be adversely affected by a remedy that would exclude SMAR from the U.S. market. As found by the Commission in the temporary relief phase of the investigation, the U.S. market contains two firms that are licensed under the '413 patent and twelve major firms that manufacture noninfringing pressure transmitters.¹⁵ The Commission also found in the temporary relief phase that U.S. consumers would not be adversely affected if SMAR were barred from the U.S. market because Rosemount is operating below full capacity and can supply enough pressure transmitters to replace those that would be excluded.¹⁶ SMAR argues only that the grant of relief would substantially harm SMAR and that this would in turn harm competition in general. SMAR does not, however, argue that U.S. consumers or the public health and welfare would suffer if the Commission issued relief. The IA takes the position that the enumerated public interest factors would not be affected by the issuance of relief.

We conclude from the evidence of record and the parties' briefs on the public interest issue that the imposition of a limited exclusion order directed against SMAR would not have an adverse effect on the public interest considerations. We therefore determine that the public interest factors enumerated in section 337(d) do not preclude issuance of a limited exclusion order.

¹⁵ Id. at 35.

¹⁶ Id. at 39.

III. Bonding

Under section 337(j)(1)(B), Commission remedial orders must be transmitted to the President for his review. Unless the President decides to disapprove the Commission's order for policy reasons, the order will become final 60 days after it is issued. During the Presidential review period, the Commission's order is fully effective, except that the statute permits importation under bond. 19 U.S.C. § 1337(j)(3). The amount of the bond is determined by the Commission. Id. Under the Commission's rules, the amount of the bond is determined by taking into account "the amount that would offset any competitive advantage resulting from the alleged unfair methods and unfair acts enjoyed by persons benefitting from the importation of the articles in question." Commission interim rule 210.58(a)(3), 19 C.F.R. § 210.58(a)(3). In determining the approximate measure of "competitive advantage," the Commission generally utilizes the price differential between the complainant's and the respondents' goods.¹⁷

Rosemount proposes a bond during the Presidential review period in the amount of 892 percent. This amount is derived by comparing the import price SMAR Equipment charges its U.S. affiliate, SMAR International, for pressure transmitters with Rosemount's average non-discounted retail price. SMAR argues for a zero bond because, according to SMAR, its prices are now higher than Rosemount's and thus no bond is required to eliminate any competitive advantage. SMAR relies on exhibits purporting to show that SMAR's sales prices are higher than Rosemount's. One exhibit is a Rosemount salesman's

¹⁷ See Certain Crystalline Cefadroxil Monohydrate, Inv. No. 337-TA-293, Commission Opinion at 49-50.

call report over one year old that states that SMAR's prices may be higher than Rosemount's. The other exhibit is a report of a bid evaluation that SMAR lost to Rosemount, allegedly because of price.

The IA suggests a bond of 22 percent. This figure is derived using the Commission's traditional formula of subtracting the respondents' prices from the complainant's price and dividing the resultant figure by the respondent's price. In this case, the IA subtracted SMAR's estimated average sales price for pressure transmitters from Rosemount's estimated average sales price for similar models and then divided the resultant figure by SMAR's estimated average sales prices. The estimated average prices relied on by the IA in making his calculation were given by employees of complainant and respondents during the hearing on temporary relief. ¹⁸

Rosemount and SMAR have not proposed acceptable bonds. Rosemount's method of calculating the bond does not compare prices at the same level of trade. Such a method of calculating the bond was specifically rejected by the Commission in Certain Crystalline Cefadroxil Monohydrate, Inv. No. 337-TA-293 (March 1990). SMAR's position that there should be a zero bond is not supported by the evidence it has proffered. SMAR's documents purporting to show that SMAR's prices are higher than Rosemount's do not reveal either SMAR's bid price or the models of pressure transmitter concerned. The bid report aggregates Rosemount's bid price for spare parts and pressure transmitters, and does not state that Rosemount won the bid strictly because it bid a lower price.

¹⁸ TEO Tr. 154; 356

Rosemount argues that because it believes the entered value of SMAR's pressure transmitters is artificially low, the Commission's traditional method for calculating bonds should not be used. Rosemount, however, neither substantiates its claim that SMAR's entered values are artificially low, nor propose an alternative method for calculating the bond that would take an artificially low entered value into account. In the alternative, Rosemount proposes that if the Commission uses its traditional method of calculation, it should use actual sales prices rather than estimated average prices. Rosemount points out that the record contains evidence on the prices submitted by Rosemount and SMAR in bids for the same equipment.¹⁹ Using those prices in the Commission's traditional formula for calculating bonds would result in a bond of 38 percent.

We agree with Rosemount that using actual prices, rather than estimated average prices is more in keeping with Commission practice.²⁰ Accordingly, we determine that a bond of 38 percent, an amount calculated by comparing prices actually bid by Rosemount and SMAR in head-to-head competition, is appropriate in this investigation.

¹⁹ Rosemount Exhs. 24 and 40

²⁰ See e.g. Certain Foam Ear Plugs, Inv. No. 337-TA-184, USITC Pub. 1671 at 4. (September 1988); Certain High Intensity Retroreflective Sheeting, Inv. No. 337-TA-268, USITC Pub. 2121 at 12. (September 1988); Certain Erasable Programmable Read Only Memories, Inv. No. 337-TA-276, USITC Pub. 2196 (May 1989); Certain Crystalline Cefadroxil Monohydrate, Inv. No. 337-TA-293 (March 1990)

V. Outstanding Motions

A. SMAR's Motion for Reconsideration

SMAR has petitioned for reconsideration of the Commission's determination not to review the ALJ's ID. Commission interim rule 210.60, 19 C.F.R. § 210.60, which governs petitions for reconsideration states:

Any petition filed under this section must be confined to new questions raised by the determination or action ordered to be taken thereunder and upon which the petitioner had no opportunity to submit arguments.

The Commission's decision not to review the ID did not raise any issues that were not raised by the ID, and SMAR's petition for reconsideration simply repeats the arguments it made in its petition for review of the ID. Accordingly, we deny SMAR's petition because it is not in compliance with the Commission's rules.

B. Rosemount's Motion for Early Relief

On September 17, 1990, Rosemount sent a letter to the Acting Chairman requesting that the Commission render its determination on remedy, bonding, and the public interest prior to October 14, 1990, although the statutory deadline in this investigation is October 22, 1990. Copies of the letter were served on counsel for SMAR and the IA. The Commission has determined to treat Rosemount's letter request as a motion.

Rosemount requested that the Commission make its determinations on remedy prior to October 14, 1990, because an industry trade show was scheduled to begin in New Orleans, Louisiana on that date. Rosemount states that SMAR has contracted for a "good-sized" sales booth at the trade show and is

intending to promote, market, and sell pressure transmitters that the Commission has determined are in violation of section 337. Rosemount maintains that SMAR's activities at this show will significantly damage Rosemount, particularly if SMAR "can truthfully say to potential customers that the Commission has not issued any exclusion or cease and desist order, implying, of course, that none will ever be issued." ²¹

SMAR opposes an early determination by the Commission, pointing out that the Commission has already rejected Rosemount's request for expedited relief during the temporary relief phase of the proceedings on the ground that sales by SMAR during the period of the investigation would be insignificant. SMAR also notes that even if it made any sales at the trade show, SMAR would not be able to import its products until after the Commission had issued its determination on permanent relief. Thus, SMAR argues, complete relief would be afforded if the remedial order is issued at the time of the statutory deadline. The IA does not oppose the early issuance of any remedial order, but argues that Rosemount's allegations regarding the trade show do not require the Commission to do so.

We do not find Rosemount's reasons for issuing temporary relief early in this investigation to be persuasive. Since we have determined not to issue cease and desist orders, early relief would not preclude SMAR from marketing its products at the October 14, 1990, trade show. We find unrealistic Rosemount's fear that it will be significantly damaged by SMAR "implying" to customers that the Commission will never issue relief against SMAR.

²¹ Rosemount's letter to Chairman Brunsdale dated September 17, 1990, at p.2.

C. Rosemount's Motion to Strike

As discussed above, SMAR attached an affidavit to its reply brief on the issues of remedy, the public interest, and bonding by the secretary and treasurer of SMAR International, Mr. Selli. Mr. Selli's affidavit concerns the amount of infringing inventory held by SMAR International.

Rosemount has moved to strike the Selli affidavit on the grounds that the affidavit is inadmissible hearsay because it is an out of court utterance. We disagree. Mr. Selli's affidavit is a sworn statement of facts personally known to him. Moreover, Mr. Selli testified to essentially the same facts during the temporary relief proceedings.²² Rosemount had an opportunity to cross-examine Mr. Selli on this testimony during the temporary relief hearing, but did not do so. In any event, administrative agencies are not bound by the Federal Rules of Evidence, and may consider any probative evidence.²³ Accordingly, we deny Rosemount's motion to strike.

