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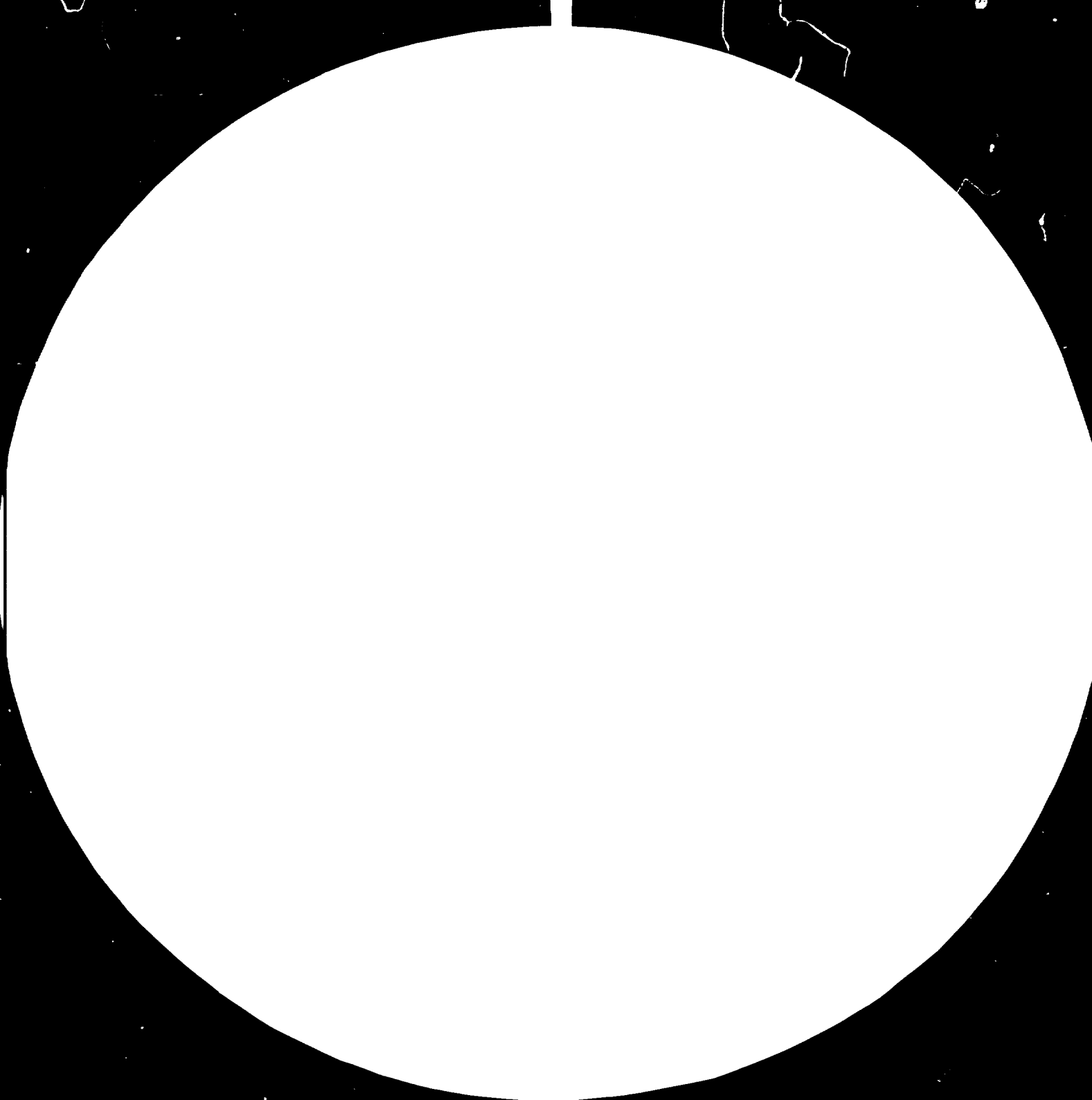
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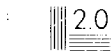
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NATIONS UNIES

Organisation des Nations Unies  
pour le Développement Industriel

09604

INSTITUT MAROCAIN DE L'EMBALLAGE ET DU CONDITIONNEMENT

I. M. E. C.

Etude pour aider le Gouvernement Marocain au développement de  
l'industrie de l'emballage métallique conformément aux besoins  
et exigences de l'économie nationale et de l'exportation

Casablanca, MAROC

(DP/MOR/73/002/11.06/D/31.7.E.)

PROJET ET RECOMMANDATIONS

Rapport Final pour le Gouvernement du Maroc  
M.C. Warren PARKINSON, Expert en Emballage  
de l'Organisation des Nations Unies pour  
le Développement Industriel

Mission du 14. 11.79 au 7. 12. 79

Les opinions exprimées dans le présent document sont celles de  
l'auteur et ne reflètent pas nécessairement les vues du secré-  
tariat de l'ONU/DI.

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ABBREVIATIONS

I.M.E.C.	Institut Marocain de l'Emballage et du Conditionnement,
O.C.E.	Office de Commercialisation et d'Exportation
ASONAP	Fédération des Industries de La Conserves de Poissons au Maroc
FICOPAM	Fédération des Conservateurs de Produits Agricoles au Maroc
Les GRANDES MARQUES	Conserverie de Poissons à Safi.
S.O.M.A.C.O.S.	Société Marocaine de Conserves de Poissons à Safi
C.P.P.M	Conditionnement de Fruits et primeurs de Marrakech
S.O.M.	Société Oléicole de Marrakech,

FOND DU PROJET

=====

L'industrie de l'emballage et du conditionnement occupe au Maroc plus de 10,000 personnes, et réalise un chiffre d'affaires de plus un milliard de dirhams. Les investissements entre 1973 et 1977 se chiffrent à 120 Millions de dirhams.

C'est pourquoi le Royaume du Maroc, dans le souci d'assurer l'expansion de ce secteur, a créé l'I.M.E.C. avec l'appui de l'O.C.E. et le concours de l'O.N.U.D.I.

Le but de ce Projet est "d'aider le Gouvernement Marocain au développement de l'Industrie de l'Emballage conformément aux besoins et aux exigences de l'économie nationale et de l'exportation".

La description de poste du Consultant en Emballages Métalliques est la suivante :

1. S'informer de l'activité de l'IMEC et du rôle qu'il doit jouer sur le plan national ainsi que prendre connaissance de l'état actuel de l'industrie de l'emballage métallique au Maroc.

.../...



2. Etudier le niveau technique et technologique du Secteur Emballage Métallique (étude au niveau des fabricants).

3. Etudier le problème de l'utilisation des emballages métalliques au Maroc, (étude de consommation de l'utilisation interne et des besoins d'exportation).

4. Définir à partir des études ci-mentionnées le champs d'interventions techniques de l'IMEC.

S U M M A R Y

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The can manufacturing industry in Morocco is efficient and has invested money to good purpose to keep itself current with modern technical development.

For future investment the desirability of not allowing lead in contact with the contents should be borne in mind.

The fish canning industry is too diverse and has too many units for its good. The quality of its products is regarded in some markets as inferior to the quality of competitor's products. In the near future it will have to meet stringent quality standards being laid down in West European countries. A rationalisation of the units to enable the larger one to achieve these standards and find the necessary investment is needed. A simultaneous rationalisation of sizes of can and brands is also called for.

The fruit and vegetables canning industry also needs some rationalisation as new standards will also apply to vegetable canning. The problem of lack of supplies of some products, particularly apricots, due it is said to poor harvests needs thorough investigation.

.../...

There is an urgent need to seek new markets to replace those which might be lost in E.E.C. countries.

I. M. E.C. has a large part to play in helping the industries concerned cope with these problems. It is suggested that its contribution need not be limited to narrowly technical aspects, but should also embrace giving a lead in matters such as standardisation, the review of markets and the encouragement of a broader view of statistical quality control.

R E C O M M E N D A T I O N S

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It is recommended :

1) That Government of Morocco follow closely the work of the Codex Committee on Food Hygiene with the intention of introducing similar legislation in Morocco shortly after its introduction into E.E.C. countries.

Meanwhile this intention should be made clear to the industries concerned so that they will have a period of perhaps three years to achieve the standards laid down.

2) That Government of Morocco review the effect of the total 18.5 % tax on tinplate with a view to making the export of canned food more profitable.

3) That I.M.E.C. initiate talks with the can manufacturers and with the canners with a view to standardising on a smaller range of sardine cans and eliminating those cans for fruit and vegetables which are not part of the international range. The talks should also consider reduction of the number of brands on offer.

.../...

4) That unhurried consideration be given to the introduction of a new national brand of sardine pack. This could be reserved to those canneries meeting the new regulations, limited to one or two sizes of easy open aluminium can and linked to the highest quality standard of contents. Such a pack should command a premium in foreign markets.

5) That I.M.E.C. and FICOPAM set up a small working party to investigate the lack of supplies of apricots to the canners and to suggest steps to improve the position.

6.) That IMEC should join Campden Research Association and send one representative to the next General Course on Principles of Canning (March 1980).

7.) That IMEC acquire a hand double seamer of the MBIA type and a flange rectifier to enable the laboratory to can specimen packs for technical or market trials. The presence of this seamer will also help IMEC personnel to familiarise themselves with seam testing techniques.

It is suggested that rather than buy a machine, an approach might be made to Carnaud-Maroc to ask if they would donate one.

.../...

8) That long term monitoring investigations are initiated urgently by I.M.E.C. on heavy metal levels, chemical and microbiological contamination and seam controls in the canned food industry.

9) That the can manufacturers be asked to bear in mind the problem of metal contamination when considering new manufacturing capacity.

10) That a member of IMEC should specialise in statistical quality control methods and the dynamic use of them to help some of the smaller canners introduce such a system.

11) That IMEC make contact with "La Direction de la Recherche Agronomique" to explore the help that can be given to the fruit and vegetable canners in extending their product range and improve the present range.

12) That IMEC should, in due course, engage the interest of canners in other African countries, and their Governments, in the incomparable equipment available and steadily establish itself as a centre of technical excellence in packaging in this part of the world.

13) That with OCE, IMEC initiate a market investigation to identify markets which can be increased or opened up,

.../...

particularly in the event of a loss of Western European markets.

