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West Europe Report

SCIENCE AND TECHNOLOGY

(FOUO 13/80)

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ENERGY

EFFORTS TO COMMERCIALIZE SOLAR HEATING DISCUSSED

Paris REVUE DE L'ENERGIE in English Special Issue Aug-Sep 80 pp 34-42

[Excerpts]

In the case of France, great efforts have been made to solar heating in dwellings and to use of biomass for energy purposes. It is in these sectors where the most significant contributions of new energy sources to meeting energy requirements between now and the year 2 000 will be made. Another priority is to maintain solar research at a hight level. This has mainly resulted in construction of a 2 MWe solar termodynamic test centre (Themis) (1) and by increased aid in the field of photovoltaics.

Research and experimentation efforts devoted to this sector have thus been developed to a considerable extent both in France and in most industrialised countries :

The French solar budget increased from more than 50 million francs in 1975 to more than 400 million francs in 1980 (2).

The difficulty of making international comparisons is illustrated by this table, prepared by the EEC.

If this development is analysed, two phenomena can be observed :

If this development is analysed, two favouring experimentation, rather than research, to an ever-increasing extent :

	1975	1978	1979	1980
Research	90 %	75 %	65 %	54 %
Experimentation	10 %	25 %	35 %	46 %

— Increased financial support from the state has been accompanied by closer supervision of the direction or even the content of the final research by the ministry responsible for energy matters.

In 1978, this supervision at ministerial level resulted in creation of the commissariat a l'Energie solaire (COMES-Solar Energy Commission), Which is responsible for coordinating, sponsoring and preparing all solar activities in France. In 1979, COMES's scope of activity was extended to include biomass, while in 1980 budget procedures for research aid were redefined.

Apart from the transition from Utopian theorizing to economic reality, this development corresponds to the gradual definition of an industrial policy in terms of energy targets, technological channels and development procedures and conditions.

II. — Market development

As opposed to traditional energy sources, for which most decisions are made by national-sized companies, for wich the public authorities can implement a voluntarist policy, investment decisions for most renewable energy sources are taken under local or even individual responsibility : the state 's action can only be a policy of *incentive*. These incentives are necessary, but this policy does not consist only of reducing the apparent cost of energy for the user.

French industrialists place great importance on training and information, and also on the principle that the state sets an example in development of the market, with its own orders.

Les conditions du développement des ventes de l'entreprise (1)
Corporate sales development conditions (1)

	Prioritaire *Priority*	Importance *Importance*		
		Forte *Large*	Moyenne *Medium*	Faible *Small*
Réduire les coûts de production *Reducing production costs*	36	24	45	21
Reduire les prix de vente *Reducting sales prices*	38	27	43	30
Croissance générale du Marché *général market growth*	75	76	15	10
Publicité de l'entreprise *Corporate advertising*	21	36	58	6
Implanter dans un réseau de distribution *Establishment in a distribution and sales network*	31	47	29	24
Améliorer les produits Products improvement	22	46	34	20
Rechercher de nouveaux produits New product research	19	43	40	17
Former des installateurs Training fitters	31	57	30	14
Prospection commercial Sales prospection	31	57	30	14
Assurer un service après-vente Afer-sales service	8	44	38	18
Assister les installations Assistant provided to fitters	11	51	23	26
Assister les concepteurs Assistant provided to designers	14	36	36	27
Augmenter les aides publiques Increasing public aid	41	70	11	19

(1) Enquête du CSTB
(1) CSTB (French Scientific and Technical Building Center) Survey.