In summary, the Commission has determined to issue a limited exclusion order prohibiting the importation, except under license, of pressure sensors or pressure transmitters manufactured by SMAR Equipment by means of a process covered by claims 1-4 of the '413 patent for the remaining term of the patent. During the presidential review period, respondents are required to post a bond of 38 percent of the entered value of pressure transmitters and pressure sensors made in accordance with the claims of the '413 patent.


²² TEO Tr. 366-7.

²³ See, e.g., McCormick on Evidence, Third Edition, pp. 1009-1010.

SMAR's request for reconsideration of the Commission's determination that there has been a violation of section 337 is denied. Rosemount's motion to strike an affidavit submitted by SMAR is denied. Rosemount's motion for early relief is denied.

Certificate Of Service

I, Kenneth R. Mason, hereby certify that the attached NOTICE, ACTION AND ORDER, was served upon Deborah J. Kline, Esq., and George C. Summerfield, Esq., and upon the following parties via first class mail, and air mail where necessary, on October 22, 1990.



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PUBLIC VERSION

UNITED STATES INTERNATIONAL TRADE COMMISSION
Washington, D.C. 20436

In the Matter of)
)
CERTAIN PRESSURE TRANSMITTERS)
)

Investigation No. 337-TA-304

INITIAL DETERMINATION

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PROCEDURAL HISTORY

On September 15, 1989, Rosemount Inc. filed a complaint and motion for temporary relief with the U.S. International Trade Commission alleging violations of Section 337 of the Tariff Act of 1930 as amended (19 U.S.C. § 1337). The complaint alleged that the importation of certain pressure transmitters infringed U.S. Letters Patent 3,800,413.

On October 17, 1989, the Commission issued a notice of investigation that was published in the Federal Register on October 20, 1989. (54 Fed. Reg. 43145.) The notice instituted an investigation to determine:

whether there is a violation of subsection (a)(1)(B)(i) or subsection (a)(1)(B)(ii) of section 337 in the importation into the United States, the sale for importation, or the sale within the United States after importation of certain pressure transmitters made abroad by a process covered by claims 1, 2, 3 or 4 of U.S. Letters Patent 3,800,413, and whether there exists an industry in the United States as required by subsection (a)(2) of section 337.

The motion for temporary relief was granted in an initial determination after a TEO hearing. The Commission reversed the initial determination on temporary relief, denied temporary relief, and substituted its decision for the initial determination. Although the Commission agreed with the most of the ultimate findings of fact in the initial determination, it based its findings on different reasoning. An appeal of the Commission's TEO decision is pending in the Federal Circuit. Meanwhile, a hearing on permanent relief has been completed, and this is the initial determination on permanent relief.

FINDINGS OF FACT AND CONCLUSIONS

JURISDICTION

Complainant Rosemount, Inc. is a Minnesota corporation with its offices at 12001 Technology Drive, Eden Prairie, Minnesota 55344. The respondents are SMAR Equipment, Rua Guilherme Bolte 1422, Sertaozianno, Sao Paulo, Brazil, and SMAR International Corporation, 3505 Veterans Highway, Suite C, Ronkonkoma, New York 11779.

The Commission has jurisdiction over the subject matter of this case (set forth in the notice of investigation) under Section 337 of the Tariff Act as amended. All parties litigated the issues, thereby consenting to the Commission's personal jurisdiction over them.

THE PATENT ISSUES

No significant new facts distinguish the record made in the hearing on permanent relief from the record made in the hearing on temporary relief. Since the TEO initial determination was issued more time has been available to review the prior art and the other evidence in the record. As a result, some tentative findings in the initial determination have been reconsidered and revised. Other findings remain unchanged.

The one area in which respondents offered significant new evidence related to one transducer with a revised design which respondents had imported into the United States. Initially this transducer was received in evidence, and a witness testified about it. Later respondents requested that they be permitted to withdraw the exhibit from the record. Respondents' counsel represented on the record that he wanted to give the imported transducer to the complainant so that it could be cut open for examination. (Up to that time, complainant had not been authorized to cut

respondents' exhibit open.) Based on the lawyer's representation, respondents were allowed to withdraw the exhibit from the record for this purpose. The parties were advised that respondents would be able to substitute an exhibit just like the one withdrawn, because the withdrawn exhibit would have been cut into pieces.

Respondents failed to give the exhibit to complainant for examination to determine how it had been made. Later, respondents reported that this transducer had been sold to a customer before it had been offered into evidence, and after it was withdrawn it had been delivered to the customer. Respondents were unable to substitute another exhibit just like the one which had been imported and about which testimony had been given. There does not seem to be any way to determine whether any transducer is exactly like the one that was imported, because that transducer is no longer available for comparison. Complainant did not consent to the admission of another transducer offered as a substitute for the withdrawn exhibit, and respondents made no timely effort to reopen the hearing to offer a new exhibit into evidence with a sponsoring witness. Upon a motion from complainant the testimony relating to the missing exhibit was stricken.

Additional evidence offered by both sides on other issues has been considered in this initial determination on permanent relief.

THE '413 PATENT AND THE '390 PATENT

The '413 patent (Rosemount Ex. 2) is a process patent relating to differential pressure transducers of the capacitor type. The inventor, Roger L. Frick, filed an application on July 26, 1971 that resulted in the '413 patent. The '413 patent, the only patent in suit, was issued on April 2, 1974.

The application resulting in the '413 patent was a division of an earlier application filed on October 27, 1969. The earlier application resulted in the issuance of the '390 product patent on November 9, 1971. (SMAR Exs. 5, 8.) The '390 patent has expired.

The '390 patent discloses a differential pressure transducer of the capacitor type, and the '413 patent claims a process by which this pressure transducer can be made.

A differential pressure sensor or sensing cell measures pressure, while the device containing the pressure sensor is called a pressure transmitter or transducer. The whole unit conveys differential pressure information to a unit where the pressure can be read.

The notice of investigation refers to pressure transmitters. A transmitter sends information from one place to another, while a transducer conveys that information from one power system to another power system. There is little or no difference between a pressure transmitter and a pressure transducer as those terms are used in this field. (Tr. 82-3.)

The differential pressure transducer of the '390 patent is of the capacitor type. That is, it contains a differential pressure sensor of the capacitor type. This sensor measures the differential flow of fluids (liquids or gases), and it is used in many manufacturing processes.

A common way in which the differential transducer is used is to measure flow in a pipe. Flow is measured by putting an obstruction into the pipe, causing the flow to have higher pressure upstream than downstream of the obstruction. The upstream fluid is diverted to one side of the differential transducer, and the downstream fluid is diverted to the other side of the differential transducer. The difference between the upstream

and downstream pressure is measured. This difference is directly related to the unobstructed flow rate in the pipe.

The differential pressure transducer has one inlet on one side for the upstream flow and another inlet on the other side for the downstream flow. When the sensor measures the difference between the pressure in the upstream and the downstream flow, it can produce an electrical signal telling someone at a remote place what the rate of flow in the pipe is. (TEO Tr. 13, 14, 382.)

Column 1 of the '413 and the '390 patents describes the solutions offered by these patents to the practical problems encountered in connection with prior art differential pressure sensors, problems such as too much pressure on one side destroying parts of the sensor and affecting the accuracy of the measurement, and lack of stability of the device affecting the accuracy of the measurement. The invention as described in the patent specification offered solutions such as:

- (1) the use of a heavier housing to increase stability,
- (2) separating the sensing diaphragm in the central chamber from the outside fluid to be measured by putting the sensing diaphragm in an inner chamber surrounded by oil and connecting the inner chamber to an outer chamber by a tube carrying the oil to the outer chamber that is isolated by another diaphragm from the outside fluid to be measured,
- (3) using the filling tubes as the wire to the outside circuitry, and
- (4) using the sides of the central chamber to protect the sensing diaphragm by allowing it to bottom out gently in case of overpressure on either side of the diaphragm.

The differential pressure transducer disclosed in the '390 and '413 patent specifications includes a central chamber filled with oil. The central chamber is divided in half by a flexible metal sensing diaphragm

(or measuring diaphragm) welded in place to keep the oil on one side of the central chamber away from the oil on the other side. This forms two sensing chambers inside the central chamber (48 and 49 in Fig. 4). A tube leads from the sensing chamber on each side of the central chamber to a second chamber or isolation chamber. There is an isolation chamber just inside the border of the sensor on each side of the device. A metal isolation diaphragm (44 and 45 in Fig. 4) closes off each isolation chamber from the fluid to be measured, which flows by the second chamber just outside of the isolation diaphragm. The isolation diaphragm on each side of the sensor separates the second chamber on each side from the fluid to be measured on that side. The isolation diaphragms are welded into place to provide a completely sealed unit, keeping the fluid to be sensed (in chambers 21 and 22, Fig. 2) separate from the oil in the sensing unit. The inner sensing chambers, the isolation chambers, and the tubes connecting each sensing chamber to its corresponding isolation chamber are filled with oil.

