

STEELWORKS



BULLETIN

FILE COPY
DO NOT REMOVE

No. 14
April, 1971.

ANNUAL REPORT OF GROUP PROGRESS DURING 1970

1. SALES

Group Sales of Heading Products up to 31st December, 1970 were £17,107,000. This represents an increase of 9% over the same period last year and a 12% unfavourable variance against the Original Group Forecast.

(£'000)

	Budget	Actual	Variance %	1969 Actual	1970/69 Variance
Profax & Other Insulators	13,323	10,968	- 18	10,200	+ 8
Ferrux & Kalmex	5,021	4,818	- 4	4,390	+ 10
Feedex & Feedex Shapes	608	813	+ 34	722	+ 13
Castings, Hardware etc.	416	494	+ 19	421	+ 17
TOTAL	19,362	17,107	- 12	15,731	+ 9

Results from individual countries are given in the attached tables.

Notes on these Tables

1. Figures refer to Home Sales only and exclude export and inter-company sales.
2. Figures take into account currency devaluations in Argentine and Brazil, and a revaluation by Canada. For comparison purposes, 1969 figures have also been adjusted to these new rates.

Cont'd.../...

3. Sales by Eureka Inc. are included for 1970 but not for 1969. If these figures are excluded, the 1970/69 variance becomes + 6.3%.
4. Total Sales figures include sales of Hardware, clips, castings etc. which were not included in 1969 sales reports. In these current tables, 1969 Hardware sales have been added in to give a true comparison.
5. Ferrux sales specifically exclude sales for continuous casting applications, but do in certain cases include sales of Ferrux for ladle insulation.
6. Profax and Other Insulator sales figures include for the first time sales of PROFLEX insulators within North America to a total value of £13,382.

2. RELATIVE MARKET PENETRATION 1970/69

In previous Heading Systems Bulletins, an attempt was made to show relative market penetration in the major countries by relating sales to steel output statistics.

It was always appreciated that this was an inaccurate method of arriving at relative penetrations since it did not take into account changes in Headable Steel Output in proportion to total steel output or changes in selling prices per ingot ton treated. During 1970, the "Business Gained and Lost" reporting procedure was instituted, the monthly and quarterly analysis of which is circulated separately, which gives a far more precise picture of detailed changes in penetration.

a) Steel Production

Appendix I gives details of world steel output for 1970 in comparison with 1969, plus variations between the last quarter of 1970 (4th 3) and the previous quarter (3rd 3). From these, it will be seen that over the whole year, output in 1970 was in most cases significantly up on 1969, but the increase took place entirely in the first part of the year, with the last quarter showing major reductions on the previous 3 months up to September 1970. This recession seems to be continuing into the first part of 1971, with the alloy and speciality steel sectors being particularly hard hit. New continuous casting plants have led to the closure of conventional casting customers, particularly in Germany and Japan, and this trend will inevitably continue through 1971. Reliable statistics in this area are difficult to obtain, but a separate analysis is currently being compiled by the Project Manager, Continuous Casting Products, and this will be circulated by Mr. P. Wallace.

Comparisons between 1970 and 1969 are also affected by strikes, the main reason behind the very large increase in Canadian production in 1970. In 1971, again steel output trends from U.S.A. will be significantly influenced by the National Steel Strike, which it is anticipated will last for 6 weeks in August/September.

- continued -

b) Selling Prices

Although certain countries managed to press through price increases in 1970, notably U.K., France and Italy, competitive activity and a greater attention to cost control by customer purchasing departments have generally led to a further erosion of selling prices during 1970. This has had a comparable effect on contributions as well, though in the area of Anti-piping compounds, revised product mixes have enabled selling prices and contributions to be improved, notably in Japan. Certain competitors have undercut prices to such an extent, e.g. in Germany, that their profitability must be in doubt and there is increasing evidence that some competitors are in serious financial trouble.

3. HIGHLIGHTS FROM OPERATING COMPANY PRODUCT PLANS DURING 1970/EARLY 1971

BENELEX The outstanding success during the period has been obtaining a contract for 20% of the Insulator business at Hoogovens with PROFAX 25 (duplex) which will be worth £16,000 during 1971.

The introduction of FERRUX 200 (ex-Foseco France), a very low cost version of Ferrux 300 still with a density of 0.38, has enabled profitable business to be got at the low cost end of the scales in this very price conscious market.

FRANCE FERRUX 300C and 300D have clearly established themselves as the products that competitors strive to match in terms of cost/effectiveness. A very detailed study by the Technical Department at Donchery during the whole of 1970 has now established the key parameters that affect the product and quality control of these ultra-low density Anti-piping compounds (0.38).