Les freins du developpement du marché
Curbs on market development

Nature *Nature*	Prioritaire *Priority*	Importance *Importance* Forte *Large*	Moyenne *Medium*	Faible *Small*
Règles d'urbanisme inadaptées *Poorly suited town-planning rules*	22	31	44	25
Règlements techniques inadaptés *Poorly suited technical regulations*	4	31	44	25
Procédure administrative lourde *Cumbersome administrative procedures*	12	51	43	6
Matériel complémentaire inadapté aux capteurs solaires *Additional equipment not suited to solar collectors*	13	7	41	52
Cherté du matériel solaire *High cost of solar equipment*	48	65	18	18
Qualité et durabilité insuffisante au matériel solaire *Insufficient quality and durability of solar equipement*	12	22	44	34
Produit inadapté au climat *Product not suitable to climate*	17	13	33	53
Absence de normalisation des produits *No product standardization*	5	25	34	41
Aides financières publiques insuffisantes *Inadequate public financial aid*	54	64	12	24
Constructions solaires publiques insuffisantes *Insufficient public solar projects*	47	58	27	15
Régime contraignant d'Assurance-construction *Prohibitive building insurance system*	17	17	41	41
Resistance des architectes *Resistance of part of architechts*	14	39	45	15
Formation insuffisante des installateurs *Inadequate training of fitters*	20	49	26	26
Circuits de distribution inadapté *Poorly suited distribution circuits*	4	38	34	28

Information insuffisante du public *Insufficient public information*	30	49	26	26
Contre publicité des réalisations défectueuses *Adverse publicity from faulty projects*	25	47	25	28
Constructions solaires privées insuffisantes *Inadequate private solar projects*	24	56	24	21

Les utilisateurs expriment un point de vue voisin, dans une enquête sur une revue de consommateurs (1)

Useers express a similar viewpoint in a survey made by a consumer review (4).

Obstacle au developpement de l'énergie solaire
Obstacles to solar energy development

	Important *%*	*Medium* *%*	*Low* *%*
Manque d'information *Lack of information*	*82*	*8*	*10*
Coût du produit *Product cost*	77	11	12
Insuffisance des aides de l'Etat *Insufficient Stade aid*	70	16	14
Rentabilités incertaines *Uncertain returns*	52	20	28
Manque de faisabilité des installations existantes *Lack of reliability in existing installations*	29	45	

Les objectifs d'entreprise *Corporated aims*		*Importance* *Importance*		
	Prioritaire *Priority*	Forte *High*	Moyenne *Medium*	Faible *Low*
Maximiser la rentabilité de la production *To maximise production profitability*	39	54	28	18
Maximiser la part de marché de l'entreprise *To maximise the company's share of the market*	37	41	49	11
Diversifier les activités de l'entreprise *Toiversify corporate activities*	52	36	36	28
Prestige et image de marque de l'entreprise *Corporated prestige and brand image*	47	45	28	28
Assurer les débouchés *To ensure outlets*	17	35	30	35

Assurer une vieille technologie *To achive a technological advance*	42	59	19	22

It is interesting to note that, in accordance with this same survey, approximately 25 % of consumers state that they are ready to pay over 10,000 French francs for a solar water heater, whereas economic calculations show that at this price, the time needed to amortize a solar water heater with additional electric heating is undoubtedly longer than ten years, i.e. much longer than the time normally allowed for energy equipement : the amortization time for energy saving projects is usually from three to five years.

THE INCENTIVES FOR SOLAR HEATING IN FRANCE

In the part months, many new measures have been taker to promote solar heating in France. Most of them deal with sanitary water heating, for obvious economical reasons, but space heating receives an increasing attention. The actions that are implemented depend on three basic principles

(i) An attractive loan system, which finally resembles to a "solar bank".

(ii) A nation-wide agressive solar demonstration policy.

(iii) A progressive transfer of the decisions and the corresponding subsidies, from the central to the regional and local authorities, especially for the solarization of public buildings, the education of the public and the training of the professionals.