The pressure in the fluid being measured is conveyed into the outer isolation chambers (21 and 22) through the flexible isolation diaphragms. (Col. 3, line 49.) Movements of the isolation diaphragms are communicated through the oil in the isolation chambers and the tubes leading to the inner sensing chambers, where the movement is sensed by the sensing diaphragm.

In the two inner sensing chambers, the pressure on one side of the sensing diaphragm will be greater than the pressure on the other side. The side on which the pressure is higher will push the sensing diaphragm slightly into the other chamber.

The walls of each sensing chamber are slightly concave opposite the sensing diaphragm, like a shallow dish. (See Figure 2.) Any excessive pressure on one side of the sensing diaphragm would cause the sensing diaphragm to bottom out gently against one of the concave walls on the opposite side, where it would be supported and protected from rupture.

The central sensing chamber is set into a massive metal housing that increases stability. An insulating material (in the specification this is glass) is fused to this metal housing on the concave walls of the central chamber.

The '413 patent requires a sensing cell of the capacitor type, and the patent specification describes a capacitor-type sensing cell. The flexible metal sensing diaphragm dividing the two inner sensing chambers forms one central capacitor plate (the first capacitor plate). This sensing diaphragm functions as one of the two required plates for the capacitor in each inner sensing chamber. The concave wall opposite the sensing diaphragm in each sensing chamber is covered with a thin metal coating. This forms a rigid second capacitor plate. (Col. 3, lines 12-13.) The second capacitor plate on each side of the sensing diaphragm makes electrical contact with the walls of the tubes 34 which lead to the read-out circuitry outside of the device. No separate wiring is required. (These tubes also are used to fill the device with oil before the device is sealed.)

To measure the differential pressure in the two second or isolation chambers, a measurement is made of the capacitance on each side of the sensing diaphragm. The capacitance between the first capacitor (the sensing diaphragm) and each of the fixed second capacitors in the inner

sensing chambers is measured. As the flexible first capacitor moves into one chamber or the other in response to the pressure exerted on the sensing diaphragm, the capacitance in each of the inner sensing chambers changes. When the distance between the two capacitor plates on one side becomes smaller than the distance between the two capacitor plates on the other side, the difference in capacitance between the two sides is detected by reading the two signals carried out through the fill tubes, and this shows the different pressure of the flow on each side of the sensor. This difference in pressure then is used to determine the pressure of the unobstructed flow in the pipe itself.

There is a metal fill tube connecting the fixed second capacitor plate in each chamber to the read-out circuitry. The fill tube carries an electrical signal from the fixed second capacitor plate in each chamber to the read-out circuitry. (In the Rosemount device a wire is welded to the other end of the fill tube, and the wire carries the signal to the read-out circuitry.) This avoids the need for separate wiring attached to the capacitor plate inside the sensor.

CONSTRUCTION OF TERMS IN THE CLAIMS

The '413 process patent describes the steps by which the product of the '390 patent (now expired) can be made.

In claims 1-4 of the '413 patent the process steps are claimed more broadly than the specific product depicted in the figures of the patent or disclosed in the patent specification. In comparing the prior art to the claims, the prior art is compared to the claims, not to the product disclosed in the patent specification.

The patent specification and the prosecution history are used to construe or to limit the scope of the patent claims only when there is some ambiguity in the words used in the claim.

Some terms in the claims of the '413 patent require construction. The construction of these terms will be considered in the context of all of the patent claims, the patent specification, the prosecution history, the testimony of the experts as to what these terms meant to those working in this field, and the ordinary dictionary meaning of the words. See ZMI Corp. v. Cardiac Resuscitator Corp., 844 F.2d 1576, 1579, 6 U.S.P.Q.2d 1557, 1560 (Fed. Cir. 1988).

The claims will be given the same meaning when determining patent validity and infringement. See Smithkline Diagnostics, Inc. v. Helena Laboratories Corp., 859 F.2d 878, 882, 8 U.S.P.Q.2d 1468, 1471 (Fed. Cir. 1988).

1. Pressure transducer

The term "pressure transducer" is used in claim 4 of the '413 patent.

To those working in this field, pressure transducer means about the same thing as pressure transmitter. (Tr. 82-83.) There is no evidence that the inventor or anyone working in the field in 1969 considered that there was a serious distinction between a pressure transmitter and a pressure transducer. In simple terms, the dictionary discloses that a transmitter sends electrical information from one place to another, while a transducer conveys electrical information from one power system to another power system.

In the context of the '413 patent and the prosecution history of this patent and the '390 patent, the pressure sensor is the instrument that

measures pressure, while a pressure transmitter or transducer conveys the sensed information to another place.

The differential pressure transducer of the '390 and '413 patents is of the capacitor type. That is, it contains a differential pressure sensor that measures differential pressure by using capacitors.

The function of sending the electrical signal from one capacitor plate on each side of the sensor out through the tubes that fill the sensing chambers with oil is part of the function of the transmitter, even though it appears as part of claim 2 relating to the method for making the sensor.

The definition of a pressure transducer is considered below in connection with respondents' contention that the only products covered by the claims of the '413 patent are pressure sensors. (See Domestic Industry.)

2. The cavity

Claims 1-3 require a massive metal housing section having an internal cavity that is filled with insulation material.

Respondents contend that the word "cavity" should be limited to a cavity that has a cup-like cross-section. The '413 patent specification describes a preferred embodiment of the cavity as having a cup-like circular cross-section, but this is not enough to limit the claims to a cup-like cavity.

The word "cavity" as it is used in claims 1-3 is construed as having the simple dictionary meaning including any hollow place. The word hollow implies a space in something else. It need not be a cup-like hollow, but could be a [C].

Respondents contend that when they [C]
[C] they are not filling an internal cavity with insulation material. This question is considered below under Infringement.

3. Fusing

Claims 1-3 require that the insulation material be fused to the metal surface of the cavity.

Respondents contend that fusing requires melting. This construction is supported by the first dictionary definition of the word and by the '413 patent specification which describes fusing glass to metal in a furnace.

Complainant argues that the patent specification supports a broader construction of fusing as meaning forming a bond between the insulating material and the metal surface of the cavity to make a stable structure that does not leak. The patent specification indicates that the insulating material that is fused to the metal surface may be ceramic. Complainant notes that a ceramic has a higher melting point than the types of metals that would be used to form the housing (TEO Tr. 277-8, 598), and argues that the ceramic contemplated by the patent specification could not have been melted to fuse it to the metal, so that fusing must include bonding the two parts together without melting.

This does not necessarily follow. Although ceramic has a higher melting point than most metals, this does not necessarily mean that the inventor intended the word "fusing" to mean only bonding or gluing the insulation to the metal. There is no indication that the inventor thought about the problem of how he would fuse a ceramic to a metal, or of the fact that most metals used in this process would have a lower melting point than ceramic. It would be possible (although perhaps difficult) to melt the

surface of the metal enough to fuse it to the ceramic. The claims require fusing the insulation material to the metal surface but they do not require that it be the insulation material that is melted.

If the term is construed in the context of the patent specification, there fusing is described as a melting process and a furnace is used for fusing. The claims use the rather narrow word "fusing", when broader words like bonding or sealing easily could have been substituted for the word fusing, if the person drafting the claims had desired to do so.

"Fuse" as this word is used in the claims in suit is construed as having its primary dictionary meaning: to combine or blend by melting together; melt. Although there are secondary dictionary definitions that would include bonding as if by melting, and that would not require melting, there is no reason to suppose that the writer of the claims would have used the word "fusing" in the claims if he meant to include other forms of bonding. In claim 2, for example, the claim writer used the word "sealing" which is similar to bonding and broader than fusing. In claims 1, 3 and 4, the claim writer referred to "closing the chambers with a diaphragm", a phrase closer to bonding than to fusing. In the context in which the word is used in the patent specification, the word "fusing" means that the surface of one product is joined to the surface of another product by means of heat or melting.

This issue is considered in connection with the question of whether respondents' ceramic [C] which are bonded to the metal housing meet the fusing requirements of claims 1-3.

OBVIOUSNESS UNDER SECTION 103

Respondents contend that the '413 patent is invalid for obviousness under Section 103 of the Patent Act. The issue under Section 103 is whether the process claimed in the '413 patent would have been obvious to one with ordinary skill in the art in 1969.

In Graham v. John Deere Co., 383 U.S. 1, 17-18, 148 U.S.P.Q. 459, 467 (1966), the Supreme Court required that certain factual inquiries be made before a determination of obviousness is made:

Under Section 103, the scope and content of the prior art are to be determined; differences between the prior art and the claims at issue are to be ascertained; and the level of ordinary skill in the pertinent art resolved. Against this background, the obviousness or nonobviousness of the subject matter is determined. Such secondary considerations as commercial success, long felt but unsolved needs, failure of others, etc., might be utilized to give light to the circumstances surrounding the origin of the subject matter sought to be patented. As indicia of obviousness or nonobviousness, these inquiries may have relevancy.