FERRUX 200 will undoubtedly also find itself a vital place at the lower end of the price/quality range as it is starting to do in Belgium.

The use of DUPLEX KALMINEX tiles, in conjunction with FERRUX 300C plus 2% X.3080 has enabled higher, segregation-free yields to be obtained at one vital customer casting 2 ton ingots in comparison with a strongly entrenched competitor.

Amitec studies on other Anti-piping compounds containing X.3080 have given encouraging results which will be followed by industrial trials when this material is commercially available.

For small ingots in the range of 1 to 2 tons, some excellent results have been achieved with 1 piece heads in a material known locally in France as FABREX 1, which is in fact identical to PROFAX 40 - made on a rotary vacuum/Kalminex forming unit.

Following an early failure with KALFLEX and the F.I.L. ADHESIVE SYSTEM on slab moulds, 2 further ingots were recently cast with complete technical success.

- continued -

Continuation Sheet

GERMANY 50% of Insulator production is now made in PROFAX 25 (duplex). Good results have been obtained on ingots in the 1 - 2.5 ton range with KALMINEX board assemblies.

A number of successful trials were carried out using duplex KALFLEX - E.P.4410B - plus the F.I.L. developed ADHESIVE SYSTEM on slab moulds in 2 tile and 4 tile applications. Full train tests will now be done in 2 plants to establish the commercial viability.

During the next four months, a campaign to introduce the French FERRUX 300/200 series will be launched, following an Amitec cost/effectiveness study which confirmed the efficiency of this product concept. Trials will shortly be done with a MECHANICAL FERRUX DISPENSER unit.

Trials will also commence shortly with PROFLEX flexible insulators on Forging Ingots.

ITALY Trials with PROFAX 25 in conjunction with French FERRUX 300D have enabled Foseco Italy to obtain higher yields than the competition on the 30 ton slab mould at Italsider Taranto for the first time ever. These key results should open the door for sales at this potentially vital customer. } #

A new factory is being built on the Marcallo site, and KALMINEX production machinery will be installed, together with a pair of MECHANISED VACUUM TABLES based on the designs of Foseco Japan.

4 PRESSURE INJECTION "B" MACHINES are in full operation and have dramatically increased the productivity of inverted PROFAX corner pieces and non-parallel Head Segments - Fiat assemblies.

An encouraging trial has also recently taken place with a new FERRUX formulation containing X.3080.

JAPAN PROFAX 40K and NIK now between them account for over 90% of the Insulator Production of Foseco Japan. At a density of approximately 0.50, PROFAX 40K is the recipe which gives the lowest RM cost/unit volume (\$9.99/litre). Recently however they have encountered problems with this material on rim stabilised and silicon grades of steel.

FERRUX 231 has been formulated as a commercially effective competitor to the Aiko Fumeless Anti-piping compound and at the same time enables the contribution within this Product sub-group to be improved from 2.8% (mean 1969) to 16.9% (last 3 months 1970). This is not a sophisticated product, being virtually a desensitised Ferrux 101 and the thermal efficiency is not high but it appears to do a satisfactory job within the Japanese industry's current insistence on low fume products. } #

Further accounts have been gained with SLOTTED MOULDS and a recent hearing has upheld our patent claims to this process in Japan.

12 MECHANISED VACUUM TABLES now deal with nearly all Insulator production and modifications to the original designs now enable flanged projects and corner pieces to be produced. Current production efficiency is running at approx. 2.43 Man hours/Kilo litre of product in comparison with the previous figures of 7.15 Man hours/Kilo litre on the SAM machine (2 man operation). This change in the production machinery should lead to a dramatic improvement in manpower utilisation.

The Japanese steel industry is urgently pressing for a system of MECHANISED HOT TOP ASSEMBLY both for slotted moulds and slab moulds. Trials with the F.I.L. ADHESIVE SYSTEM, in conjunction with PROFAX 40, will take place in June/July, plus trials with various APPLICATION UNITS designed at F.I.L. We understand that trials with a mechanised multi-gun applicator using HILTI guns will also be tested by Hilti in June, following the rejection of an earlier proposal submitted to a major steelworks by their agents last year. We also hear that competitive trials involving the attachment of Insulator tiles by WELDING inserted nails onto the inside surface of slab moulds failed at a major plant.