FINDINGS

TECHNICAL AND TECHNOLOGICAL LEVEL OF CAN-MANUFACTURERS.

On a technical level it is difficult to fault the standards followed by Carnaud-Maroc. Their lines for "boites décollagées" are fast and efficient. The equipment used for manufacturing round open top cans is standard, as used in Italy, France, and Greece. Their equipment for easy-open sardine cans is to the highest modern level, demanding tool maintenance of an engineering accuracy met with in few other industries. The quality of printing is good on any standards. Their quality control including the constant checking of components and cans during manufacture is up to the standard of the best can-makers. The company continues to invest to meet demand and to keep up with modern technology. A new aerosol line based on soudronic techniques has recently been installed. New printing equipment is coming into production. A new single storey factory is being built. The installation of a three-piece beer can line, when demand justifies the expenditure, is under consideration.

.../...



Carnaud-Maroc Have the advantage of being connected with their French associate and through Carnaud-France have access to the most advanced can making technology in the world. They seem to have used this knowledge and applied it successfully to the needs of Morocco.

Fortunately, for Carnaud -Maroc, as well as for the industry, they have competition from Gourvenec, who, whilst not as advanced as Carnaud in some aspects of their equipment, are nevertheless competent can-Makers and a good source of stimulation and competition for Morocco to have. Gourvenec also are improving their printing equipment to keep up with modern technical development in synthetic varnishes.

Whilst not saying that these companies are beyond criticism - indeed one or two points are made elsewhere in the report the general standard of can-making is good.

One criticism by the canners of the can-makers is that the thickness of tinfoil and tin covering have been reduced in recent years. This is undoubtedly so. The rising cost of tinfoil and the astronomical cost of tin have forced all manufacturers to reduce specifications. The result is a less costly can than would otherwise have been the case, but the standards presently used should provide a can capable of performing its function.

.../...

The other criticism is of the cost of the empty can. ASONAP have pointed out that the empty can represents 35/36 % of the cost of the filled can.

Figures from Carnaud and Gourvenec show that of the final price of the can up to 70 % and on average about 65 % is the cost of tinsplate and other raw materials. Thus the balance of 30 %/35 % is the amount charged to print, make the can, cover other charges and make a profit.

These figures of 65 %/70 % for raw materials are the same or indeed slightly higher than for can-makers in other countries and would indicate a low cost of conversion perhaps due to the low cost of Moroccan Labour.

The figures given by ASONAP can be extended further to :

Cost of raw materials in can	24 %
Cost of printing, making and delivering can + can makers profit	12 %
Cost of content	18 %
Labour in filling can	10 %
Canning overheads and profit	36 %
	<hr/>
	100 %

The problem is the cost of the tinplate.

.../...

TINPLATE COSTS

Both can-makers buy their tinplate from Europe. The price is fixed and there is no way of obtaining any discernible relief on the basic price of the material. Quotations from the U.S.A. might now be competitive with the dollar low, but usually American prices are higher than European.

Further, depending very heavily on the price of energy, the cost of tinplate is likely to continue rising (there will be an increase again in January 1980) until oil prices stabilise temporarily.

Thus it is not possible to offer any hope of relief on basic tinplate prices. The only consolation is that they are equally burdensome for all users.

There are two possible ways of obtaining some relief in the rate at which can prices rise :

.../...

1) Standardisation and reduction of range of can sizes and reduction of ~~number~~ of brands. This matter is dealt with in greater detail elsewhere. A reduction in the number of different sizes would reduce tinsplate costs to say nothing of the other benefits outlined.

2) Abolition of the import duty on tinsplate.

The total tax on tinsplate has been quoted as 18.5 %. If this were abolished it would reduce the price of cans by perhaps 10 % for the home market, thereby stimulating demand. For the export market the benefit would be much less as draw back would no longer be claimed. Nevertheless there are hidden additions to the cost of exported canned food as a result of the financing of this tax. From the time the tinsplate arrives until it leaves the country in the form of canned food - probably on average 15 months - manufacturers and canners are deprived of cash resources. The financing of the extra 18.5 % tax for 15 months at an average interest rate of 11 % adds 2.5 % to the price of the tinsplate which is, in fact, a tax on exported canned food. There must also be hidden administrative costs.

.../...

As there is no indigenous tinsplate industry to protect and keeping exporters' costs down is so important, this tax might be reconsidered.

# LES INDUSTRIES DES EMBALLAGES METALLIQUES FONT LE POINT

Les difficultés proviennent des aléas climatiques, du trop grand nombre d'utilisations et de la faiblesse du marché intérieur

Les membres de l'Association Marocaine des Industries d'Emballages métalliques (A.M.I.E.M.) qui regroupe les fabricants :

- d'emballages métalliques légers

- de fûts et tonnelets,
- et de capsules métalliques,

ont tenu leur Assemblée générale à Casablanca le 17 juillet 1979

Lors de cette réunion, l'A.M.I.E.M. a dressé son bilan d'activité et a procédé à l'élection de son bureau.

## I. Les emballages métalliques légers

Les problèmes des fabricants d'emballages métalliques légers sont très étroitement liés à ceux des conserveurs de poisson, fruits et légumes puisque plus de 90 % des boîtes produites leur sont destinées. Or, depuis 1974, le secteur de la conserve connaît une crise aiguë due à la conjonction de plusieurs facteurs :

- les aléas climatiques qui rendent difficile toute prévision de la récolte et qui entraînent les conserveurs et les fabricants d'emballages métalliques à prévoir leurs approvisionnements de façon anticipée.

marque du produit « Maroc ». Le bureau d'études Mc Kinsey, à l'initiative de l'O.C.E., avait étudié ce problème et conclu en préconisant le regroupement des conserveurs ; mais ses recommandations sont restées lettre morte.

- le marché intérieur qui, dans les pays concurrents, est le support de l'industrie de la conserve, est négligé au Maroc et malgré un potentiel important, n'absorbe qu'une faible part des productions.

Dans cet environnement mouvementé, les fabricants d'emballages métalliques légers se sont efforcés de satisfaire les besoins des conserveurs. Malgré l'absence quasi totale de prévisions de campagnes et l'extrême multiplicité des formats et des marques fabriqués, ils ont été en mesure d'honorer les commandes passées. Les boîtes livrées ont été conformes aux normes internationales que les fabricants suivent rigoureusement et dont ils entendent suivre l'évolution.

Comme chaque année, le problème du prix des boîtes s'est posé de façon aiguë. Le blocage du prix des emballages métalliques par le Pouvoir Public depuis mars 1977 jusqu'au 1er juin 1978 a porté préjudice aux fabricants puisque les prix des matières premières

les principaux formats par rapport aux prix internationaux. La preuve est que, malgré la liberté laissée aux conserveurs d'importer leurs emballages en admission temporaire, ces derniers n'utilisent pas cette facilité.

Enfin l'institution du dépôt de 25 % sur les importations de matières premières nécessaires à la fabrication d'emballages métalliques légers, malgré le régime de draw back dont bénéficie l'exportation de conserves pose aux fabricants des problèmes de trésorerie inhabituels et occasionne des frais financiers supplémentaires importants.

Globalement, l'activité des fabricants d'emballages légers en 1978 a été à peine égale à celle de 1977.

Après les graves problèmes qu'a connus en 1977 la conserve de poisson à cause de l'éloignement du poisson des côtes marocaines et de l'incapacité de notre flotte traditionnelle à pêcher le poisson là où il se trouve, les Pouvoirs Publics ont autorisé la constitution de lignes de congélateurs étrangères au profit des conserveurs. Ces mesures ont permis pendant le premier trimestre et surtout le premier trimestre et surtout le quatrième trimestre, de pallier la défaillance quasi-totale de la

pêche, inférieures à celles déjà médiocres de 1976.

Par ailleurs, globalement, il est prévu une chute d'activité sensible alors que le coût des matières premières, des taxes et de la main-d'oeuvre ne cesse d'augmenter.

## II. Les fûts métalliques

L'industrie des fûts métalliques, dont les capacités s'échelonnent de 20 à 225 litres peut se subdiviser en deux activités bien différentes :

- celle des fûts de 225 litres utilisés essentiellement pour le conditionnement des huiles minérales et des jus de fruits congelés

- celle des capacités de 20 à 100 litres utilisées par les industries de la peinture, des huiles minérales et des industries chimiques en général.

Tous ces emballages sont fabriqués en tôle noire qui peut être galvanisée au pourcentage de revêtement intérieur selon les besoins.

Le premier semestre de l'année 1978 a été marqué par une activité soutenue due en grande partie à la saison exceptionnelle pour les agrumes.

tion de la sidérurgie européenne, il a fallu également supporter l'augmentation des frais d'importation alors que les situations de trésorerie étaient fortement touchées par le dépôt obligatoire de 25 %.

Ces hausses de prix de revient n'étaient que partiellement compensées par les majorations de prix de vente effectuées durant cette période.

Il est probable qu'en 1979, la mauvaise campagne d'agrumes et la diminution de l'activité des autres secteurs aura conjointement avec les majorations de prix de revient une incidence fâcheuse sur la bonne marche des entreprises.

## III. Les capsules métalliques

Cette industrie qui assure la fabrication des bouchons couronne et des capsules aluminium à vis destinés au bouchage des boissons gazeuses et des bières a connu en 1978 une expansion substantielle sur le plan des ventes.

Pour suivre cette demande, le Maroc a dû importer des capsules de procédés divers et procéder à des investissements importants. Le coût de ceux-ci ainsi que l'abaissement de celui des matières premières

Les aléas climatiques qui rendent difficile toute prévision de récolte et qui empêchent les conserveurs et les fabricants d'emballages métalliques légers de prévoir leurs approvisionnement de façon traditionnelle.

Les mesures protectionnistes prises par les pays de la C.E.E. ont freiné l'implantation des usines marocaines sur ces marchés traditionnels.

Les aides à l'exportation accordées par les pays concurrents (Maroc, Espagne, Portugal, Grèce...) à leurs conserveurs afin de faciliter la pénétration de leurs produits sur la C.E.E. au détriment des exportations marocaines de conserves. La prochaine extension de la C.E.E. à ces trois pays va encore aggraver cette situation.