To determine whether a patent claim is invalid as obvious under Section 103, what one with ordinary skill in the pertinent art would have known at the time of the invention must be considered.

ORDINARY SKILL IN THE ART

The initial application that resulted in the '390 and '413 patents was filed on October 27, 1969, and no earlier date of invention is claimed. It is as of this date that ordinary skill in the art must be defined.

The pertinent art relates to designing differential pressure transducers.

The hypothetical person with ordinary skill in the art is deemed to have been aware of all relevant prior art before October 27, 1969. Such a

person would have been a college graduate with a bachelor's degree in engineering or physics (TEO Tr. 180, 566), or someone with an equivalent amount of hands-on experience working with differential pressure transducers.

The '413 patent itself discloses a prior art patent with a differential pressure transducer of the capacitive type in which the fluid being measured for pressure acted directly upon a capacitive sensing diaphragm. The '413 patent notes that this prior art patent did not disclose isolation diaphragms. The '413 patent describes another prior art patent that had a sensor using a liquid-filled chamber, but it used a different sensing unit. The '413 patent describes its own invention as combining capacitive sensing with the capacitor plates isolated from the fluid being sensed, positive overpressure protection, and stable sensing characteristics. (Col. 1, SMAR Ex. 2).

One with ordinary skill in the art in 1969 would have recognized that differential pressure transducers had two problems. He would have known (1) that sudden bursts of pressure in the fluid being measured could injure a delicate sensing diaphragm, and (2) that prior art differential sensors had problems with accuracy. The invention as described in the '413 patent offered solutions to these two problems.

One with ordinary skill in the art in 1969 also would have known what was disclosed, taught or suggested in the prior art that was cited in the patent and in any other prior art.

THE SCOPE AND CONTENT OF THE PRIOR ART

There is a statutory presumption of patent validity under the Patent Act (35 U.S.C. § 282). The respondents have the burden of overcoming this

presumption by proving by clear and convincing evidence that the combination of elements in each claim was either taught by or suggested in the prior art.

To prove obviousness under Section 103, respondents rely principally upon four prior art patents:

1. The Prell '719 patent
2. The Coon '769 patent,
3. The Wolfe '386 patent, and
4. The Wolfe '385 patent

The three patents other than the Prell patent were cited expressly by the patent examiner in connection with the application for the '413 patent.

The Prell patent (SMAR Ex. 7) was not brought to the attention of the patent examiner in the prosecution of the '413 patent, but it was considered in the prosecution history of the '390 patent. It should have been considered by the patent examiner in the '413 patent prosecution because it had been considered in the parent application from which the '413 patent application was derived. (SMAR Exs. 2, 5 and 8.) Under Section 707.05 of the Manual of Patent Examining Procedure, the examiner of the '413 patent application was required to review the prior art considered during the prosecution of the parent application. It is not clear from the record that he did so, and if he did, there is no explanation of why he failed to cite this very relevant reference as prior art. Complainant is not entitled to rely upon an assumption that the examiner in the '413 prosecution considered the Prell patent. Not only was the Prell patent not cited in the '413 patent, but the patent applicant in the prosecution of the '390 parent application misrepresented what Prell disclosed. (See Inequitable Conduct as a factor in Section 103, below.)

Respondents also rely upon other prior art: The Titus patent, U.S. Patent No. 2,627,750, the Jones patent, U.S. Patent No. 2,752,949, the Werner patent, U. S. Patent No. 3,195,028, the Trezell patent, U.S. Patent No. 3,342,072, the Bristol '594 patent, U.S. Patent No. 3,372,594, and the Bristol '945 patent, U.S. Patent No. 3,350,945.

Finally, respondents rely upon differential pressure transducers that were sold before 1969 as prior art, but the record does not show what most of the pressure transducers sold before 1969 were like.

There is some evidence in the record relating to a differential pressure transducer sold before 1969 that isolated seawater from the fluid that would measure the pressure of the seawater. (Tr. 270-282.) Respondents tried to obtain more information about this transducer, but were able to find only an incomplete experimental device with a gold diaphragm. Respondents failed to prove that this sample was in the prior art, and failed to get the sample into evidence over objections. Assuming that a device to measure the pressure of seawater was available to the public for sale, was sold and shipped, there is not enough evidence in the record to show how the device was constructed. The record does not show whether this device would have been invalidating prior art.

The prior art relied upon by the respondents disclosed products rather than processes. When a pressure transducer is clearly described in a prior art product patent, an assumption is made that someone with ordinary skill in the art could have made this product. If this were not the case, a prior art patent would be invalid under Section 112 for failure to disclose enough to allow one with ordinary skill in the art to use the invention.

Respondents could rely upon prior art disclosures of products rather than processes for making these products.

The '413 patent in suit describes a process by which the '390 product could be made, and the process steps claimed in the '413 process patent as a practical matter were made obvious by the disclosures in the specification of the now-expired '390 product patent. Nevertheless, the claims of the '413 process patent are not anticipated or made obvious as a matter of law by the '390 product patent because they both grew out of the same patent application, and a division was required by the patent examiner. (See Double Patenting, below.)

The Prell patent

The Prell patent (SMAR Ex. 7) discloses a diaphragm-type variable-reluctance pressure transducer (TEO Tr. 563-564), rather than the capacitor-type pressure sensing cell described in the claims of the '413 patent.

Prell discloses a metal measuring diaphragm stretched across the inside of a central chamber. The measuring diaphragm divides the central chamber into two inner chambers. On the outside of each inner chamber opposite the measuring diaphragm there is an isolation or seal diaphragm welded to the wall to seal the inner chamber and separate the fluid on the outside that is being measured from the fluid inside the chamber. (Col. 1 and 3). The isolation diaphragm isolates the outside fluid that is being measured from the sensor, which is closer to the center of the central chamber.

The sensor is located in one of the two inner chambers. It measures the pressure of the fluid outside the central chamber by measuring the

pressure in the central chamber. The sensor includes a variable reluctance transducing device, a cylindrical spring, and a registration diaphragm. (Tr. 342-344.) The chamber in which the sensor is located is filled with fluid from fill tubes, and another tube carries this fluid from the sensor to each isolating diaphragm. Pressure is conveyed through the fill fluid inside the chamber from the isolation diaphragm to the measuring diaphragm. The isolation diaphragm is corrugated so that it can move, and the fluid dampens it to reduce the effects of shock from outside pressure and vibrations. The tube carrying fluid from the measuring diaphragm to the isolation diaphragm runs into one thin chamber in the isolation diaphragm from another thin chamber in the measuring diaphragm.

The measuring diaphragm cannot bottom out on a concave wall when pressure is too high, but mechanical stops are provided to restrain the limits of travel, and the isolation diaphragm can bottom out on a piece of metal that provides a back-up to the diaphragm. (TEO Tr. 612; SMAR Ex. 7, col. 3, lines 56-67, col. 4, lines 58-73.)

Hermetically-sealed electric wires carry the signal showing the pressure measurement from the sensor to the outside.

Prell does not disclose the clamping steps of claim 4 of the '413 patent.

The Coon patent

The Coon patent (SMAR Ex. 5, attachment) discloses the fusing of glass (an insulating material) to the metal housing. It also uses a diaphragm-type capacitance transducer.

The Wolfe '385 patent

The Wolfe '385 patent (SMAR Ex. 5) was issued on September 12, 1961. This patent discloses essentially the same sensing unit as that disclosed in the Wolfe '386 patent. (Tr. 267.) The '385 patent does not disclose the massive metal housing of the '413 patent, or the isolation chambers and closed system to carry oil from the isolation chambers to the sensing diaphragm. It discloses a number of elements claimed in the '413 patent, and it discloses an improved flexible clamping process not found in the Wolfe '386 patent. Instead of using the single unit spring ring disclosed in the Wolfe '386 patent, the sensing unit disclosed in the Wolfe '385 patent uses a number of individual clamps that are spaced apart from one another. These clamps do not exert a force on one another as temperature variations occur. (Tr. 268.)

The Wolfe '386 patent

The Wolfe '386 patent (also issued on Sept. 12, 1961) discloses the diaphragm-type capacitance transducer of the '413 patent. (SMAR Ex. 6.) The diaphragm is stretched across an inner chamber dividing the chamber into two metal housing sections. Each metal housing section has an internal cavity filled with insulation material. Slightly concave sides are formed in the insulation material. A layer of conductive film is deposited on each concave surface. The sensor compares the capacitance changes on the two sides of the chamber as the central diaphragm is deflected.

The patent does not disclose the massive metal housing of the '413 patent, or the closed system to carry oil from the isolation chambers to the sensing diaphragm. The patent does not teach a second (isolation)

chamber, a fluid passage means between the first and second chambers of each cell section, or filling the first and second chambers with fluid to transmit pressure on the second diaphragm to the sensing diaphragm.