MAC
HARDWARE

U.K. (F.S.) LTD. The major development during 1970 was undoubtedly the Formulation and testing of FERRUX 700 (D.R. 1423A) containing X.3080. Trials at several plants and on a range of ingot sizes and types showed the technical effectiveness of this product in comparison with U.K. FERRUX 300 (density 0.72), and the first major sales are confidently expected in mid-1971. In anticipation of this, a plant to produce up to 2½ tons of X.3080 per week was built in January/February 1971. FERRUX 700 is virtually totally fume-free as well as giving a sensitive, hot exothermic reaction with excellent final insulation values and an overall expansivity of approximately x 3.

FF

Numerous trials at B.S.C., Port Talbot, with the SELF ADHESIVE KALFLEX have shown the technical efficiency of this product concept, with adhesive coverage rates down to 40% (and less in some cases). Several trains of ingots have now been treated using a mechanised applicator, and the chances of reducing the current high floater rate at this account looks good. Because of this high floater rate, accurate yield comparisons are difficult to assess. Tests at this works have also proved a valuable trial ground for applicator design studies. It is hoped that the 1½ years of testing at this plant will lead to sales in mid-1971; there are some technical/commercial problems with the supply from Dunlop of the material for the adhesive system, but recent developments at F.I.L. should help to overcome this by the use of a new material.

By the end of 1970, a 50% conversion from FEDEX to KALMINEX 88 in the small ingot sector had been achieved.

HIT

Over the next few months, trials with simplex KALFLEX/PROFLEX on Forging Ingots will be conducted.

The first fully automatic PRESSURE INJECTION "B" Production machine was installed specifically to make PROFAX 32, and this is now running successfully, making flanged slabs of great dimensional accuracy.

U.S.A. -

POSECO INC. The outstanding success of 1970 has been the translation of the SEAL ON concept for large B.E.U. ingots into a practical commercial reality by the development of PROFLEX GASKET RINGS. This has opened up a real opportunity for achieving a major share in a market worth \$30,000,000 per annum and in which our previous penetration was only 20%. Many of the theoretical advantages, both metallurgical and operational, have now been proved in trials and the process is achieving a good level of customer acceptance.

At present, Poseco Inc. have a real lead over competitors with this process and in order to deal with anticipated future demand, 2 specially designed "SuperSam G" forming units will be installed before the end of 1971. A marketing "task force" has been set up by Poseco Inc. to exploit our advantage as quickly as possible and ensure an adequate return on the very

large extra capital investment programme the company will be committed to. Certain projects (up to approx. 25" square) will be made as 1 piece units, larger projects being made in "knock-down" form with separate rings and boards.

(NOTE FOR INFORMATION OF OPERATING COMPANIES OUTSIDE NORTH AMERICA)

Because of the disproportionate tonnage of killed steel cast in North America in large B.E.U. moulds with head boxes or superimposed heads (65% of Killed Steel Output) and because of the rough surfaces encountered on the top of their ingot moulds, the SEAL ON concept is really only applicable to North America. The SLOTTED MOULD, as adopted on a large scale by Foseco Japan, and to a lesser extent by Australia, France and the U.K., is an alternative method of solving the same casting pit problem, but this solution has always failed to find acceptance in North America).

Interesting developments have also taken place with PROFLEX (1 piece and foldable 2 piece) inserted linings for B.E.D. SQUARE moulds up to 5 tons, in conjunction with a new design of HOLDTITE clip system.

U.S.A. -

EUREKA INC. Progress in 1970 was hampered by a drastic cut back in production of Speciality steels, plus a resistance on the part of customers to consider alternative Hot-top hold down systems. KALMINEX sales increased steadily within these limitations, and if the use of Headbox castings can be sold, then the 1 piece SEAL ON concept in PROFLEX should improve the situation for Eureka.

CANADA

Trials with the SEAL ON/PROFLEX concept were very encouraging at Stelco, and Foseco Canada currently awaits the decision from the customer as to whether this system will be adopted when their new BOP plant opens in September. Such a decision would substantially increase the turnover and profitability of Foseco Canada, and provisional plans to expand the production capacity to deal with this business are in hand.

Encouraging initial sales have been achieved with PROFLEX on PORGINO INGOTS from 15 to 80 tons in weight.

Trials with FERRUX 300 (302) on slab ingots showed a useful increase in yield, but the customer complained of an unacceptable dust problem during rolling which remains unsolved at present.

Excellent yields have been obtained with KALMINEX on 20 inch round ingot moulds in conjunction with FERRUX 300. At present these heads are supplied in 2 semi-circular segments made on a SAM 1650, but the opportunity of using the PRESSURE INJECTION MACHINES will be studied in 1971.