La multiplicité des conserveurs qui amène des conséquences préjudiciables au secteur. En effet, la grande diversité de marques et de formats empêche les fabricants d'emballages métalliques légers de produire de grandes séries détaillant leurs fabrications et de travailler par anticipation. Par ailleurs, quelques conserveurs, tout en livrant sur les marchés extérieurs une concurrence sournoise à leurs confrères, n'ont pas la technicité nécessaire et peuvent être amenés à livrer à l'exportation des fabrications portant atteinte à l'image de

marque ou du prix des boîtes s'est posé avec acuité. Le blocage du prix des emballages métalliques par les Pouvoirs Publics depuis mars 1977 jusqu'au 1er juin 1978 a porté préjudice aux fabricants puisque leurs coûts pendant cette période n'ont pas cessé de croître.

En effet, en plus du fait qu'on voit le prix voler en fonction de l'inflation mondiale, les prix des autres éléments constitutifs des emballages métalliques légers ont connu parfois comme l'un des envoies extraordinaires. De même, les ferblantiers, bien que travaillant quasi totalement quoiqu'un directement pour l'exportation, voient leurs matières premières importées grevées de taxes à l'importation en augmentation constante. Ainsi, la taxe spéciale à l'importation est passée au 1er janvier 1978 de 8 à 12 % (elle était de 2,5 % jusqu'en 1972 et de 5 % entre 1973 et 1976). Par ailleurs, d'autres produits nécessaires aux fabrications sont soumis à des droits de douane parfois très importants (vernissés et couchés, joints et colles...).

Malgré l'importance des taxes et droits frappant leurs importations (ceux-ci sont théoriquement remboursés aux conserveurs dans le cadre du régime du draw-back) et malgré les faiblesses des séries, les emballages métalliques légers restent à des prix compétitifs (et parfois très inférieurs pour

autoriser la chartrisation de bateaux, congélateurs étrangers au profit des conserveurs. Ces mesures ont permis pendant le premier trimestre et surtout le quatrième trimestre, de pallier la défaillance quasi-totale de la pêche traditionnelle, et de maintenir à la Conserve Marocaine de sardines sa place sur les marchés extérieurs.

Malgré la légère progression de 1978, les livraisons d'emballages métalliques pour la conserve de poisson restent inférieures de 33 % à celles de 1979, année record il est vrai.

Le secteur de la conserve végétale, à quant à lui, connaît une baisse en volume après la remarquable progression enregistrée en 1977. Les aléas climatiques et la tenue des marchés extérieurs sont les principaux responsables de cette situation.

Si la campagne d'abricots a été remarquablement bonne, les ventes d'emballages métalliques légers pour les jus de fruits, les olives, les petits pois, les haricots verts et les tomates ont nettement baissé. A noter la percée remarquable des cornichons mais dont l'importance n'est pas suffisante pour compenser les pertes enregistrées dans les autres postes.

Les perspectives pour 1979 des fabricants d'emballages métalliques légers ne sont guère brillantes. Les premiers mois sont caractérisés par des campagnes agricoles et de pêche très net-

retement inférieures selon les besoins.

Le premier semestre de l'année 1978 a été marqué par une baisse et en 1979 par une activité soutenue due en grande partie à une saison exceptionnelle pour les agrumes, notamment pour les jus de fruits.

Par contre le second semestre s'est fortement ressenti des mesures prises au titre de l'annulation de cette sorte que l'ensemble de l'année n'a apporté qu'une progression par rapport aux exercices antérieurs.

Comme toutes les industries de transformation de produits métalliques, le secteur connaît des matières premières livrées précédemment de l'importation.

En plus des majorations importantes du prix des tôles d'acier, compte tenu de la situa-

expansion substantielle sur le plan des ventes.

Une autre cause d'augmentation importante de ces coûts de production est due à des investissements importants. Le coût de ceux-ci ainsi que l'alourdissement du coût des éléments constitutifs du prix de revient entraîneront sans doute une réévaluation du prix de vente de ces produits.

Cette majoration n'ayant pu être appliquée, il en résulte un affaiblissement très sensible des marges bénéficiaires. A cela s'ajoute l'obligation du dédit, imposition de 25 % sur l'ensemble des matières premières nécessaires à ces fabrications.

Ainsi malgré une évolution favorable du marché, cette industrie connaît de grosses difficultés pour assurer son équilibre financier.

#### COMPOSITION DU BUREAU DE L'AM.I.E.M.

PRESIDENT .....	El Madani LARAKI
VICE PRESIDENT .....	Mohamed GASIS
SECRETARE GENERAL .....	André CAPELLA
Secrétaire Général Adjoint .....	Hadj Mohamed AMHAL
TRESORIER .....	Gérard BOUCLIER

THE CANNING INDUSTRY AND ITS PROBLEMS

The industry is beset by a number of difficulties, some of which are likely to get worse in the medium term future if they are not tackled promptly :

1. The supply problem suffered by the sardine packers owing to the cyclical movement of the sardine shoals. The TARFAYA project is an imaginative effort to meet this difficulty. However, assuming it really is a cyclical movement, any return of the fish to their traditional areas should not cause the long term problem to be forgotten and plans, perhaps including the use of large deep sea trawlers, should be laid for the next disappearance of the shoals.

2. The drop over the last few years in the canning of fruit, particularly apricots, is disturbing. The pack is a good one and should be increasing steadily. The fall in supplies of fruit to the canners is apparently due to bad harvests.

A further investigation to see if there are other factors affecting supplies might be valuable.

.../...



3. The general slowing-down in the rate of increase in world trade is likely to continue for some years, perhaps leading to more protectionism. This problem is particularly acute for Morocco faced by the probable entry of her natural trade competitors into the E.E.C.

The Government of Morocco will obviously maintain the present pressure on E.E.C. members to protect her western European markets in any negotiations that may ensue. Meanwhile for the next year or two, the greater the exports to these countries from Morocco, the better will be the base from which negotiations will start.

But for the long term the prospects for traditional exports into E.E.C. countries must give rise to dismay. The position with sardines is bad enough but the fact that 90 % of Morocco's exports of canned fruit and vegetables goes to E.E.C. countries is most disquieting.

A major effort to develop new markets for these products is most necessary. Nigeria, the Middle East and perhaps the prosperous markets of the Pacific Basin are obvious targets.

.../...

4. Certainly in the case of sardines and perhaps also fruit and vegetables, Moroccan produce obtains lower prices than some competitors obtain. This must be a reflection on the quality of the canned goods. A sustained effort to remedy this problem by improving quality in its broadest sense is necessary.

Some of the smaller canners do not have the control over the canning process that is necessary for a high quality product and in some cases this lack of control can be dangerous, particularly for sardines packers.

The stringent regulations to be applied to canneries in the U.S.A. and in E.E.C. countries should be studied with a view to bringing Moroccan Legislation in line over a definite period.

5. There are 76 fish canneries in Morocco covered by 36 different companies.

This is too many small units without the resources of expertise or money for investment to achieve the higher quality standards needed.

Rationalisation of the industry into a smaller number of powerful, better financed units, able to compete in quality and marketing with their competitors is urgently required.

This should be accelerated by the action outlined in 4. above.

.../...

In the field of fruit and vegetable packing there is a similar profusion of units. These seem to be concentrated into a few areas and the industry would be stronger with fewer but more powerful packers. Whilst the health dangers of insufficient control may be less in the case of fruit canning than fish packing, vegetables in cans can be as hazardous as fish and the introduction of legislation for the canning of low-acid foods would have a similar effect in rationalising the vegetable canners.

THE ROLE OF I.M.E.C.

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With the need for the Institute to become self-financing over a period , it will be necessary to enlist those firms who will benefit from its services as members, paying an annual fee. Such firms will include the manufacturers of packaging raw materials and of packages, in addition to the packers, including as a special case the canners. It is to be expected that other interested parties such as transport companies, consumer interests and the larger retailers will also want to join.

It will therefore be necessary to persuade these firms over the next few months, of the relevance of IMEC's work and for the longer term, the fact that these organisations are subscribing money will tend to bend IMEC's work in the most fruitful directions.

With this sort of framework I would see IMEC's contribution as follows :

1) Carrying out specific tests for members in the fields of chemical and microbiological analysis, raw materials testing and compatibility of container and contents. These would be chargeable to the member.

.../...

2) Special long-term investigations into present or anticipated problems. One present example might be a monitoring programme on the lead and heavy metal content in fish and vegetable packs. Another might be, in agreement with O.C.E. a monitoring programme on double seams in both fish and vegetable packs. Apart from providing a picture of the present position on seaming standards, this would provide excellent experience for IMEC personnel in familiarising themselves with seam measuring techniques. The results would be available for members to refer to.

3. Advice to Government of Morocco on legislation in all packaging matters but particularly on regulations governing the canning of low-acid foods.

4. An advisory service on general packaging matters.

5. Encouraging the development of new fruit and vegetable packs by acting as liaison between the packers and "La Direction de la Recherche Agronomique". The contribution of IMEC would be in the field of preparing trial packs, testing various strains of fruit and vegetables for canning purposes and perhaps advising on the marketability of such new products. The interest now being shown in the development of the strawberry pack and of the clementine or satsuma segment pack might provide a starting point.

.../..

6) Giving a lead in the standardisation of the range of cans for sardines and for fruit and vegetables. From purely economic and quality points of view a successful reduction in the range of cans and brands would be one of the greatest services that could be bestowed on the industry.

7) Conducting courses and symposia.

8) Outside the technical field and in association with O.C.E., carrying out market research exercises into foreign markets. In particular, at this time an investigation into the markets which might be lost by Spain, Portugal and Greece on entry into the E.E.C. would be of great use.

FISH CANNING INDUSTRY

Out of the normal total catch of 250.000 Tons of fish, some 100.000 Tons of sardines are canned, represented by a final pack of over 2 M. cases, each of 100 cans of 1/6P. 30, the vast majority of which is exported. The main ports are Agadir, Safin and Essaouira.

The attached figures show a dramatic fall on those of the mid'70s. Exports fell from 3.5. M. cases in 1973/74 to 2.0. M in 1977.

The cause of this erious decline in the sardine industry was the migration of fish down the coast of Africa, a cyclical event. Happily 1979 has seen an improvement in the position and it is hoped the in-shore sardine shoals will stay further north for the next few years. The position has also been alleviated so tome extent by the use of Russian trawlers to dredge deeper waters, supplying the canners with frozen sardines. However the effect of this step has been very limited.