The dielectric space between the fixed capacitor plate (the side of the metal housing) and the moving diaphragm in the center is not filled with oil that is separated from the fluid being measured. There is no isolation diaphragm to separate the fluid being measured from the fluid within the capacitor itself. The dielectric will be whatever fluid is being measured, so that the sensor will not be consistent in its measurements if different fluids are measured. (TEO Tr. 615.)

The Wolfe '386 patent discloses a pressure transmitter in which a resilient spring ring is positioned over the plates which hold the insulation sections together. The ring is compressed to provide the needed force and then held in place by a threaded retaining ring. (TEO Tr. 501, Tr. 245, 248-49.) This internal assembly is placed in a heavier set of rings which are bolted together. Soft elastomer seals bear down on the metal case of the sensor, supporting the internal assembly and providing leak-tight connections. (Tr. 246, 249-50, 290-91.)

Other prior art

When the prior art relied upon by respondents is not more pertinent than that considered by the Patent and Trademark Office, the burden of overcoming the presumption of patent validity is greater than when respondents rely upon prior art that was not considered by the patent examiner. Hughes Aircraft Co. v. United States, 717 F.2d 1351, 1359 (Fed. Cir. 1983).

The Trekell patent and the two Bristol patents were cited as prior art in the '413 patent specification.

The Werner patent is not as pertinent to the claims of the '413 patent as the Wolfe '386 patent that was cited in the '413 patent.

The Titus patent and the Jones patent are not as pertinent to the claims of the '413 patent as the Prell patent. The evidence that the examiner of the '413 patent application considered the Prell patent carefully is not persuasive because the Prell patent is not cited in the '413 patent. The Prell patent is the strongest prior art relied upon by respondents because it is likely that it was not given serious consideration by the patent examiner.

A COMPARISON OF THE PRIOR ART TO THE CLAIMS IN ISSUE

Claims 1-3

Claims 1-3 of the '413 patent (Rosemount Ex. 2) are as follows:

1. A method of constructing a pressure sensing cell assembly of the capacitor type including the steps of providing massive metal housing sections, at least one of said sections having an internal cavity, filling said cavity with an insulation material and fusing said material to the metal surfaces defining said cavity, forming a concave surface in said insulation material after it has been fused to the cavity surface, depositing a layer of electrical conductive material on said concave surface to form a first capacitor plate, enclosing the concave surface with a sensing diaphragm sealed to said one housing section to form a sensing chamber, said sensing diaphragm forming a second capacitor plate, forming a second chamber in said one housing section, closing said second chamber with a second diaphragm, providing fluid passage means between said first and second chambers, and filling said first and second chambers and said fluid passage means with a fluid to transmit pressure on said second diaphragm to said sensing diaphragm.

2. A method of constructing a pressure sensing cell assembly of the capacitor type including the steps of providing massive metal housing sections, each of said

housing sections having an internal cavity, filling said cavities with an insulation material and fusing said material to the metal surfaces defining said cavities, forming concave surfaces in said insulation material, providing electrically conductive tubular members opening to said concave surfaces and passing out the walls of said housing sections, depositing a separate layer of electrical conductive material on each of said concave surfaces electrically connected to said tubular members, sealing said sensing diaphragm means to said housing sections to form first and second sensing chambers, said housing sections having isolation chambers defined therein with isolation diaphragm means, providing fluid passage means opening between each of said isolation chambers and a corresponding sensing chamber, filling said isolation chambers, said fluid passage means and said sensing chambers with a fluid through said tubular members sealing said tubular members after the filling step, and connecting electrical lead means to said tubular members after they have been sealed.

3. A method of constructing a pressure sensing cell assembly of the capacitor type including the steps of providing massive metal housing sections, at least one of said sections having an internal cavity, filling said cavity with an insulation material and fusing said material to the metal surfaces defining said cavity, forming a concave surface in said insulation material after it has been fused to the cavity surface, depositing a layer of electrical conductive material on said concave surface to form a first capacitor plate, enclosing the concave surface with a sensing diaphragm sealed to said one housing section, said sensing diaphragm forming a second capacitor plate, providing a second chamber closed by a second diaphragm on said one section providing fluid passage means between the area enclosed between the concave surface and the sensing diaphragm and said second chamber, filling said second chamber, said fluid passage means and the area enclosed by said sensing diaphragm with fluid to transmit pressure on said second diaphragm to said sensing diaphragm.

The Prell patent

The first three claims of the '413 patent claim a method of constructing a pressure sensing cell assembly of the capacitor type. This type of sensing cell was not disclosed in Prell, but was disclosed in other

prior art patents, such as the Wolfe '386 patent and the Coon patent. (TEO Tr. 612.)

The Prell patent does not disclose fusing the insulation material to the metal surfaces of the cavity, or forming a concave surface in the insulation material after it has been fused to the cavity surface. It does not disclose depositing a layer of electrical conductive material on the concave surface to form a first capacitor plate, or enclosing the concave surface with a sensing diaphragm sealed to one housing section to form a sensing chamber, the sensing diaphragm forming a second capacitor plate.

The Prell patent uses a separate sensing unit on one side of the central chamber. The sensing unit is connected by a magnetic bar to the sensing diaphragm, and movement of the magnetic bar changes the inductance of two coils in the sensing unit. (TEO Tr. 560-4). Prell does not use the sensing diaphragm itself as part of the electrical circuitry.

Prell does not disclose providing electrically conductive tubes for filling the sensing cell with fluid and electrically connecting the electrically conductive material on each of the concave surfaces to electrical leads, as required by claim 2. In Prell, separate wiring to the outside is required, while in the '413 patent the tubes that are used to fill the cavities with oil are also used as electrical conductors for the capacitor plate in the sensing cell.

In Prell, when there is too much pressure, the isolation or seal diaphragm bottoms out against a back-up to prevent damage. In the '413 patent, the sensing diaphragm bottoms out before the isolation diaphragms are affected. Prell teaches the use of mechanical stops to limit the movement of the sensing diaphragm, but does not teach that there should be

a concave wall surface on which the sensing diaphragm can bottom out. (The Wolfe '386 patent does teach this.)

Wolfe '385 and '386 patents

The Wolfe '386 patent discloses a capacitor-type pressure sensor and the use of the movement of a diaphragm stretched across a chamber to measure pressure differentials separated by the diaphragm.

Like the '413 patent, Wolfe discloses a diaphragm stretched across a chamber with slightly concave sides. The concave sides offer protection to the measuring diaphragm which can bottom out on the concave wall when the diaphragm is under too much pressure. (See Col. 6, Fig. 2, and Tr. 247-248.)

The '386 patent discloses that metal tubes may be used to connect the electrodes to external terminals (SMAR Ex. 6, Col. 6, Tr. 247-248), but in this patent these tubes do not perform the function of bringing in the fill fluid to the sealed chambers claimed in the '413 patent. Fill tubes were disclosed in Prell. It would have been obvious to one with ordinary skill in the art to use the Prell fill tubes as an electrical connection, once the '386 patent taught that tubes used to carry pressure to the sensing diaphragm (as disclosed in Prell) also could be used as the electrical connection to the sensor.

Neither the Wolfe '385 nor '386 patent (SMAR Exs. 5 and 6) discloses forming two chambers on each side of the diaphragm, or isolating the second chamber from the fluid to be measured, or providing passageways between the first and second chambers and filling them with fluid, or providing tubes for filling the chambers with fluid, or using the fill tubes as an electrical connection to the fixed capacitor plates. (TEO Tr. 599-600.)

Neither Wolfe patent discloses the heavy metal housing of the '413 patent.

The Coon patent

The Coon patent discloses the fusing of glass (insulation material) to the metal housing, but it does not disclose the other steps of the '413 patent claims.

No prior art reference cited by the respondents teaches the precise combinations of elements known in the prior art as they are claimed in claims 1-3 of the '413 patent.

Claim 4

Claim 4 can be separated into two parts:

4. A method of making a differential capacitive pressure transducer having a sensing cell of the capacitive type and an outer housing forming a pair of pressure chambers, including the steps of providing two sensing cell sections, each of said cell sections having a first chamber defined in one surface thereof, a spaced second chamber and fluid passage means extending between said first and second chambers of each cell section, placing a sensing diaphragm between said cell sections to close both of said first chambers, closing each of said second chambers with second diaphragms, filling said first and second chambers and said fluid passage means on each cell section with fluid to transmit pressure on said second diaphragm to said sensing diaphragm, ...

[and]

providing a wall member, clamping said sensing cell sections together against said wall member so that said sensing diaphragm is clamped at a first clamping stress level, and clamping said outer housing to support portions of said wall member other than those clamping the sensing cell sections to mechanically support said outer housing on the support portions at a desired clamping force before the outer housing is pressed against said cell sections to thereby support said outer housing without substantially changing the clamping stress on said diaphragm.

The first part of claim 4 claims process steps that do not include the step of fusing the glass to the metal housing.

The Prell patent

Some of the steps in the first part of claim 4 are disclosed by implication in the Prell patent, but there are differences between claim 4 and Prell:

Prell does not disclose a method of making a differential capacitive pressure transducer having a sensing cell of the capacitive type.