Because of customer insistence on having exothermic side lining tiles, large FEEDEX tiles will be produced in 1971 for a B.E.D. slab mould customer. Trials to meet this demand in KALMINEX were initially encouraging from a yield point of view, but breakage in transport was unacceptable.

MEXICO

A new factory to produce PROFAX and KALMINEX locally was built at the end of 1970 and will be in operation shortly.

- continued -

Continuation Sheet

7.

SWEDEN -

E. BOX The major increase in sales in 1970 arose from FERRUX exported from U.K. coupled to increased penetration with PROPAX 10.

AUSTRIA Against increasing competition, Poseco Austria did well in 1970 to maintain their high penetration with existing products, but price reduction led to a reduction of turnover compared to 1969.

The local production of KALMINEX one-piece heads will start in mid-1971.

SPAIN Increased production facilities at a new factory, combined with aggressive sales on the whole range of products, including KALMINEX and a modification of PROPAX 32 gave Poseco Spain a record year with an impressive 60% increase over sales in 1969.

INDIA In order to reduce R.M. costs per unit volume to a minimum, the majority of PROPAX production was converted to PROPAX IND.2, a recipe close to PROPAX N.1. Studies were also done comparing the feasibility of supplying certain customers with one piece PROPAX heads from the new factory at Chinchwad.

AUSTRALIA Sales in 1970 were drastically affected by the loss of business at one key customer to a very low price competitor. Steady technical work on recipe improvement and cost reduction will hopefully lead to Poseco Australia regaining at least a proportion of this business when the contract is up for tender again in April 1971.

Encouraging results were also obtained from initial fitting tests with two piece FOLD UP PROPAX assemblies on 15" and 17" semi octagonal moulds.

SOUTH AFRICA The main item of interest in 1970 was the installation of PRESSURE INJECTION "B" MACHINES for PROPAX production, enabling thick, non parallel 4 piece self locking assemblies to be made with high dimensional accuracy and improved productivity. Although far behind the original forecast, a most satisfactory increase of 52% over 1969 sales was achieved.

ARGENTINA Sales are dominated by the supply of one piece inserted sleeves in FABREX 3 to one customer, made on a CENTRIFUGE. In spite of considerable uncertainties in the general business climate, and high inflation, an increase in turnover of 68% was achieved, entirely accounted for by increased sales of insulators.

BRAZIL The high penetration with FERRUX was maintained, with an increasing proportion of FERRUX 300 in the last quarter of 1970.

Attempts to make use of a fine but highly refractory fly ash as a filler for PROPAX caused some problems at the end of the year.

4. SUMMARY OF PROGRESS WITHIN PRODUCT SECTORS (cross refers with above)

A. PROPAX No major developments can be said to have been achieved in 1970. New formulations of PROPAX 25 in Germany have led to more consistent quality. In attempts to reduce R.M. costs per unit volume to a minimum, Poseco Japan have converted 90% of their insulator production to PROPAX 4CK and N1K. Similar attempts in India and Brazil have led to the formulation

Continuation Sheet

of PROFAX 10 (IND 2) and PROFAX 10 (G) respectively, though the latter has apparently run into some problems (see Brazil).

Attempts to reduce R.M. costs with PROFAX 12 in the U.K. have not been totally successful yet, but the high quality of tiles made of PROFAX 12 containing "Dunite" as the filler has been proved in Italy, in comparison with other non siliceous fillers. PROFAX 32, without asbestos, still causes some production problems in the U.K., but where asbestos can be tolerated, as in Spain, PROFAX 32 M has met with some success as a semi sintering product.

B. FERRUX All indications suggest that recipes with a low inherent density have the best cost/effectiveness ratios, and in this respect the French range of FERRUX 300C, 300D, 310, 330 and 200 appears to offer special advantages, offset only by some doubts about dust levels on application (Germany) and stripping (Canada). Fosco France have done a massive study on how such products can be controlled at a density of 0.38.

The use of X.3080 as a component in FERRUX recipes (700 series) opens up many interesting possibilities for obtaining low density layers of Anti piping compounds from initially denser, dust free products. Plants to produce this R.M. have now been built in U.K. and U.S.A. and it is hoped that the optimum way of using this material in FERRUX recipes will be resolved in 1971.

The whole question of optimising the cost/effectiveness of FERRUX recipes was discussed at an International Meeting held in Birmingham in October 1970, and it is hoped that considerable progress in this direction will be made in 1971. To assist in this, a special Group Product Leader, Mr. G. Cook, has been appointed at F.I.L., with effect from April 19th.