Loans cover mainly the residential solar water heaters : for instance, partments and houses built under our social housing schemes (more than half of the 400 000 dwellings built every year in France) benefit from a low interest (8 %) loan covering about half of the cost of the heater and extending over a 15/30 years period. Furthermore, for those dwellings which are electrically heated, the other half may also be covered by a more complex mechanism, which finally leads to a zero-interest-rate loan over 10 years. For 1980, it is anticipated that these measures may cover 10 % of the new dwellings i.e., about 40 000. The cost of this procedure will probably implayayearly amount of 20 to 25 million dollars of loans.

Demonstrations are financed both by loans and grants. For instance, a recent request for proposal deals whith an order of 5 000 solar-heated houses over the 1980/82 period : it is, to my knowledge, the largest single solar space heating operation lauched in the world. The estimated loan per dwelling (always at 8 % and over a 15/30 period) lies around 6 000 dollars, which brings the total of this demonstration project to 30 millions dollars. Furthermore, another project where 50 % grants are given to solar heating of public swimming pools : 26 of them should be in operation this summer. Another request for proposal deals with seasonal storage : more than 2 million dollars of grants will be devoted to experimental systems.

Another budget of nearly 5 million dollars should subsidize individualized requests for demonstrations, inclunding passive architecture. A part of this budget is devoted to a procedure by which local authorities or industries can request the Commissariat à l'Energie Solaire to share, on a 50-50 % basis, the cost of feasibility studies for the solarization of public buildings (scholls, hospitals, campings, etc...). The rests goes to grants, which depend on the quality and the technical interest of the demonstration. The Commissariat à l'Energie Solaire has started a decentralization policy, and creats local "solar funds", through 50-50 agreements with regional, provincial or municipal authorities, in order to associate the local decision-makers to our national policy.

Finally, an education policy for the professionals (plumbers, electricians, heating specialists) is being implemented : the goal is to train between 1 000 and 2 000 professionnals every year, through 20 regional instruction centers.

When all these measures are in full operation, more than 50 million dollars will be yearly devoted to incentives grants and loans, aside from the R & D budget. It should be also stated that energy conservation and renewable energy materials can be deducted from the income of each french family, with a yearly ceiling of about 1 500 $: this is not a tax credit, but a reduction to the taxable asset.

NEW ENERGIES AND JOB CREATION

Many development projects concerning renewable energies are financed by the Administration in France as in other countries. These projects are sponsored as part of programs aimed at industrial development, decentralization, cooperation with developing countries or job creation.

Given the present overall situation, the last-mentioned point is of special importance. In this way, the French government's aims in the solar energy and biomass sector will mean the creation of 40,000 jobs between now and 1985.

Apart from the fact the jobs created often concern industrial sectors in difficulties, and that they are decentralized and located in rural or post-urban environments, involving economically underprivileged regions, for the same investment, more jobs are provided than in most other industrial sectors.

Direct or indirect jobs 1 billion dollars (United States)	
Biomass	38 000 (1)
Energy savings in housing	35 900 (1)
Energy savings in industry	30 000 (1)
Solar energy	35 000 (1)
New building	34 100 (1)
Wind power	30 800 (2)
Photovoltaic conversion	29 500 (2)
Household electric appliances	28 700 (2)
Oil refinery	16 400 (2)

Maximum permissible price for a solar water heater

Less than 5 000	37 %
Between 5 000 à 7 000	16 %
Between 7 000 à 10 000	24 %
Over 10 000	23 %

This uneconomic attitude is probably a result of both increased sensitivity to and awareness of ecological problems and anwiety over the energy crisis. However, it would certainly be necessary to make a distinction between opinions of potential users and the opinions of the effective decision makers...

In actual fact, a great effort is needed for industrial development of renewable energy sources. In France, it is considered that in order to reach the targets set for 1995 (5), nearly 5 billion francs in incentive loans will have to be granted in 5 years.

If this kind of effort is small with regard to the oil bill, it may seem considerable in view of the energy contributions expected. But the interest of renewable energy sources in the short and medium-term, unlike traditional energy sources, cannot be gauged only on the basis of petroleum equivalent tons. The economic importance of renewable energy sources, which has no common standard with their energy contributions, has to be evaluated using other criteria, especially with regard to regional development, creation of employment and cooperation with developing countries. Moreover, it is on this basis that solar programs are financed.