Prell does not disclose the step of providing two sensing cell sections, each having a first chamber.

Prell discloses an outer housing forming a pair of pressure chambers, including the steps of providing two sections (although only one contains a sensing cell), and a spaced second chamber and fluid passage means extending between the first and second chambers of each cell section.

Prell discloses placing a sensing diaphragm between two chambers to close both of the first chambers, closing each of the second chambers with a second diaphragm, and filling the first and second chambers and the fluid passage means between each chamber with fluid to transmit pressure on the second diaphragm to a sensor.

The Wolfe '385 and '386 patents

The second part of claim 4 broadly claims the steps of clamping the sensor unit to the outer housing without substantially changing the clamping stress on the diaphragm.

The Wolfe '386 and '385 patents disclose flexible systems for clamping two pressure sensor cells together using a spring ring ('386 patent) or separated spring clips ('385 patent). The '385 patent also describes rigid

clamping systems used in the prior art. But it does not disclose all of the other earlier steps of claim 4 in combination with the clamping steps.

The clamping steps of claim 4 are stated broadly, and they would have been obvious over the prior art Wolfe '386 patent. In fact, the clamping system in the Wolfe '386 patent is superior to that disclosed in the '413 patent, and Rosemount itself now uses flexible bolts to overcome the problems in a rigid clamping system.

Although a rigid clamping system is disclosed in the '413 patent, the broad wording of claim 4 would cover a rigid or a flexible clamping system. The clamping steps in claim 4 as described this broadly also are disclosed in the '385 patent.

It is the combination with the elements in the first part of claim 4 that is not found in the prior art. Although some of the elements of claim 4 are found in the clamping methods taught in the prior art, other elements in the first part of claim 4 are not found in either Wolfe patent or in the more rigid clamping disclosed in the Wolfe '385 patent specification as being known in the prior art.

In summary, the four patents principally relied upon by respondents disclose many but not all of the individual elements of claims 1-4. They do not disclose, teach or suggest the combinations of the prior art that are claimed in the '413 patent.

As discussed above, other prior art discloses the capacitor-type sensor cell, a sensor cell in each chamber divided by a sensing diaphragm, and a back-up wall to protect the sensing diaphragm from damage when there is too much pressure on one side of the device.

The Prell patent, the Wolfe '386 patent, and the Coon patent disclose by implication the individual features making up the process steps in claims 1 and 3 and the first part of claim 4 of the '314 patent, but the features are not all found in a single patent, and there does not appear to have been any teaching or suggestion in 1969 that these elements should be combined.

The step in claim 2 using the fill tubes as an electric conduit from the sensor to the outside circuitry is not taught in the prior art relied upon in this case.

The most relevant prior art to the '390 patent claims (the four prior art patents principally relied upon by the respondents) should have been considered by the Patent and Trademark Office either in connection with the '413 patent application or the related '390 patent application, but it is not likely that the patent examiner for the '413 patent claims studied the prior art Prell patent. Nevertheless, what the Prell patent disclosed fell short of making obvious what claims 1-4 of the '413 patent claimed, even if one concludes that the clamping steps of claim 4 were disclosed in the Wolfe patents.

There was no teaching or suggestion in any of the prior art references cited by respondents of the combinations in the claims of the '413 patent of elements found here and there in the prior art references.

INEQUITABLE CONDUCT AS A FACTOR UNDER SECTION 103

Under the general argument that the patent was obvious in light of the prior art, respondents argue that the claims were allowed by the patent examiner only because of the applicant's inequitable conduct in making misrepresentations to the patent examiner and failing to disclose material

information. Inequitable conduct that would make the patent unenforceable was not raised as a separate issue or litigated.

1. In connection with the prosecution of the '390 patent application, Rosemount's counsel told the patent examiner that the Prell patent did not teach the concept of providing mechanical support against overpressure for the measuring diaphragm before the isolation diaphragms were supported. (Rosemount Ex. 63, Amendment dated March 16, 1971, p. 6; see SMAR Ex. 8, Col. 5; SMAR Ex. 2, Col. 5.) In fact, the Prell patent discloses that in an overpressure condition the sensing cell will move until it is stopped by the edge of the casing or by an adjustable stop, and that this will occur before the seal diaphragm is backed up by the casing. (SMAR Ex. 7, Col. 4).

2. During the prosecution of the '390 patent application, Rosemount's counsel failed to disclose to the patent examiner that the Wolfe '386 patent showed a sensing diaphragm forming two chambers and a sensing diaphragm carrying one part of the capacitor means and the housing surface carrying the other part of the sensing means. (See Rosemount Ex. 63, Amendment, March 16, 1971 at 8-9, and SMAR Ex. 6.)

Rosemount failed to disclose to the patent examiner that the Wolfe '386 patent and the Coon patent teach the use of tubes for fluid passage means and as electrical contacts for the capacitor plate. (SMAR Ex. 6 and SMAR Ex. 5.)

Rosemount failed to call to the attention of the patent examiner the fact that the Wolfe '386 patent disclosed the clamping steps of claim 4.

Although the applicant's representation about the Prell patent was wrong, the patent examiner had the Prell patent in front of him and could have read it himself, as the applicant knew. Respondents failed to prove

that the applicant intended to mislead the examiner. (As noted previously, the patent examiner assigned to the process claims also should have looked at the Prell patent, but it is difficult to believe that he studied it yet failed to cite it as relevant prior art in the '413 patent.)

With respect to the failure of Rosemount to disclose the important features of the Wolfe '386 patent to the patent examiner, the '413 patent shows that the '386 patent was considered by the patent examiner. Perhaps Rosemount should have used more care in what it represented to the patent examiner. Nevertheless, respondents failed to prove the intent to mislead or an intentional failure to disclose material facts known to the applicant.

The Prell patent, the Coon patent, and the Wolfe '386 patent have been considered as prior art under Section 103. Perhaps the applicant's misrepresentation of the Prell back-up feature for the sensing diaphragm in the '390 file history should have some effect on whether one should assume that the patent examiner for the '413 patent looked carefully at the Prell patent even though the Prell patent was cited in the file history of the '390 patent. But this has not been assumed anyway, because Prell was not cited in the '413 patent as prior art. The obligation of the examiner of the '413 patent to look at the prior art cited in the '390 patent was not enough to support an assumption that the examiner really looked at the Prell patent before allowing the '413 patent claims.

SECONDARY CONSIDERATIONS

The secondary considerations support a finding of patent validity:

1. Commercial success:

Complainant has proved that the apparatus claimed in the related '390 patent (now expired) was successful, as shown by the many licenses taken by other companies on the '413 patent. Rosemount receives substantial royalties. (Rosemount Ex. 34.) Rosemount's own sales of electronic pressure transmitters for fiscal year 1989 amounted to \$[C]. (TEO Tr. 113; SMAR Ex. 20.) In each year that Rosemount has been selling pressure transmitters including the patented sensing device there has been substantial growth in sales. (TEO Tr. 104, 108, 113, 118; Rosemount Ex. 41, SMAR Ex. 20, SMAR Ex. 18.)

2. Respondents took apart Rosemount's pressure transmitters and copied the design, with very few changes. SMAR Equipment knew about the '413 patent prior to its design of its sensor module. It obtained a copy of the '413 patent in 1985 (TEO Tr. 340) and later obtained a sensor module made by Rosemount, took it apart, analyzed it, and measured it before designing SMAR's sensor module. (TEO Tr. 305.) Respondents spent very little on research and development prior to selling their first pressure transmitter in the United States. (Rosemount Exs. 5, 53; TEO Tr. 304.)

3. There was a need for the product that is covered by the process of the '413 patent. The capacitance pressure transmitter disclosed in the '390 and '413 patents was an advance over the transmitters in industrial use in the late 1960s.

Rosemount did not prove that others had been trying to fill this need without success. In fact, when Rosemount began to develop industrial

pressure transmitters in 1967, the capacitance transmitter project progressed very quickly and with no noticeable problems, and a parallel project to develop an improved force balance pressure transmitter was abandoned. (TEO Tr. 184-188, 390-92.)

SMAR asserts that there is no connection between the '413 patent and the product's success, and that Rosemount's commercial success has been due to Rosemount's timing and marketing skills. But SMAR's copying of Rosemount's pressure transmitter demonstrates that Rosemount's success was based at least in part on its sales of the particular product covered by the '413 patent.

DOUBLE PATENTING

Respondents argue that enforcing the process claims of the '413 patent amounts to an inequitable extension of the patent monopoly beyond the term of the '390 product patent, and that the four claims of the '413 patent disclose nothing that would not have been obvious when compared to the 22 more detailed claims of the '390 patent. (Rebuttal brief, pp. 1-2.)