C. PROFLEX/KALFLEX Simplex PROFLEX, in the form of Gasket RJNGS, really opens up tremendous commercial possibilities in North America. For FORGING INGOTS, some interesting trials have been started in Canada, to be shortly followed by similar trials in Germany and U.K. Repeat orders have been obtained on B.E.D. Square Ingots with simplex PROFLEX R.5. in U.S.A., using both one piece sleeves and two piece fold up units.

Duplex KALFLEX, combined with the SELF ADHESIVE SYSTEM, has now been applied to well over a hundred slab ingots in U.K. and tests have also been done in this country on 7-ton B.E.D. Square Ingots with technical success. The system has been tested successfully on several ingots in Germany. After an initial technical failure in Belgium (due to excessive turbulence and the use of a teeming flux) and a boiling failure in France (due to lack of permeability), a repeat trial in France on two ingots was technically successful.

All indications now suggest that an adhesive area coverage of 40% should be practical with the Extruded Mastic system, and new material currently under test at F.I.L. may well reduce this to 20%. Tests using the ADHESIVE SYSTEM with PROFAX 40 will begin in Japan in June.

An International Conference on PROFLEX/KALFLEX system was held in Birmingham in October 1970. Total sales for these materials (without the Adhesive System) in 1970 were £13,382, all generated in North America.

- continued -

6. BUDGETS/FORECASTS FOR 1971

Appendix II gives details of Operating Company Forecasts for 1971. As originally prepared in October 1970, they predict a 17% increase over 1970 sales for total Heading System Products.

STOP PRESS. Sales at the end of the first 2 months were £2,949,000 : this represents a 9% increase over sales in the same period in 1970, but a 12% short fall against Budget.



J.M. MACNAIR
(Product Manager : Heading Systems)

JMM/NPJ
16.4.71.

D. FEDEX No technical developments occurred in 1970 - sales in 1970 were in Excess of Forecast because of delays in the planned changeover to KALMINEX in U.K. and by Eureka Inc.

E. HARDWARE/CASTINGS etc. This product sector is dominated by Foseco Inc., and Casting sales in 1970 were in excess of forecast due to the success of the SEAL ON programme, requiring new specially designed Headbox Castings. 1970 also saw some interesting developments in the range of HOLDTITE application clips and fixing Hardware.

F. KALMINEX See report in Heading Systems Bulletin No.13.

5. GENERAL NOTES ON OTHER DEVELOPMENTS IN 1970

1. The very successful Amsterdam Symposium initiated considerable interest in the Self Adhesive Proflex/Kalflex system. The latest Adhesive system developments should enable this interest to be followed up commercially in 1971.

2. Asbestos Following a Group Purchasing arrangement with Cape Asbestos Fibres Ltd in 1969, considerable commercial benefit was achieved from them in 1970, though certain countries experienced problems with delivery of the material from South Africa, and the recommended grade S.22/65 (R.M.265C) had some processing problems at the mines. The preferred grade is now S.33/65 (R.M.265D), though Cape are also offering a cheaper, shorter grade S.44 (R.M.265E). Tests carried out in our Laboratories here suggest that this grade is entirely suitable as a substitute for S.33/65, when making PROFAX containing R.M.267. A full scale production trial will take place in Germany soon. At present, S.44 is not recommended for use in PROFLEX/KALFLEX or in recipes which do not contain R.M.267.

3. Hilti Hilti A.G. introduced a new nail fixing gun in 1970, called the SX.335. This is specially devised for fixing tiles in slab moulds, and has magazine loaded cartridges enabling 10 consecutive shots to be fired without reloading. It is having considerable success in U.S.A. and Japan. A further modification, SX.336, with magazine loaded nails and washers as well will be available in late 1971.

It is also Hilti's intention to introduce cheaper nails and washers for Hot-Top fixing in 1971, which will reduce the costs of tile fixing by this method.

A meeting was held at Hilti A.G. in January 1971 to discuss general co-operation between Hilti and Foseco. As a result of this, agreement was reached in principle that our two companies should work closer together in the future and in general to assist in mutually recommending each other's products to customers to the exclusion of competitors. This agreement is developing along more specific lines in Japan with regard to fully mechanised Hot-Top Assembly systems.

Where this is not being done already, operating companies are advised to establish personal contact with the local Hilti organisations so that knowledge of the latest developments in Nailing can be obtained and our "special relationship" exploited by sales forces in the best way to increase Profax sales.

Any questions about these arrangements should be addressed to J.M. MACNAIR.