In the same way, development of renewable energy sources contributes to replacement of hight energy consuming industrial activities by activities consuming less energy or even producing or generating energy (bio-industry, agricultural and food industry, etc).

CSO: 3102

TRANSPORTATION

OBJECTIVES, PROGRAMS, PLANS OF AUTO INDUSTRY

Milan IL SOLE-24 ORE in Italian 4 Oct 80 p 3

[Text] Point by point decisions (goals and channels for action) in completed automotive industry program. Future of Italian auto industry hangs on innovation. Time is running out in the race for international competitive status. How to stop share-of-market losses in Europe. Action under PL 675 deemed inadequate. Practical steps to boost productivity, streamline component production and design, and support research and development.

I. How Serious Is the Crisis?

The problems besetting the troubled Italian automotive industry were covered in the report released in March 1980 by the study commission set up in the Interministerial Committee for Industrial Policy Coordination (CIPI). That analysis showed that the Italian automotive industry had been steadily losing ground through the seventies in its share of world, European, and domestic markets. The decline was slight at first, but gained momentum by mid-decade: we stand now where we did in the Sixties, before the great 10-year leap toward modernization in the industry. That loss, the report concluded, "should it continue over time, would lead to the irreversible decline of the Italian automotive industry."

The penetrating probe embodied in the preceding chapters of the current program confirms that assessment. What also emerges from it, and in even starker terms, is the fact that the growing interdependence among policies of the various world producers has further eroded the margin of time remaining for any effective intervention in the domestic industry.

The great challenge the Italian auto industry must face and win lies, first of all, in the area of innovation. That is very tough ground, into which the competition has poured tremendous human and financial resources, and upon which, in the next 3 to 4 years, the future ranking of the world's auto-makers will be decided.

The Commission finds, to a man, that the effectiveness of the measures outlined below will depend to a large degree upon improvements in labor relations within the industry, without which the indispensable improvement in competitive standing required to achieve the goals set forth in the program would be highly problematical. The hope is, therefore, that both industry and labor will swiftly take all possible steps to sit down together for constructive negotiations in the national interest.

II. Trends in Supply and Demand

At the start of the seventies the automobile market was displaying two tendencies. On one hand, there was a change in the behavior of the demand side of the market, with a gradually increasing weakness in demand for extra options, coupled with a growth in buyer preference for "replacement" components, which in the OECD area reached better than 70 percent of the total. On the other hand, there was the decline in the differentials in spending on all factors of production -- particularly the availability of manpower at various levels of skill -- and the emergence of growing institutional rigidity in their utilization.

These trends, which were to be found in all the developed countries, albeit to varying degrees, were accentuated by the energy crisis. Specifically, there was the perceptible growth of a negative attitude toward the very future of the automobile in response to the soaring increases in the prices of petroleum products and to the growing uncertainty as to their future availability.

These scenarios for the decline in demand in Italy found support in the extreme inflexibility of existing legislation, and in occasional slants imposed on the manipulation of economic policy. This had an impact on the process of product innovation which, during those very same years, was rapidly accelerating in the plants of some foreign competitors.

The leaders active in other countries at the time were reacting to this mounting pessimism here over the outlook for domestic demand by adopting aggressive policies of penetration in markets with consumer structures similar to those in the producing countries. And so there came about an enormous expansion in the di-

mensions of the market, with further intensification of the tendency toward penetration by the producers in all areas of the market, and in all the national markets.