Although not so labeled, this is an "obviousness-type" double patenting argument. Under this judicially-created doctrine, an inventor is not permitted to obtain more than one patent where the inventions defined in the claims of the later-issuing patent do not patentably distinguish over the earlier-issued claims. In re Vogel, 422 F.2d 438, 164 U.S.P.Q. 619 (C.C.P.A. 1970); In re Van Ornum, 686 F.2d 937, 214 U.S.P.Q. 761 (C.C.P.A. 1982).

The application for the '413 patent was filed as a result of a restriction requirement imposed by the examiner of the parent application (which later issued as the '390 patent). (SMAR Ex. 5, Amendment under Rule

147, filed in July 1971.) The examiner of the parent application required the applicant to restrict that application to one of two distinct inventions: claims drawn to a pressure cell, and claims drawn to a method of making a pressure cell. The applicant elected the invention defined in the first group, and these claims eventually issued as the '390 product patent. The method claims of the second group were withdrawn and later filed as a divisional application, before the '390 patent issued.

Under these conditions, the '390 patent claims cannot be used as a reference to show that the later-issued '413 claims are obvious or constitute double patenting. Section 121 of the Patent Act, 35 U.S.C. § 121 provides:

A patent issuing on an application with respect to which a requirement for restriction under this section has been made, or on an application filed as a result of such a requirement, shall not be used as a reference either in the Patent and Trademark Office or in the courts against a divisional application or against the original application or any patent issued on either of them, if the divisional application is filed before the issuance of the patent on the other application.

See also Section 804.01 of the PTO's Manual of Patent Examining Procedure (MPEP).

Section 121 "effects a form of estoppel that shields the applicant from having to prove the correctness of the restriction requirement in order to preserve the validity of the second patent." Studiengesellschaft Kohle mbH v. Northern Petrochemical Co., 784 F.2d 351, 228 U.S.P.Q. 837, 844 (Fed. Cir. 1986).

The MPEP, § 804.01A(b), states that the protection of Section 121 does not apply when "the claims of the different applications or patents are not consonant with the [restriction] requirement made by the examiner, due to

the fact that the claims have been changed in material respects from the claims at the time the requirement was made." See Union Carbide Corp. v. Dow Chemical Co., 619 F. Supp. 1036, 229 U.S.P.Q. 401, 418 (D. Del. 1985).

In this case, there were some changes in claims 1-3, and claim 4 was added after restriction was required, but the applicant retained the critical distinction between product claims and method claims. The '390 patent cannot be used as a reference against the '413 patent claims.

It is found that the '413 patent is not invalid under Section 103. Most of the steps in claims 1-4 of the '413 patent were known in the prior art but they are used in new combinations. Respondents have failed to prove by clear and convincing evidence that the specific combinations of the process steps set forth in claims 1-4 of the '413 patent were taught or suggested by the prior art or that they would have been obvious to one with ordinary skill in the art in 1969.

INFRINGEMENT

The '413 patent is a process patent. Complainant Rosemount alleges that respondents practiced this process in a foreign country. Rosemount did not invoke a presumption of infringement under the Process Patent Act, 35 U.S.C. § 295, and could not have done so because respondents allowed reasonable discovery of the processes by which their imported products were made. The burden of proof therefore rested upon complainant to prove by a preponderance of the evidence that respondents imported products infringed the claims of the '413 patent.

Respondents make two types of capacitance pressure transducers: one using a fused-glass sensor and one using a ceramic-filled sensor. Rosemount alleges that the glass version infringes all 4 claims of the '413

patent, and that the ceramic version infringes claims 1, 3 and 4. It is found that the glass-fused version infringes claims 1-4, while the ceramic version infringes only claim 4.

Claims 1-3

1. The glass-fused sensors

To make SMAR's glass-fused sensor, SMAR starts with a [C]

[CONFIDENTIAL]

[CONFIDENTIAL]

[CONFIDENTIAL]

[CONFIDENTIAL]

[CONFIDENTIAL]. (TEO Tr. 629-630.) The melted glass fuses to the metal surface of the cavity. (TEO Tr. 459-462 and Rosemount Phys. Ex. AA and AD.) After the fusing process has been completed, the cavity is [CONFIDENTIAL]. (TEO Tr. 329, 660.) [CONFIDENTIAL] [CONFIDENTIAL]. SMAR then makes a concave surface in the glass (TEO Tr. 632.)

SMAR puts a sensing diaphragm between the two half cells and an isolation diaphragm on the other side of each half cell. The isolation diaphragms close the cell on both sides. (TEO Tr. 634-7.) [C]

[CONFIDENTIAL]

[C] SMAR [CONFIDENTIAL]

[CONFIDENTIAL]

[CONFIDENTIAL]

[CONFIDENTIAL]

[C]. (TEO Tr. 637-641.)

The metal housing section in each half cell forms a fixed capacitor plate for the sensor, while the flexible metal sensing diaphragm forms a second movable capacitor plate for the sensor. (TEO Tr. 460, 462.)

[CONFIDENTIAL]

[CONFIDENTIAL]

[CONFIDENTIAL]

[CONFIDENTIAL]

[CONFIDENTIAL]

[CONFIDENTIAL]

[CONFIDENTIAL]

[CONFIDENTIAL]

[CONFIDENTIAL]

[CONFIDENTIAL]

[C]. (TEO Tr. 643.)

Claims 1-3 all require the step of filling a cavity with an insulation material and fusing that material to the metal surfaces defining said cavity. In respondents' glass sensor, glass is used to fill the cavity, and the glass is fused to the metal. Glass is an insulation material.

Each of the additional steps in each of these claims is found in respondents' process for making glass sensors as described above.

Respondents' glass sensors literally infringe claims 1-3.

2. The ceramic sensors

Respondents' ceramic sensors do not infringe claims 1-3 literally or under the doctrine of equivalents. In the ceramic sensors, glass is not fused to the metal housing, nor is ceramic fused to the metal housing.

Under the doctrine of equivalents, the patent claims will be given a broader scope if the patent is a pioneer patent and a narrower scope if the patent offered only a minor improvement in a crowded field of prior art. The '413 patent is not a pioneer patent. Most of the elements in claims 1-3 are found in the prior art, but not in the combination claimed. Respondents have not shown that a massive metal housing was used in prior art sensors, but this element would have been obvious to one with ordinary skill in the art in 1969, who would have known that lack of stability was a problem with sensors in the prior art. (See Col. 1, '413 patent.)

Nevertheless, both the '413 patent and the '390 product patent reflected an advance in the art. Respondents failed to show by clear and convincing evidence that the new combination of known elements found in the prior art was taught or suggested in the prior art. It does not appear to be a surprising or unexpected combination, but it was useful and it did improve the accuracy of differential pressure transducers for industrial uses, and this design has received wide acceptance. (TEO Tr. 188, 391-392.) Under the doctrine of equivalents, however, the '413 patent would be entitled to only a limited range of equivalents.

Claims 1, 2 and 3 require filling a cavity with an insulation material and fusing this material to the metal surfaces defining the cavity. Fusing is clearly distinguishable from other processes that may achieve similar bonding results. The advantages of fusing the glass to the metal are discussed in the patent. (Col. 5, line 9.)

Glass can be fused to metal, because the glass can melt and bond to the metal. A ceramic has a higher melting point than most metals that would be used in this type of sensor, and the ceramic could not easily be

melted so that it would fuse to the metal surface, nor could the metal surface easily be melted to fuse to the ceramic.

In respondents' ceramic sensor, [C]

[CONFIDENTIAL]

[C]. This material is bonded to the metal housing by Loctite, a commercially-available compound for binding things together. When Loctite is used to bind the ceramic filling to the metal, no part of the ceramic is fused to any part of the metal.

It is found that respondents' process for making ceramic sensors does not literally infringe claim 1 or claim 3, because there is no fusing step, nor does it infringe these claims under the doctrine of equivalents.

(Complainant did not allege that the ceramic sensors infringed claim 2.)

The Loctite performs the same function as fusing, i.e., binding two parts together, but it achieves this by a substantially different process step. In column 2 of the '413 patent the fusing step is specifically described as taking place in a furnace. Fusing bonds by melting the surface of one product to the surface of another product. Loctite bonds without heat.

The other elements of claims 1 and 3 are found in the ceramic sensor under the doctrine of equivalents. [C]

[C] in the ceramic sensor is a cavity as required by claims 1 and 3.

In the SMAR process for making a ceramic sensor this cavity is filled by a

[C] which is insulation material that is bonded to the sides of the cavity by Loctite.

Claim 4

Both the process for making respondents' glass sensors and the process for making respondents' ceramic sensors infringe claim 4 literally and under the doctrine of equivalents.

As the final clamping step, SMAR takes [C]

[CONFIDENTIAL]

[CONFIDENTIAL]

[CONFIDENTIAL]. (TEO Tr. 643-646.)

The wall member of the '413 patent includes the internal and external surfaces of the housing that holds the sensing cell. (TEO Tr. 561.)