The attached tables show recent figures for exports by countries and illustgate both the drop in catch and the fact that 40 % of exports go to E.E.C. countries. Portugal (2 M. cases and Spain 3.M cases) are the main competitors and if and when they become members of the E.E.C. , this could damage Morocco's export prospects into Western Europe.

.../...

The organisation of the fishing vessels, some owned by the larger canners, others contracting supplies to canners, is extremely well planned ensuring that the time between the catching of the fish and the finalisation of the canning process is minimised.

It is therefore disappointing that canned Portuguese sardines command a higher price in the market than the Moroccan pack, being regarded as of a higher standard, due partly perhaps to well known brand names and the fact that Portuguese sardines have the back-bone of the fish removed.

The Moroccan industry covers 76 factories up and down the coast owned by 36 companies which have formed themselves into 12 groups. As a result, many of the canneries are small and are unable to employ enough high-grade staff to ensure the degree of control that is necessary. Also it is going to be extremely difficult for these smaller units to invest enough to bring themselves up to the standards now being laid down by the USA and E.E.C. countries in such areas as control of cooling water, non-corrosive metal pipes and plant, etc...

.../...



The orthodox container used for canning the sardines is the *boite décollagée* made from tinfoil. There are ten sizes, seven of rectangular base and three oval. In addition some solid-drawn tins are used for special packs.

Also easy-open aluminium cans are used in three sizes.

The aluminium container has some disadvantages compared with the traditional box. The most serious is its price, up to 40 % higher than the *boite décollagée* of the same capacity. Also it is not as strong as the tinfoil container at the point of packing and thus takes a little less solid fish, size for size, and withstands pressure less well in its final pack form for export. Lastly there is the opinion in some countries that the taste of the product is affected. This presumably means the lack of a slight metallic taste! On the other hand it has the very important advantage of being a container with only one seam and therefore of greater integrity, it has greater sales appeal in the self-service store and overcomes the traditional fear of causing a cut finger. Finally its lower weight in transit should counter, to a small extent its higher cost.

The experience of S.I.E. in Italy is relevant in this context.

.../...

There was criticism of the can-makers from ASONAP on the grounds firstly that the cost of cans is too high and secondly that the standard of support for the canners from the can-makers in the matter of service could be improved and the cost of hiring the machines and servicing them was too high. This criticism was not borne out by the two fish-canners visited who both expressed themselves as happy with the service given and with the price charged for hiring (hiring prices quoted by GOURVENEK were surprisingly modest and GOURVENEK said they lose money on hiring and servicing the machines. This is not unique and is a regular feature of hiring arrangements by can-makers).

ASONAP have quoted the following break down of the final cost of the full can

Empty can	35/36 %
Contents (fish and oil)	17/13 %
Labour	9/10 %
Overheads, etc...profit	36/39 %

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100 %

This point is dealt with in the findings, but such a pattern of expenses between empty box, contents and filling costs is by no means rare.

EVOLUTION DES EXPORTATIONS DES CONSERVES D'ANCHOIS

DESTINATIONS		1970 - 71	1971 - 72	1972 - 73	1973 - 74	1974 - 75	1975 - 76	1976 - 77	1977 - 78
AFRIQUE .....	I.	1,8	-	-	-	-	-	-	-
	V.	18 393	-	-	-	-	-	-	-
MOYEN ORIENT ...	I.	7,0	12,9	6,4	22	2,4	-	-	2,5
	V.	50 036	136 900	48 775	154 194	17 726	-	-	60 406
FRANCE .....	I.	567,8	340,4	373,4	376,2	251,2	285,3	797,3	1 631,1
	V.	4 756 242	3 130 396	2 788 815	4 054 084	2 543 778	2 796 008	9 181 276	19 580 423
RESTE C.E.E.....	I.	47,2	134,8	75,7	226,6	48,1	50,1	88,3	152,6
	V.	452 609	1 277 587	657 692	1 913 303	410 396	629 096	1 483 766	2 997 860
RESTE EUROPE ...	I.	46,5	115,7	325,7	285,9	245,3	67	98,7	86,5
	V.	319 343	661 930	1 251 535	1 340 355	1 135 005	760 215	835 767	1 560 178
AMERIQUE .....	I.	129,4	8	21,9	8,3	2,4	2,8	15	33,5
	V.	606 681	102 422	264 086	101 004	29 597	45 347	297 408	571 450
AUTRES PAYS ....	I.	9,4	3,3	1,4	-	-	-	-	-
	V.	58 73	23 299	8 995	-	-	-	-	-
TOTAL .....	I.	809,1	615,1	804,5	919	549,4	405,2	999,3	1 906,2
	V.	6 262 037	5 332 534	5 019 898	7 562 940	4 136 502	4 230 666	11 798 217	24 770 117

Campagne du 1/7 au 30/6

T. Tonnage

V. Valeur FOB en Dirhams

EVOLUTION DES EXPORTATIONS DE THON

DESTINATIONS		1970 - 71	1971 - 72	1972 - 73	1973 - 74	1974 - 75	1975 - 76	1976 - 77	1977 - 78
AFRIQUE .....	T.	20,7	12,1	6,7	47,7	4,4	2,1	-	24,4
	V.	130 771	72 015	46 274	351 612	41 853	27 296	-	332 871
FRANCE .....	T.	817,4	490	202,5	555,2	439,6	136,6	217,4	347,64
	V.	4 242 646	2 815 515	1 293 728	4 419 148	3 625 736	1 368 942	2 074 608	4 359 993
RESTE C.E.E.....	T.	81,9	40,9	82,6	12,8	42,7	40	56,2	250,5
	V.	623 893	347 855	864 805	107 844	320 504	115 839	529 875	3 049 463
RESTE EUROPE .....	T.	1,2	13,6	9,9	1,6	33,8	2,1	4,5	9,8
	V.	3 369	51 753	36 029	4 276	211 936	25 725	28 416	177 516
AMERIQUE .....	T.	2,5	-	-	-	-	-	-	-
	V.	10 717	-	-	-	-	-	-	-
AUTRES PAYS .....	T.	-	-	0,6	-	-	-	-	-
	V.	-	-	4 330	-	-	-	-	-
TOTAL .....	T.	923,7	556,6	302,3	617,3	520,5	180,8	278,1	632,4
	V.	5 011 396	3 287 138	2 245 166	4 882 880	4 200 029	1 537 802	2 632 899	7 919 84

Campagne du 1/7 au 30/6

T. = Tonnage

V. = Valeur FOB en Dirhams

EVOLUTION DES EXPORTATIONS DE CONSERVES DE SARDINES

CAMPAGNES		1970-71	1971-72	1972-73	1973-74	1974-75	1975-76	1976-77	1977-78
PAYS	Q								
	AFRIQUE.....	V	307.167	478.425	723.733	550.306	543.131	637.327	662.620
		15.926.379	20.179.376	22.901.376	32.841.941	34.720.592	40.911.605	67.909.450	62.556.417
	Q	242.934	615.466	376.324	390.923	121.072	255.462	59.241	11.077
EXTREME ORIENT	V	7.535.119	12.920.907	7.303.432	11.337.965	4.884.924	6.422.911	3.090.340	1.547.780
	Q	103.642	167.265	174.726	208.116	192.425	162.097	292.010	107.667
MOYEN ORIENT..	V	4.181.090	7.247.037	7.141.175	10.179.678	11.240.195	10.779.160	12.021.934	1.547.780
	Q	559.280	633.310	643.262	847.767	683.529	563.080	412.130	435.942
FRANCE.....	V	39.039.543	44.074.366	41.765.479	58.273.173	67.141.566	50.669.271	39.161.444	47.261.627
	Q	436.198	426.672	469.611	712.281	539.986	421.939	312.513	336.691
RESTE C.E.E....	V	23.110.346	25.317.088	29.328.444	48.269.433	45.976.243	33.906.779	27.376.630	25.392.927
	Q	211.180	340.997	342.918	422.939	240.406	219.228	199.346	141.067
RESTE EUROPE..	V	9.506.922	15.610.737	16.451.732	22.577.956	17.291.906	16.313.738	14.471.489	12.363.574
	Q	41.566	45.099	62.072	236.075	30.752	72.385	25.373	25.375
AMERIQUE.....	V	2.225.351	2.548.506	3.292.915	11.203.195	2.697.023	7.492.253	2.260.437	2.735.541

! !	!	!	!	!	!	!	!	!	!
AUTRES PAYS...!	Q !	51.567 !	51.368 !	60.828 !	65.035 !	73.642 !	83.514 !	91.142 !	64.050 !
! V !	2.321.713 !	3.439.860 !	3.346.173 !	3.201.162 !	5.306.902 !	3.250.417 !	3.521.671 !	4.840.100 !	
! !	!	!	!	!	!	!	!	!	!
! Q !	2.043.569 !	2.845.789 !	2.971.544 !	3.453.493 !	2.422.943 !	2.375.002 !	2.323.122 !	1.265.01 !	
TOTAL.....!	V !	103.794.432 !	141.336.777 !	139.471.129 !	191.764.023 !	189.219.256 !	171.876.734 !	175.806.350 !	182.045.11 !
! !	!	!	!	!	!	!	!	!	!
! !	!	!	!	!	!	!	!	!	!
! !	!	!	!	!	!	!	!	!	!
! !	!	!	!	!	!	!	!	!	!