The period during which the automobile industry crisis seemed most acute -- from 1973 to 1976 -- thus constituted, for the German, French, and Japanese makers a breathing-space to set clear-cut strategies for growth during a period of sluggish demand. To bring their plant, organization-management, and distribution systems up to the requirements of the new goals, they then undertook intensive restructuring on an industry-wide basis, with financial help and guidance from the respective governments. Significant in this connection are the steps taken by the British and U.S. governments to rescue British Leyland and Chrysler from bankruptcy.

III. Why the Italian Auto Industry Lost Its Competitive Steam

In this context, the Italian position was steadily weakening. Various factors were simultaneously at work to bring about this downward trend:

a. decline in productivity and operational efficiency due to the built-in rigidity of manpower utilization, with the consequent rise in production costs, during a period when the foreign producers were trying to hold down price changes;

b. delays in bringing out new models, during a period of rapid innovation on the part of foreign competitors, a period in which foreign competition, particularly Japanese competition, was moving to very aggressive marketing strategies;

c. difficulties in building up marketing and distribution systems, and desultory attention paid to upgrading marketing techniques.

It was the synergistic effect of these combined factors that started the downward spiral. The shrinkage in profit margins brought a worsening in corporate economic and financial equilibrium leading to inadequate investment, with consequent adverse effects on both the status of production efficiency and on market position. Such investments as were made, furthermore, were generally financed by recourse to new indebtedness, with a further worsening of the economic and financial picture.

IV. Growth in Demand and Outlook for Jobs

Given the economic outlook, growth in European demand for automobiles over the eighties is generally forecast at 1.5 to 2 per

cent per annum. In this scenario,Italy's trying to hang onto its present share of the market, considering the requisite boost in productivity, is going to create problems when it comes to maintaining today's level of employment.

Merely to achieve that goal will therefore mean that Italy's performance will have to be better than the average of the other European auto-makers. Meanwhile, predictions for the rest of the current year show that along with an improvement of its share of the domestic market, the Italian industry is suffering a marked decline on the European market -- as are those of other European countries, for that matter -- as a result of strong Japanese penetration.

For 1980-81, the chilling of the international economy will bring a demand level well below the average forecast for the eighties as a whole.

V. Government Intervention in Other Countries

Government intervention has been crucial in the sometimes forced behavior of the automotive industry in the major countries. In fact, where the government does not take a direct hand -- and it is worth recalling that in Europe the industry leaders, with the sole exception of Italy, are either entirely state-owned or partly owned by the central governments or by its peripheral agencies -- the industry has been the target of emergency government intervention in the charting and implementation of the restructuring processes.

In the major countries state intervention in the industry has been massive, designed -- initially with isolated measures, then increasingly with the formulation of overall national strategies -- to guide and channel the structural changes in the national industry. In some countries, like Japan and France, most of the intervention has taken the form of incentives which set a premium on achieving specific growth targets agreed upon between industry and government.

The policy thrust behind all such intervention is to strengthen the national auto-makers' production and marketing structures, while encouraging them in penetration of foreign markets and making sure that any eventual recovery in domestic demand does not redound to the benefit of foreign producers. The trend toward government intervention in the various countries thus seems to be shaping up finally in measures designed to prop up production at home and to encourage initiative which, by boosting the companies' ability to compete, would guarantee them stable shares of foreign markets.

At this point the document goes into an examination of intervention policies on behalf of the automotive industry in France, Japan, West Germany, and the United States.

VI. The Finished Program: Goals and Thrusts

A. The basic purpose of the program is to bring about a marked increase in the competitive health of the Italian automotive industry, and to do it in such a way as to reach a volume of sales compatible with the objective of restoring sound levels of employment and improving the balance of trade.

B. The objectives of the plan thus become:

1. Reducing the Italian lag in overall productivity, jobs, and plant behind the rest of the EEC countries and bringing the "new" Italian production systems up to the prevailing levels of productivity in the area.