[CONFIDENTIAL]

[CONFIDENTIAL]

[CONFIDENTIAL]

[CONFIDENTIAL]

[CONFIDENTIAL]

[CONFIDENTIAL]

[CONFIDENTIAL]

[CONFIDENTIAL]

[C]

This clamping process, together with the elements of the sensing cell that are required in the first part of claim 4 and are found in both the ceramic and the glass sensor, infringes claim 4.

If the clamping process alone had been claimed in claim 4, it probably would have been invalid as obvious under Section 103 because the clamping part of the claim alone is so broad that it would cover the rigid prior art clamping methods disclosed in the preamble of the Wolfe '385 patent as well

as the flexible clamping methods disclosed and claimed in the '386 and '385 patents.

Figure 3 and column 4 in the '413 patent disclose what appears to be a rigid clamping system. A number of cap screws on the circumference of a retainer ring around the central sensing diaphragm secure the retainer ring to an annular ring that is welded to the housing section. The cap screws bolt the central sensing diaphragm to the housing without substantially changing the pressure on the sensing diaphragm.

Respondents argue that in the '413 patent, the cap screws bolt the sensing diaphragm to the housing rigidly, causing sheer stress, while in respondents' own system they attach the two cell halves together [C] [C], thus avoiding sheer stress.

Complainant argues that Rosemount uses flexible bolts to avoid sheer stress. But to determine infringement, respondents' process must be compared to the '413 patent process, not to the process now used by complainant. The '413 patent does not disclose the use of flexible bolts to avoid sheer stress.

In short, respondents use [C] instead of rigidly bolting the two sensor halves together. The process of clamping with a [C] should reduce sheer stress more than the clamping structure depicted and claimed in the '413 patent. Respondents are using an improved clamping system closer to [C] [C]. But claim 4 makes no distinction between rigid and flexible clamping, and it is broad enough to encompass both.

It is found that respondents are using a clamping system that is encompassed by claim 4, although respondents are also using the clamping system disclosed in the prior art Wolfe '386 patent.

Claim 4 requires additional elements that were not disclosed in the Wolfe '386 patent, so respondents are not free to practice the Wolfe clamping process without infringing claim 4.

In the TEO part of this case, respondents contended that complainant was barred from arguing that claim 4 is infringed because of the doctrine of prosecution history estoppel. That argument apparently was abandoned in the hearing on permanent relief. The argument was considered and dismissed in the initial determination on temporary relief.

Rosemount has proved that respondents' glass sensors are made by processes that infringe claims 1-3, and that respondents' transducers containing glass or ceramic sensors infringe claim 4. Complainant has not proved that SMAR's ceramic sensors infringed claims 1 or 3, and it did not allege that the ceramic sensors infringed claim 2.

It is found that claims 1-4 of the '413 patent have been infringed.

DOMESTIC INDUSTRY

1. Both transmitters and sensors may be included in the domestic industry.

Rosemount raises a question as to what products are included in the domestic industry.

After the Commission issued its opinion on temporary relief, Rosemount filed a motion for summary determination that there is a domestic industry which exploits the '413 patent. This motion was granted in part on Feb. 12, 1990. (Order No. 4, Initial Determination Relating to Domestic Industry). The ruling, which was not reviewed, was limited to finding that

there is a domestic industry at least relating to pressure sensors covered by the '413 patent. The ruling did not attempt to define the scope of the domestic industry, but found that complainant had met the threshold requirement of showing that there is a domestic industry.

Rosemount now seeks a determination that the domestic industry includes pressure transmitters containing pressure sensors, as well as just pressure sensors. Respondents oppose this.

Claim 4 expressly covers the entire pressure transmitter as opposed to the sensing cell alone. Claim 4 covers a method of making a differential capacitive pressure transducer having a particular kind of sensing unit.

The term "pressure transducer" as used in the claims of the '413 patent means about the same thing as pressure transmitter. (Tr. 82-83.)

The pressure sensor is the instrument that measures pressure, while a pressure transmitter or transducer conveys the sensed information to the outside world. A commercial pressure transmitter would include read-out circuitry of the transmitter. These electrical leads would carry the pressure measurement information to the outside world.

The process for making read-out circuitry is not explicitly claimed in claim 4, which claims a method for making a differential capacitive pressure transducer. The words "pressure transducer" imply that there will be read-out circuitry, and read-out circuitry is disclosed in the '413 patent specification. (Col. 2, lines 18-22; col. 5, lines 32-36.) In claim 4 it is assumed that there will be some kind of read-out circuitry but the type of circuitry that will be used is not critical to that claim.

The question of whether a pressure transmitter can be excluded from this country by the Commission if it contains an infringing pressure

sensing unit that infringes claim 1, 2 or 3 will be considered by the Commission in connection with determining what relief is appropriate if a violation of Section 337 is found. Under the Commission's Rules of Practice the administrative law judge is prohibited from ruling on the issue of remedy.

Order No. 4 treated this issue as a remedy question and it is, in the sense that the Commission can decide that if claims 1-3 have been infringed by a sensing unit, it can exclude the larger product containing the infringing sensing unit.

Nevertheless, the question of whether there is a domestic industry practicing each separate claim of the patent must be decided here. If only claim 4 were found to be valid and infringed, there would have to be proof of a domestic industry relating to articles protected by claim 4 (certain pressure transducers) to support a remedy under Section 337. A pressure transmitter could infringe all of the elements of claim 4, although the sensing unit contained in the transmitter would not infringe claims 1-3 (for example if no fusing occurred).

2. There is a domestic industry practicing each of the claims

To prove a violation of Section 337, complainant must show that an industry in the United States, relating to the articles protected by the patent concerned, exists or is in the process of being established. 19 U.S.C. § 1337(a)(2).

Section 337(a)(3) sets forth the following criteria for the existence of a domestic industry in patent cases:

an industry shall be considered to exist if there is in the United States, with respect to the articles protected by the patent ... concerned --

- (A) significant investment in plant and equipment;
- (B) significant employment of labor or capital; or
- (C) substantial investment in its exploitations, including engineering, research and development, or licensing.

19 U.S.C. § 1337(a)(3).

Rosemount has made significant investments in plant, equipment, labor, and capital in practicing the '413 patent. (Rosemount Exs. 27, 29, 34, 41-44; TEO Tr. 93, 99.) Rosemount also has made some expenditures in connection with engineering, research, development and licensing of the patent. (Rosemount Exs. 34, 43; TEO Tr. 98.)

Complainant also must prove that there is an investment or employment of labor or capital with respect to the articles protected by the patent. In this case, complainant established this by proving that it is practicing each of the four claims of the patent in the United States.

Claims 1-3 cover a method of constructing a pressure sensing cell. The domestic industry is making such sensing cells using all of the steps of claims 1-3. Rosemount practices claim 4 of the '413 patent in making pressure transmitters in the United States. About [C]% of Rosemount's pressure transmitters (or pressure transducers) are made in the United States by a process covered by claims 1-4 of the '413 patent. (Tr. 94, 119, 19, TEO Tr. 82-83, TEO Tr. 421-35.) It is found that there is a domestic industry relating to each of claims 1-4.

CONCLUSIONS

Violations of Section 337 have occurred in connection with respondents' importation into the United States of glass-fused sensors and pressure transducers containing glass-fused sensors and ceramic sensors.

The evidentiary record in this proceeding includes the following exhibits:

Rosemount Exs. 1-14, 16-58, 59A, 59B, 60-64, 67, 78, 80,

Rosemount Physical Exs. A-K, M-R, T-Z, AA-AD, AG-AI, AL, AN,

SMAR Exs. 1, 2, 4-13, 14B-14G, 14I, 15-33, 35-43, 45-52, 53, 54, 54A, 55, 57, 61, 63, 64, 64A,

SMAR Physical Exs. A-G, H1-H5, I, J, M, Q, R, U-Y, AA, HH and

Staff Exs. SX1-SX5.

The evidentiary record also includes the transcript of the testimony at the TEO hearing and the hearing on permanent relief. The evidentiary record is hereby certified to the Commission.¹ The pleadings record also includes all papers and requests properly filed with the Secretary in this proceeding.

Janet D. Saxon

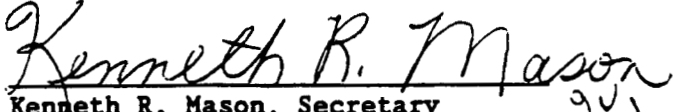
Janet D. Saxon
Administrative Law Judge

Issued: July 2, 1990

¹ Pursuant to § 210.53(h) of the Commission's Rules, this initial determination shall become the determination of the Commission unless a party files a petition for review of the initial determination pursuant to § 210.54, or the Commission pursuant to § 210.55 orders on its own motion a review of the initial determination or certain issues therein. For computation of time in which to file a petition for review, refer to §§ 210.54, 201.14, and 201.16(d).

CERTIFICATE OF SERVICE

I, Kenneth R. Mason, hereby certify that the attached Public Version Initial Determination was served by hand upon Deborah J. Kline, Esq., George C. Summerfield, Esq., and upon the following parties via first class mail, and air mail where necessary, on July 5, 1990.


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