CAMPAgne du 1/7 A U30/6 :

Q. : quantité en cartons de 100 btes 1/6P30

V. : Valeurs FOB en dirhams

EVOLUTION DES EXPORTATIONS DE CONSERVES DE MAQUEREAUX

DESTINATIONS		1970 - 71	1971 - 72	1972 - 73	1973 - 74	1974 - 75	1975 - 76	1976 - 77	1977 - 78
AFRIQUE .....	T.	2 373,7	1 361,9	749,4	996,4	986,7	696,3	498,7	1 406,6
	V.	3 606 614	2 127 505	1 491 745	2 137 376	2 669 500	1 940 455	1 433 984	5 313 450
A S I E .....	T.	91,3	-	-	-	-	4,5	-	-
	V.	125 282	-	-	-	-	11 724	-	-
MOYEN ORIENT ..	T.	-	11,1	-	-	12,5	-	-	-
	V.	-	28 181	-	-	32 258	-	-	-
FRANCE .....	T.	490,9	172,6	70,6	141,2	130	106,2	235,6	383,9
	V.	1 241 128	357 259	135 948	353 797	376 851	516 628	1 090 428	2 044 139
RESTE C.E.E....	T.	3 001,5	2 326,9	1 540,2	2 798	1 127,5	2 663,5	3 967,8	3 353,6
	V.	5 545 639	4 288 052	3 152 992	7 454 946	7 147 391	6 799 791	23 190 528	20 367 120
RESTE EUROPE ..	T.	780,7	336,2	344,8	517,7	144,2	123,5	264,6	246,9
	V.	1 244 624	624 686	543 307	1 237 270	315 168	285 281	830 768	1 037 899
AMERIQUE .....	T.	76,6	-	2,7	62,8	17,5	-	-	-
	V.	244 983	-	13 909	139 117	117 671	-	-	-
AUTRES PAYS ...	T.	7,4	0,2	7,9	-	-	-	-	-
	V.	26 111	526	10 192	-	-	-	-	-
<b>T O T A L .....</b>	<b>T.</b>	<b>6 822,1</b>	<b>4 208,9</b>	<b>2 715,6</b>	<b>4 516,1</b>	<b>2 388,4</b>	<b>3 594</b>	<b>4 986,7</b>	<b>5 391,2</b>
	<b>V.</b>	<b>12 014 381</b>	<b>7 426 209</b>	<b>5 348 093</b>	<b>11 322 506</b>	<b>10 659 839</b>	<b>9 553 879</b>	<b>26 545 708</b>	<b>28 762 606</b>

Campagne du 1/7 au 30/7

T. Tonnage

V. Valeur FOB en Dirhams

FRUIT AND VEGETABLE CANNING INDUSTRY  
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Attached are figures showing the exports of fruit and vegetables, over the last few years, both by country of export and by product.

It will be seen that while vegetables, olives and gherkins have shown a steady increase, there has been a serious drop in exports of canned fruit and citrus juice since the mid-seventies.

The main element in the figures for fruits is the apricot pack. The drop in exports of this product is blamed on recent poor harvest. It is an excellent pack and should be capable of great expansion. A thorough investigation into way of reversing this downtrend seems called for.

The tonnage of the various products in order of relative importance are :

- Olives	50.000 Tons
- Apricot	50.000 Tons
- Citrus Juice	30.000 Tons
- Tomatoes	20.000 Tons
- Haricot beans	10./15.000 Tons
- Gherkins	8./10.000 Tons
- Capers	2.500 Tons

.../...



The amount of haricot beans packed has been increasing steadily and more could be sold if the supplies were available.

To an even greater than with sardines, exports of fruits and vegetables go mainly to E.E.C. countries so that the whole trade is very vulnerable to competition from Greece, Spain and Portugal, if and when these countries join the EEC. This is extremely serious and other markets must be researched and developed as a matter of urgency.

The number of factories processing fruit and vegetables is high. For example, 30 units pack apricot and 27 vegetables. The 53 packing olives would not concern us from a canning point of view, but over all, it seems most desirable that the number of canners should be rationalised, so that each one can be strong enough to support investment and a standard of professional management to ensure high quality standards of product and pack, product development and, especially in the case of vegetables, changes in practice to keep up with standards now being set in Western countries.

.../...

FICOPAM and the canners visited felt that the can manufacturers gave good support to the industry, their only criticism being of an out break of corrosion in cans, some 4/5 years ago.

The industry has some great strengths, mainly the fact that many of the big canners own their own orchards and there is obviously a high degree of professional management of the production of the fruit. Other canners contract requirements out to the farmers to ensure supply.

To ensure the development of the fruit and vegetable canning industries, there will be required much work in research and development, to improve present strains of the fruit and vegetables, to prolong the canning season for each product and to introduce new products in the places most suitable for soil and climate.

This work is already covered to some extent by la Direction de la Recherche Agronomique, but it would seem that this organisation is of a very general nature and there may well be a gap, which IMEC might fill, between the knowledge of this organisation and the practical problems which need solving with the canner to develop a satisfactory product.

.../...

A start in this direction might be made by IMEC interesting itself in the present work being done to develop a pack of clementines in segments, work on the possibility of growing satsumas and ways of increasing the strawberry pack. All are good prospects for export markets.

EVOLUTION DES EXPORTATIONS PAR PRODUIT/CAMPAGNE

EN QUANTITE ET EN VALEUR

CAMPAGNES		1972 - 73	1972 - 73	1973 - 74	1974 - 75	1975 - 76	1976 - 77	1977 - 78
PRODUITS								
Olives.....	Q	33.424	32.343	35.902	23.576	32.671	42.107	38.700
	V	47.051	52.729	67.237	60.784	85.108	153.630	112.143
Frapes.....	Q	3.517	2.817	2.676	2.236	2.336	3.535	3.212
	V	11.711	9.211	14.729	20.937	19.539	29.711	34.157
Cornichons.....	V	Comptabilisés avec légumes				2.685	5.018	5.817
						6.621	11.344	15.152
Légumes.....	Q	12.266	21.450	19.555	14.684	11.312	16.156	21.527
	V	17.897	32.932	37.659	35.240	27.493	56.244	91.194
Fruits.....	Q	24.162	32.874	42.542	27.935	16.497	32.310	19.480
	V	24.836	34.496	47.199	51.753	34.753	48.950	51.927
Fus.....	Q	24.570	19.110	24.792	13.364	18.212	15.713	14.917
	V	31.448	22.924	30.383	18.710	26.807	31.339	37.047
TOTAL CAMPAGNE...	Q	98.267	108.594	123.467	81.845	83.713	116.847	107.743
	V	132.953	152.291	197.207	187.332	200.585	280.22	341.620

t. = Tonnes

V. = 1.000 DH

Campagne du 1/7 au 30/6

EVOLUTION DES EXPORTATIONS DE CONSERVES VEGETALES

PAR ZONE EN QUANTITE ET EN VALEUR

CAMPAGNE		1971 - 72	1972 - 73	1973 - 74	1974 - 75	1975 - 76	1976 - 77	1977 - 78
DESTINATION								
C. E. E.....	Q	21.332	101.911	118.305	75.354	75.256	107.066	94.511
	V	119.770	148.591	177.553	166.636	179.279	244.959	301.000
EUROPE OUEST....	Q	1.060	1.302	3.503	2.239	1.659	2.572	1.370
	V	3.094	2.623	10.229	7.714	4.258	10.695	12.705
EUROPE EST.....	Q	1.386	105	110	1.195	3.871	2.824	1.758
	V	3.321	433	453	3.117	9.164	9.354	5.009
AFRIQUE.....	Q	91	1.393	656	1.735	246	616	1.962
	V	122	3.988	992	4.526	418	1.476	5.048
ASIE, MOYEN ORIENT AUSTRALIE.....	Q	49	29	81	68	93	325	750
	V	72	49	200	167	370	1.279	4.814
AMERIQUE.....	Q	4.349	3.955	2.722	1.224	1.888	3.424	2.332
	V	6.574	5.517	7.481	5.172	7.076	12.573	12.438
TOTAL CAMPAGNE..	Q	98.367	108.594	125.467	81.845	83.713	116.847	102.748
	V	132.953	152.291	197.207	187.332	200.585	280.226	341.620

t. Tonnes

V. = 1.000 DH

campagne du 1/7 au 30/6

CARNAUD- MAROC

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Turnover estimated as Dh. 160 M.

Capital Social DH. 30,6 M. (43 % CARNAUD -FRANCE  
1,2 % Continental Can)

Hold 70 % of market

General Manager M. LARAKI

Production Manager M. Roger BONNET

Secretary , M. Hassan SEKKAT.

Equipment : 8 specially developed sardine can lines  
at 220. per minute per line

French equipment

Bodies fed in strips to bodymaker vertically and  
cropped prior to presenting to first stage of bodymaker.

2 Cevolani? (320 /minute) Bodymaker lines for small cans

2 Carnaud (250/Minute) " " "

2 GB type Bodymaker with Metal Box Solder attachment  
for 603 diameter.

2 Soudronic lines one of which makes aerosols.

1 Stolle and 1 Minster press for aluminium sardine cans.

Various general line equipment for motor oil, paint, etc..

Presses include one 314 ex Metal Box

5 printing lines, all but one double-colour, 2 varnish  
lines.

.../...

All but one line coil fired  
Photographic and plate making equipment . Touching up by  
hand.

Quantities

Capacity is installed for 35 m sardines cans and 15 m fruit  
and vegetable cans per month. Demand has not reached these  
figures for some years.

Capacity for General Line cans and aerosols appears well up  
to demand.

At present insufficient demand for beer cans but 3 piece line  
is under considerations.

Prices (per 100 in DM)

	1/4 Club	A2½	110	A10 (ProfileC)
Plain Outside	28,09	54,20	192,43	197
Varnish Outside		67,76	200,41	205

Quality control

Good examination on the lines . Statistical  
Quality office well manned and efficient

.../...

Import Tariff

18.5 % on tinfoil

Some doubt as to whether tax is subject to draw-back for scrap.

Suppliers

Tinfoil Sollac, Otto Wolf, Carnaud, BSC

Aluminium Alcoa

Employees

850 plus some casuals . All operators are male  
Find difficulty in recruiting potential technicians to the standard required.

Remarks

1) A new factory is being built outside Casablanca. It will be single -storied but will take only part of the equipment and the present multi-storied building will continue in use.

2) The two sizes of large irregular built up sardine cans cannot be made to processed food standards.  
Consideration should be given to some alternative pack that can be made with greater integrity.

3) The limitation of some of the smaller, less well equipped fish canners was discussed with M. LARAKI who emphasised the need for rationalisation of the industry.