2. Improving the cost-price-performance ratio for Italian-built automobiles.

3. Streamlining the components and parts industry.

4. Gradually recovering the share of the European market lost over the 1975-1979 period.

Parentheses in the following list indicate the objectives (above) toward which the thrusts are directed.

a. Accelerating the rate of innovation in product and processes (B2)

b. Restructuring investments for streamlining and technically updating individual plants and for redesigning and simplifying the layout of the entire automobile production system (B1)

c. Restructuring investments as part of a territorial redistribution of automobile production activities, with an eye to rectifying regional imbalances. (B1)

d. Stepping up and expanding marketing activities abroad. (B1 and B4)

e. Internal mobility of workers between departments of a single company and between companies in a single group. (B1)

f. External mobility of workers between different companies on a region-wide basis. (B1)

g. Reducing absenteeism. (B1)

h. Greater flexibility in working conditions and work organization (B1)

i. Development of integrated component clusters and standardised parts. (B2 and B3)

j. Improving the ratio between corporate funds and indebtedness. (B2)

k. Mergers and agreements among component and parts manufacturing firms. (B3)

l. Technical collaboration agreements between auto-makers and companies making parts and components and supplying materials. (B1, B2, and B3)

m. Bringing Italian regulations into line with those of the EEC insofar as concerns inspection and certification of the technical features of registered motor vehicles. (B2, B4)

All these thrusts, however, are to be aimed at the end producers (automotive and body companies), at component and parts makers, and at suppliers of materials and production systems.

Two Goals: Protect Jobs and Improve the Trade Balance

VII. Tools Available

The scope of the problems outlined and the size of the development programs pursued by most of the international competition with the support of their respective governments lead us to the conclusion that the actions provided for in PL 675 alone will be inadequate. Specifically, it is clear that tremendous weight is attached to the matter of the capacity for innovation which auto-makers must display in a competitive context that has proven spirited in the extreme.

On the other hand, actions aimed at the production structures must be accompanied, if they are to be effective, by measures designed to foster exports and to build up marketing systems abroad. Moves to boost production and marketing capacities must not be confined solely to the companies marketing the final product, but must on the contrary cover the components and parts makers as well.

Similarly, action taken to stimulate research activities should be expanded to include companies and consortia of components and parts makers. Given the nature of automobile production, a good

share of product innovation is achieved by building into the finished car elements of technological advancement actually achieved by the parts makers.

The objectives to be achieved, in addition to implementation of PL 675, will call for the adoption of additional measures. Specifically, such measures must deal with providing incentives for industrial innovation, for production and organizational flexibility, and for increasing exports.

How much success the sector will achieve in striving for these specific goals will depend, furthermore, on the more general effectiveness of economic policy, first of all of its ability in the medium run to bring the rate of increase in prices here into line with that prevailing in the other industrial countries. Lacking this, not only will it become increasingly difficult to find foreign markets for our products, but the domestic market itself will become increasingly and extremely vulnerable to a price-war launched by foreign auto makers.

The huge increase in the size of the market further necessitates coordinating the industrial policy measures adopted by the several countries. For the countries in the Community zone, that action must be undertaken by the EEC both within its own confines and in relations with foreign producers.

The Community, therefore, must formulate a policy of industrial and commercial coordination among the member nations and between the Community as a whole and third countries and/or their producing organizations. Specifically, that policy should insure containment of the presence, direct or indirect, in the Community market of foreign producers.

When the Commission was installed, the minister for industry asked, among other things, that it assess the feasibility of a suggestion from Nuova Innocenti that it import engines from Japan. Given the general orientation embodied in the program, we feel that the entire matter should be made part of the broader guidelines the Community will have to agree to observe in connection with industrial and commercial relations with third countries and that decisions in this area be evaluated at the CIPI level to ensure equal treatment for the various national producers in their relations with foreign producers, aside from relations already existing between Italian firms and/or their licensees abroad.

Also requested must be continuation of the policy of harmonizing regulations on technical standards in the individual countries.