ETABLISSEMENT GOURVENEK

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GENERAL /

Turnover Dm 60 M (1978)

Capital Social : 7 M. de DM

(OMNIUM 80 %)

Factory Manager : M. AGOUZAL

TOTAL / 30 % of market

Equipment

14 Cerfei lines for "boites décollagées"

(slit, form, soldered lap seam (Schüler Machine)

Flange top / Bottom, solder bottom, apply to top

by multiheaded solder machine)

Speed 3.600 each line

4 old Bodymarkers for O.T. cans and Schüler for slow lines

1 Cevolani for A.10

1 Italian bodymaker for A2½ + below

Presses, croppers for sardine body blanks

2 strip feed presses

PRINTING

3 Crabtree Marquess lines (2 double -colour)

3 rd with follow on varnisher)

All are fired by oil and have short ovens

New Varnish machine under installation with longer oven

for better control of synthetics.

.../...

Quantities

80 M. boites décollagées      10 Sizes  
6 M. Aluminium sardine cans    2 sizes (E - 0 end)  
1 M. Solid drawn tinplate      2 Sizes ex Cebal)  
8 M. Sardine + Fish cans  
22 M. open top cans in various sizes

Suppliers

Tinplate                      Sollac    15.000 T p.a. E50/E75  
Aluminium                      Cebal  
Varnish                        Holdens + Stoner Mudge  
Inks                            Inmont

Employees

40 permanent - 70 casuals

Customer Service

Resident maintenance engineers in Safi + Agadir  
Lose money on service

Quality Control

Statistical quality control  
Full control of all attributes of seams but as a  
historic record. Could use information more dynamically  
on the lines themselves.

.../...

Material usage

50 % of selling price is tinplate

69%70 selling price is raw materials

(taking printed plate as such)

Aluminium Can

2 Sizes - Price 40 % higher than tinplate

REMARKS

1. The 4 old body makers may have ceased to be able to guarantee open top cans to required standard.
2. Statistical quality control method is looking backwards rather than forwards. They would be better to have graphs of the most important attributes (overlap, etc ...) on the lines so that supervision and operators can see any movement in the dimensions and take action before trouble arises.
3. The packing of sardines cans ensures that the cans arrive scratched. Returnable paper or board separators would help.
4. The present stoving equipment is barely adequate for full curing of some synthetic varnishes. The new line being installed should solve this problem especially as it will be fired by gas rather than oil which is notoriously difficult to control.

STANDARDISATION OF CAN SIZES

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The advantages of reducing and standardising the sizes of pack for any particular product - or group of products - are considerable :

1. Tinplate prices are less
2. Less stocks need be carried
3. Machine change over times are reduced and higher speeds attained
4. Investment in improvements on manufacturing lines are more profitable
5. Ancillary stocks (cartons, etc ...) are less
6. Longer printing runs give reduced unit costs
7. Tool maintenance is less.

These advantages apply not only to the can-manufacturer but also to the canner.

But standardisation cannot be achieved satisfactorily if production factors only are considered. The final arbiter must be the market. However, this is not to say that the market cannot be guided into a standard range of packs, from which it also will benefit eventually due to obtaining a more consistent product of better value than is possible with a pack run only occasionally, demanding tools rarely used and tinplate in comparatively small quantities.

.../...

In the case of vegetables and fruits it is simple to adhere to the world wide range of open Top sizes.

For fish generally and sardines in particular, the problem is more difficult due to the special requirements of the market and the geometry of the product.

However, with ten sizes of "boites décollagées" and a range of aluminium easy-open containers there should be scope for reducing this range and the multiplicity of brands given a determination by the trade, not to deprive the customer of choice but, by making the standard range such good value for the customer that he cannot resist it. Over a period the normal efforts to hold down the price and costs of the standard range cannot be repeated with non-standard packs as the cost of doing so for a diminishing off-take would be prohibitive.

It needs emphasising that it often takes a long time to persuade the last customer off a non-standard size of can, but with the present fast rising prices of tinplate giving plenty of scope for making any standard range economically desirable it should not take too long.

CANNING AND CANNERY HYGIENE STANDARDS

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The consumer movement in developed countries has focussed on the dangers of pollutants - bacteriological and inorganic - in food generally and this is resulting in more and more stringent standards being laid down for canned food.

1.) A recent case of botulism in the U.K. traced to canned salmon resulted in two deaths. The sales of canned salmon have dropped catastrophically and are likely to take a long time to recover. There have been less serious cases with imported canned fish and the Government is worried that any repetition could lead to a public outcry which could damage the industry - especially imports - badly.

2.) The lead content in canned goods has recently been under review and allowed limits have been reduced in the case of fruit and vegetables and introduced for the first time in the case of fish. The allowable limit for fish will undoubtedly be reduced in the future. This will call for careful monitoring of present levels in packs and a review of spraying procedures and proximity to car fumes in the case of fruit and vegetables. Additionally it favours the use of any can which does not have a lead element.

These regulations will presumably be applied to imports and other countries are likely to follow this trend.

.../...

3.) A codex code of hygienic practice for canning low acid foods is being drawn up by an international committee. The regulations are still in draft form and will eventually cover the USA and the E.E.C. countries. It will be a stringent code and is likely to be accepted eventually by many other countries. A copy of the current draft has been passed to IMEC.

4.) Also the attached draft on low-acid food canning should be drawn to the attention of the industry.

Whilst these regulations will obviously not affect Morocco immediately, a steady tightening of the law in this regard should be considered if export markets are not to be jeopardised.

4th Draft

June 1979

DESS MEMORANDUM ON LOW ACID CANNED FOOD

Dr R H C Charles



**FOURTH DRAFT**

**DESS MEMORANDUM ON LOW ACID CANNED FOOD**

1. All canned foods that are intended to be shelf stable must be subjected to a heat process which will ensure destruction of *Clostridium botulinum* unless they are so formulated that the growth of *Clostridium botulinum* is prevented. All heat treatment given to such cans should be related to scheduled processes which are supported with adequate heat penetration data prepared by canning technologists. The details of the scheduled processes and the heat penetration data must be kept and be readily available for inspection for a minimum period of three years from the date of the last production to which they relate.
2. The  $F_0$  value (heat treatment used) of any scheduled process involving hot filling of cans does, to a large extent, depend on the maintenance of the temperature of the fill at the levels specified in the scheduled process. The fill temperature should be checked at regular intervals during production and the record should be kept and should be readily available.
3. If cans are not given a full botulinum cook or are not otherwise shelf stable at ambient temperature, conditions of storage must be clearly marked on each can and on any packaging that is used. The maximum temperature of storage should be given precisely.
4. All cans must be marked with a code enabling the identification, at least, of the place and date of production. The symbol used for this code should be embossed or otherwise indelibly marked on the metal of the can.

4th draft (continued)

5. Empty cans must be stored and handled so as to prevent their becoming contaminated or damaged in a manner which may affect proper seam formation.
  
6. Before filling, cans must be cleaned mechanically in an inverted position by a suitable air jet or water jet.
  
7. Can seaming processes must be kept under constant supervision. The efficiency of can seaming should be checked before processing begins and at intervals during production, depending on the output and the can manufacturer's recommendations. During production, the cans for seam checking should be filled cans taken from the actual production line and the examination should be carried out on the cannery site. Seam checks should be carried out on the manufacturer's end and on the canner's end of the can. They should include the following measurements:  
Seam width, seam depth, countersink depth, percentage overlap and free space.  
The manufacturer's recommendations should be observed as to the points on the can where measurements should be made and as to the limits to be observed. Seams should be stripped and examined visually for other abnormalities such as wrinkling of the cover hook. Records of measurements must be kept and must be readily available for inspection for a minimum period of three years from the date of production.
  
8. All retorts must be fitted with direct reading (indicating) thermometers and with automatic time and temperature recording devices. These should all be checked for accuracy at least twice a year. Time and temperature records must be kept, and must be regularly available for inspection for a minimum period of three years

4th draft (continued)

from the date of production.

9. A satisfactory system, such as heat sensitive tape or a colour-change device, should be used with baskets of cans to indicate when they have undergone heat processing.
  
10. Water used for general purposes in the plant, including that used in the making up of products or likely to come into contact with the product should be of the following quality:  
Coliforms must not be detectable in 100ml in 95% of samples nor in any consecutive samples. If coliforms are detected immediate investigations must be undertaken. The water should be sampled at different points in the distribution system within the plant at least once every month. Total aerobic colony counts should also be performed and under most circumstances these should not give values of more than 100 organisms per millilitre after incubation for five days at 20-22°C. However, too much importance should not be attached to an absolute value; it is essential that a normal value should be established for water in the plant and any changes in this should be investigated immediately. Samples for total aerobic colony counts should be taken at least once a week at different points in the plant.

If this standard cannot be maintained in any other way the water must be chlorinated or otherwise adequately treated.

The water should not contain toxic chemicals in quantities likely to cause harm to health.

It is essential that water used for can cooling should be free from harmful organisms. Even though the can seams are satisfactory, small quantities of water can enter the can during this cooling period. For this reason the can cooling water must be tested at monthly intervals and it should never be possible to detect coliforms in any samples of 100ml. It must be shown that the water supply is capable of maintaining this standard consistently, before the water is put into use for can cooling. The total aerobic colony count should be performed at at least weekly intervals. A colony count of less than 100 organisms per millilitre after incubation for 5 days at 20-22°C is satisfactory, but any change in the count should be investigated immediately. This count cannot be totally relied on to ensure the absence of harmful intestinal organisms so it is essential that coliform tests be performed at least once a month.

If it is not certain that the standard can be maintained, cooling water must be chlorinated. The chlorine should be in contact with the water for at least 20 minutes before the cooling water enters the retort. Sufficient chlorine should be added to give a residual free chlorine content of 0.5 ppm in samples of water taken at the exit from the retort. If the cooling water is re-circulated it is essential to screen or filter the water to remove organic debris for chlorination. Monthly coliform counts must be performed, even if the water is chlorinated.

11. After heat processing, until the cans are both cool and dry, organisms deposited on the outside may gain access to the interior of the can through the double seam, even though this is satisfactorily formed. Therefore after heat processing the can must not be touched by <sup>the bare</sup> hand

4th draft (continued)

until it is cool and dry. Any mechanical handling equipment must be constructed so as to permit easy cleaning. Any can runways in the post processing area which are wet or likely to become wet should be disinfected regularly during production runs by mist spraying with appropriate disinfectants. Can seams should not come into contact with the runways. It is advisable that regular microbiological monitoring should be performed in the post processing areas on cans, runways and other can handling equipment. It is important that cross contamination from raw food areas should be avoided; processed cans must be dealt with in an area that is structurally separated from areas where the raw food is stored or prepared and all precautions must be taken to protect processed cans from contact with any raw food, equipment, clothing or staff who have been in contact with raw food.

12. Cans may be cooled with water sprays outside the retort. The spraying areas must be protected from contamination and the water must be of the same standard as water used for cooling cans within the retort.
13. After heat processing, cans must not be washed with brushing machines with or without sawdust. They may, however, be washed with a water spray containing detergent. This water must be of the standard of can cooling water and the spraying area should be protected from contamination. If cans have to be wiped, this should not be done until they are both cool and dry; disposable paper tissues should be used, one for each can.
14. At all times, cans must be handled with care so that they are not damaged. Mechanical handling equipment must be constructed so as not to cause damage to cans.

4th draft (continued)

15. After cooling processed cans must show no evidence of internal positive pressure.
  
16. A representative sample of heat processed cans with a minimum of one can from each retort load should be subjected to an appropriate incubation test. The time and temperature of the incubation will depend on the type of process that the can has received. After incubation, all unblown incubated cans must be opened and the contents subject to appropriate organoleptic and pH examination. Microbiological examination should, at the very least, be performed on the contents of all cans showing any organoleptic or pH changes, not just on the contents of blown cans.
  
17. Processed cans must not be stored in direct contact with the floor. Pallets, packing material and other material in direct contact with the cans should be clean, dry, of good quality and not liable to transmit contamination to the cans. It is preferable that cans should not come into direct contact with wooden pallets or shelves.

CAMPDEN RESEARCH ASSOCIATION

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The Campden Food Preservation Research Association has been in existence for some fifty years. It is an Association formed by companies in the canning and allied industries devoted to the technical improvement of preserved food.

Its activities include the training of personnel for member firms in the principles of canning control and analysis and evaluation of packs. Members can also commission special enquiries in areas of interest to them and submit samples for analysis.

The members include virtually all U.K. canners and a number of canners and associations from overseas.

It has provided a support for the British food preservation industry, without which the present high standard of safety and hygiene enjoyed by the industry would not have been possible.

It provides a good pattern for some of the activities of I.M.E.C. and to enable use to be made of its accumulated knowledge and training facilities, it would be well worth joining the Association.

Details of the work of the Association and the courses it holds have been passed to IMEC.

DEVELOPING THE MARKET FOR CANNED  
GOODS IN MOROCCO AND FOR EXPORT

-0-

Ultimately, the market for canned goods depends on the housewife or catering establishment buying them.

The reasons for purchase will be one or more of the following :

1. The equivalent fresh produce is unavailable
2. Using a can saves time and effort in preparation
3. The product is unique (canned grape-fruit is quite different from fresh)
4. For emergencies.

These reasons would appear to limit the scope for increasing the Moroccan market. Fresh produce is available in abundance and domestic help is common. This severely limits the potential growth. However this need be no fatal obstacle to the development of an export market and indeed excessive use of expensive imported tins to wrap round produce which is otherwise available fresh is not necessarily desirable.

For the export market in the developed countries the purchaser will demand of the product :

.../...



- 1) ~~an~~ outward appearance which will persuade her to make an initial purchase and does not make her nervous of cutting herself.
- 2) Consistency of pack
- 3) A pleasing appearance to the product when the can is opened
- 4) A high proportion of solid contents
- 5) That it suits the palate
- 6) That it does not seem too expensive
- 7) That she can recognise the product again and will be able to purchase it.

Particular emphasis needs laying on 5) as palates vary from country to country. Indeed before marketing any new product the tastes of the market aimed at should be tested as, frequently, a product prepared for a local market will be quite unsuitable for export to some countries.

Bearing these points in mind the necessity for a good brand name, selling a consistent product to a high standard both of product and integrity of pack is obvious.

.../...

By stating the problem it becomes evident that such a standard cannot be achieved by the very small canner. These markets in developed countries are therefore more likely to be penetrated and held by a large canner with resources for investment and marketing.

This does not mean necessarily that some small canners may not have a part to play in providing for specialised markets but it does indicate the general need for rationalisation among the packers. This could be achieved by a gradual tightening of standards of canning procedure and of building which are necessary in their own right and will lead to the weaker packers being taken over by the larger ones or having to drop out of the industry.

"LES GRANDES MARQUES" , SAFI, M. FOUIN

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M. FOUIN showed us round the cannery, which unfortunately was not working as there had been no catch that morning.

The plant cans 30 tons a day in full season and is one of five belonging to "Les Grandes Marques", two being in Agadir and two others in Safi.

The fish are brought from the docks, some 5 kilometres away, in plastic bags. They are floated and then cut and de-gutted, the final product being paddled through to selection and placing in the cans. Selection is by quality and size for various markets. In general the back-bone is not removed.

Cooking is then carried out for 30 minutes at 100 °. Oil is added to the pack automatically at a temperature of 80°C.

Sealing is by 2 head, 8 pocket CARNAUD irregular seamers. There are 6 seamers. The filled cans after washing fall into baskets which are moved by pulley for lowering into the autoclave. The autoclave time is controlled by automatic clock recording.

The full tins are then cooled in town water, dried and packed in cartons.

The tins are unpacked after three months and before delivery to reject blown cans (0,5 %).

.../...

POINTS DISCUSSED

" Les Grandes Marques" have some 17 trade marks for various countries but at this plant normally 3 were used. The main customers were Germany, Switzerland, France and some African countries (generally the large sizes for the African countries).

M. FOUIN was satisfied with his seaming equipment from CARNAUD and felt the back-up by the Safi-based engineers was good. He has had trouble with spares due to delays in obtaining import licences. It took him a year to obtain 10 gallons of marking ink from France due to licence delays.

The price of the 1/6 size can is DH 0.32 which is 30 % of the final sales prices of the product. In aluminium with easy opened the price is DH 0.38 . The aluminium box is more easily deformed and consequently smaller fish are packed in it.

Standardisation of can sizes would be difficult on account of the geometry of the fish and the need for a large range to cover the various sizes of fish.

The water used for cooling is town water and is not monitored. It should be.

The factory has a problem with the cleaning of the cans at final inspection prior to despatch. The best method is by means of a detergent solution, but this produces a high incidence of blown cans and has had to be abandoned. Some research into methods of cleaning might be worth -while.

.../...

This firm would like to do its own exporting without the help of O.C.E., which adds to the price of the product. At the same time the inspection by OCE appeared to be not unwelcome.

M. FOUIN said he would be glad to send some of his supervisors on courses organised by IMEC and felt that IMEC's research facilities should be of value to the industry. The three Safi factories of "Les Grandes Marques" can some 4.500 cases per year in aluminium cans and 115.000 cases in tinfoil cans.

SOCIETE MAROCAINE (SOMACOS)

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Privately owned. Director General M. BOUAMRANI.

Production Director M. THAMI.

The method and equipment is similar to that at "Les Grandes Marques".

The cannery was built in 1945 and removed at some 10 years later. Floor and walls of the cannery are suitable but the pipe from the outside tank holding the fish, to the troughs below was enclosed so as to make it impossible to inspect and probably difficult to keep clean.

The troughs were of enamelled cast iron. Many cast iron pipes were showing corrosion.

The seamers were maintained but there was no evident check by the company on the seams themselves.

Although the cans from the autoclave passed directly through a wall, the need to keep all canned produce away from the canning process did not appear to be appreciated.

No form of statistical quality control was practised and the integrity of the pack appeared to rest with OCE, the can manufacturers' maintenance of the seamers and a check for blown cans (reported as 0,4 % . Seemed higher).

# SARDINES EN CONSERVE D'ALUMINIUM FAUT-IL SUIVRE L'EXEMPLE ITALIEN ?

La Conserverie de Sardines de la Société Ittica Elbana (SIE) est installée à l'île d'Elbe ; elle est la seule industrie de cette île italienne. Afin d'assurer son développement commercial, son directeur, M. Benatoff, a décidé il y a une dizaine d'années, d'utiliser la boîte aluminium. Compte tenu des résultats très satisfaisants obtenus, elle a dû automatiser une partie de sa chaîne de fabrication.

Dès en 1960, l'usine de la SIE est approvisionnée à 100 % en sardines fraîches par les pêcheurs du port voisin. Le poisson est traité immédiatement dans les quelques heures qui suivent la pêche, si bien qu'en moyenne 60 à 65 % du poisson mis en boîte est fraîchement pêché du matin. Il ne pouvait être question pour ses responsables de laisser du poisson pêché la veille. Ainsi, pour éviter de conserver les sardines dans de la glace, mais aussi pour que les activités de cette entreprise ne subissent aucun ralentissement (en raison des journées de pêche infructueuse), la SIE s'est équipée de chambres de surgélation. Elle peut ainsi emballer toutes les quantités offertes, pratiquant si nécessaire en cas de pêches abondantes une surgélation rapide à -40 °C, température maintenant ainsi de façon parfaite la qualité du poisson.

En 1968, lors de l'apparition de la boîte

aluminium, la SIE produisait 10 000 boîtes par jour. Afin de faire face à l'accroissement de son marché elle a augmenté sa capacité de production atteignant à l'heure actuelle 100 000 boîtes par jour. Il fallait donc résoudre le problème de cette augmentation de capacité.

## Simplicité du processus

Il n'y a pas à priori de différence fondamentale avec le processus classique de fabrication de conserves de sardines (voir photos et légendes). La SIE est équipée de façon complète et dotée des installations suivantes :

- lignes d'ététagage et d'équeutage semi-automatiques,
- postes manuels permettant un travail en continu de mise en boîte des sardines,
- cuisson des sardines à la vapeur,
- dosage de l'huile dans les boîtes,

- sertissage des boîtes suivi d'un lavage externe,
- stérilisation.

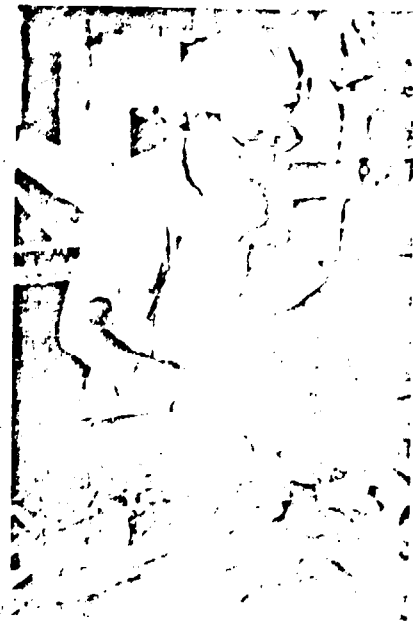
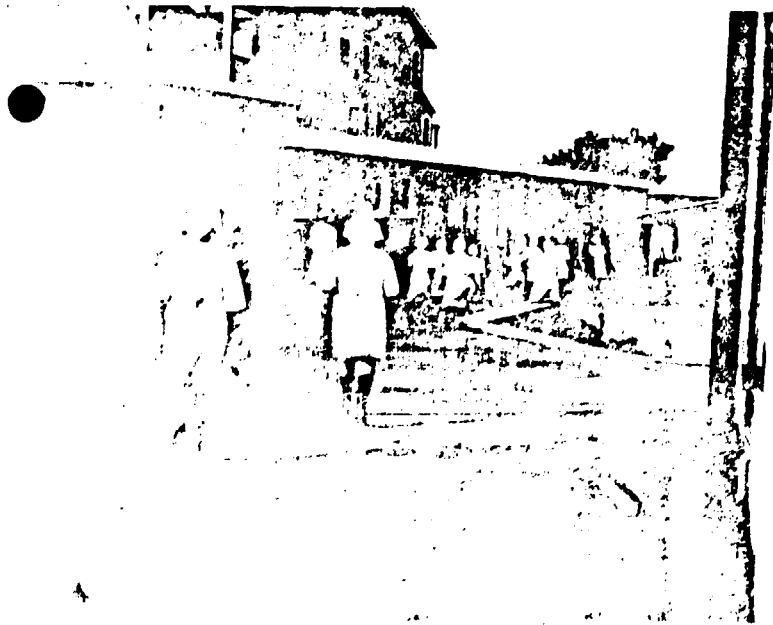
Après stockage dans l'usine, les boîtes sont expédiées dans un entrepôt à Milan où elles subissent une maturation de trois mois. La SIE commercialise ses produits sous la marque « Napoléon » et « Désirée » et travaille à façon pour d'autres marques.

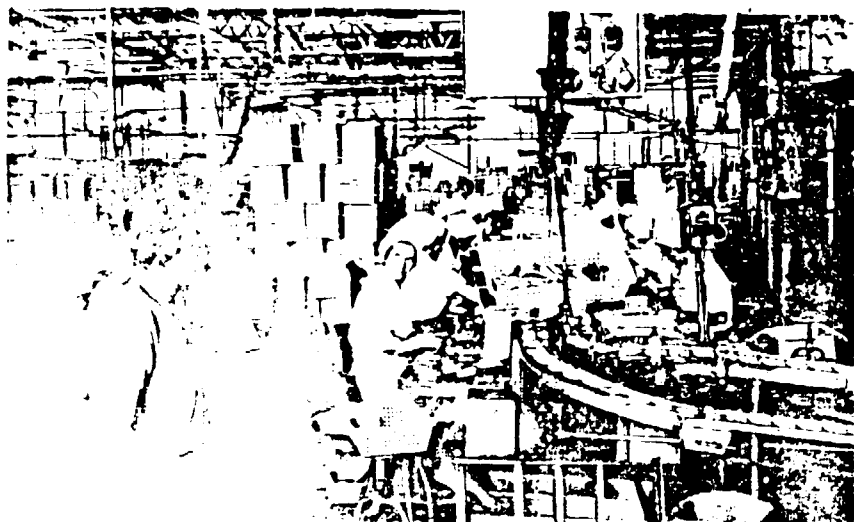
Les différentes phases ont été étudiées en commun entre le conserveur et la société Cebal, fournisseur des boîtes. Cette étude a abouti il y a six mois. De la création à la photogravure, tous les aspects de la décoration des boîtes de même que tous les travaux de mécanique et d'électronique nécessaires à la synchronisation de l'ensemble des machines ont été réalisés à l'usine Cebal de la Flèche.

La SIE possédait deux chaînes de fabrication chacune munie d'une sertisseuse à cadence de 3 000 boîtes/h. Il s'agissait d'augmenter cette cadence à moindre frais.

## Moderniser l'ancien

La solution choisie a été de coupler chacune des anciennes sertisseuses à une nouvelle plus performante (4 200 boîtes/h), réduisant ainsi très nettement l'investissement global. Un aiguillage électronique automatique permet de les coupler. Par rapport à une ligne normale ou, après huit-



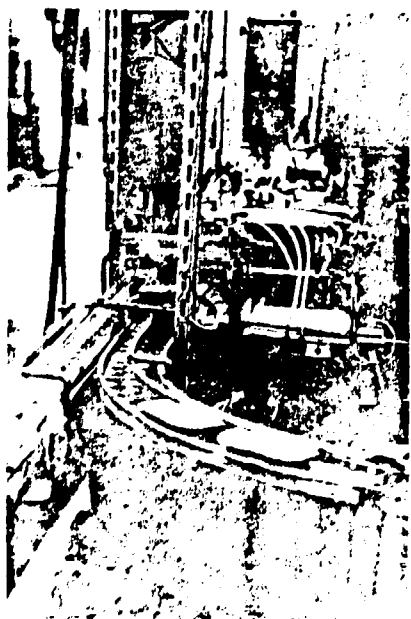


... une seule machine réalise les opérations de bûchage et de sertissage, les deux opérations sont en séparées (le clinquet sert à resserrer légèrement le couvercle des boîtes du corps de boîte afin de provoquer un léger accroissement de la pression pour qu'il ne bouge plus) à hauteur à haute cadence (7 000 boîtes par heure) un aiguillage électronique dirige les boîtes en priorité vers la machine à sertissage plus rapide, lorsque la machine à sertissage est averti par un détecteur de présence automatisé qui provoque le sertissage.

**La réactivité des sardines**

Le conditionnement des produits nécessite un suivi constant et précis. Pour cela, les produits passent par des essais de stabilité et de conservation à des températures précises.

Les boîtes sont stockées dans des conditions de leur évolution et de leur conditionnement. Le laboratoire de recherche assure le conditionnement des produits et leur suivi et sa durée.



Cebal possède plusieurs laboratoires qui sont implantés dans ses principales usines. Le plus important est le laboratoire de recherches situé à La Flèche qui emploie actuellement 26 personnes. Les principaux objectifs du Laboratoire de recherches de La Flèche sont les suivants :

- apporter son aide aux usines de fabrication, en facilitant la conception de nouveaux produits ou l'amélioration des produits et procédés existants,
  - apporter son aide aux clients de Cebal.
- Le laboratoire, avec la collaboration éventuelle du Service Clients résoud les problèmes de conditionnement qui peuvent être rencontrés par les clients.
- entretenir l'esprit de recherche au sein de la Société et ainsi contribuer à son développement ce qui permet d'offrir à ses clients une gamme de produits répondant encore mieux à leurs besoins.

Le rôle du laboratoire ne consiste pas seulement à faciliter l'élaboration des produits de Cebal mais également d'être au service de ses clients en les conseillant et en les aidant à résoudre leurs problèmes de conditionnement.

Pour cela, le laboratoire dispose d'un équipement complet de conditionnement qui comprend, entre autre, des sertisseuses, une thermoscelleuse et des autoclaves avec

- 1 - L'usine, d'une propreté remarquable travaille 9 mois sur 12 avec des sardines fraîches.
- 2 - La SIE possède 3 machines d'ététagage et d'équeutage semi-automatiques.
- 3 et 4 - Après passage dans la saumure pendant 1 heure et lavage à l'eau courante, les sardines ététagées arrivent à l'emboitage dans des paniers.
- 5 - Les boîtes rasées reposent sur des balancettes sont présentées à l'entrée du four continu. Les boîtes restent 40 mn à 100° puis 7 mn à 120°; l'opération de séchage des boîtes, très importante pour la qualité du produit, est réalisée en fin de cuisson.
- 6 - Vue de l'aiguillage automatique entre étiquetage et sertissage.





...ibilité de travailler avec une contre-  
...ion contrôlée. Les essais de compta-  
... contenu contenant qui sont effectués  
...érateur permettent d'adapter les  
... en fonction par des vernis en  
... du contenu qui sera en contact  
...illage.

... pour mesurer avec précision les  
... de comptabilité  
... effectuée  
... à différentes  
... climatisées.

... le laboratoire  
... important et perfec-

... vers  
... contrôlé :  
... après

... adap-  
... de 25  
... 1965

- un microscope,
- des loupes binoculaires,
- un spectrophotomètre,
- divers appareils de mesure,
- des chromatographes,
- un détecteur de fuite à l'Hélium.

Certains de ces essais sont assez fré-  
quemment réalisés en collaboration étroite  
avec le client.

**Durée de conservation**

Le laboratoire dispose également de l'équi-  
pement nécessaire à des analyses bacté-  
riologiques : hôte stérile pour les prélève-  
ments, études d'incubation, microscope  
d'observation. Il peut ainsi caractériser les  
germes présents dans les emballages et  
déterminer les causes d'un défaut  
constaté : (mauvais sertissage, stérilisation  
insuffisante...).

Les études précédentes sont adaptées à  
des conditionnements finis, et tournées  
vers les besoins des clients.  
Cebal dispose des durées de conservation  
en boîtes aluminium à ouverture facile  
pour chaque produit, actuellement mis en  
boîtes de conserve.

**LA SIE EN CHIFFRES**

- Effectif : 70 personnes (le seul poste non automatisé de la chaîne de fabrication, la mise en boîte emploie 80 % de la main d'œuvre totale de l'usine).
- Capacité de production installée 100 000 boîtes/jour.
- Quantité de sardines traitées 120 quintaux/jour.
- Nombre de boîtes produites : 60 000/jour.
- Capacité de stockage de sardines surgelées : 700 T soit deux mois de travail environ.
- Capacité de surgélation : 320 Q/jour.
- Capacité annuelle 18 000 000 de boîtes (la totalité de la production est livrée en boîtes Tu Hop).