The procedures directly available under PL 675, however, must be backed up by additional measures calling for specific moves to stimulate research and development, export increases, and bringing Italy's regulations on technical points into line with those of the Community, as well as action to encourage greater flexibility in the production process so as to boost productivity. We must, furthermore, make use of whatever Community procedures are available.

VIII. Eligibility Requirements Under PL 675/1977

Bearing in mind the state the automotive industry is in, the aims of PL 675/1977, and the limited funds available, the basic requirement for eligibility to the "Industrial Restructuring and Reconversion Fund," as stated in Art. 3 of the Act, can be none other than the one covering appropriation for all investments -- whether in individual plants or in specific equipment for the production cycle -- in support of "new" models as well as restyling: interventions, in other words, which, partly because of the size of the investment capital required to make them, will call for substantial innovation by comparison with existing models.

Barred from this definition, however, are all "cosmetic" modifications, meaning those which generally involve no changes in moulds and dies.

To be eligible for assistance under the law, designs proposed by builders must also refer to completed models with technical features of fuel consumption, pollutant emissions, noise and safety levels consistent with the standards already adopted for the Community.

To be in compliance with the provisions of PL 675 and with those in the amendments made to it under PL 91, passed in 1979, firms seeking the assistance provided thereunder must submit the complete plan for their corporate activities, including: the purpose of each undertaking, their plans for restructuring and reconversion, the time it will take to carry them out, their plans for financing them and the total amount they expect them to cost, the manpower for which they are asking mobility allocations, their plans for decentralization of production, how they plan to integrate decentralized activities into those of the parent corporation, the total number of jobs to be provided at completion of the plan, planned siting for plants involved in the project, and infrastructure needs, if any.

IX. Intervention Timing

The innovation processes already undertaken by our principal foreign competitors will be coming on line within the next 3 to 4

years. Given the importance of the innovation factor in the recapturing of market share, 1983-1984 is therefore considered the critical period in the competitive battle among the automobile makers.

On the basis of these considerations, intervention timing and its phases will be a very stringent constraint. Since major producers estimate the time required for designing a new model, from initial design concept to the first car off the line, as around 54 months, the obvious urgency of this program should justify compressing the phases of its implementation into 45 to 48 months.

One of the major criteria for granting financial assistance, aside from the scope of innovation, will be the time required to get the innovation on line. Specifically, for "new" models, financing will be granted in a mixed bag in the form of help in meeting interest payments and direct loans, with instalments paid on the basis of the aforesaid time phases.

X. Intervention in the Production Process

Automotive industry trends indicate that production is increasingly viewed as a system of integrable processes joined together in phases with different dimensions of scale. A more sweeping innovation of the process would make it possible to achieve more rational utilization both of individual plants and of the entire production system, better production conditions through greater flexibility, increased productivity and output quality, and more efficient dimensions for every phase of the production cycle.

The additional costs the corporation would have to bear for plant-cum-organization solutions aimed at improving the quality of work, while allowing for the constraint of overall production efficiency, should be considered deserving of assistance under special provisions still to be adopted.

Streamlining processes are usually based on a selection of a few basic models and subsequently breaking them down -- for component assembly or better by integrated groups of components -- into a good many types, right down to luxury options aimed at a carefully selected market. The goal right now must be to get to the assembly line with increasingly complex and integrated parts and components assembled off-line or bought from component companies. Restructuring processes like these are destined to fine down both the production phases within each company and those that involve the entire production cycle. Hand in hand with them must go the process of automating the costlier processes, particularly casting, forging, and stamping.

From the assembly-line end, this goal can be achieved by designing models increasingly based on modular components. The component firms, on the other hand, will be asked to produce packages made up of several integrated components, ready for assembly as is.

XI. Industrialization

Assembly-line finishing and interior installation and other investments involved in industrialization constitute the final phase of the innovation process. This phase, which will cost very big sums of money, will embrace intervention specifically related to the features of the restructuring plans covered in PL 675.

We shall need integrated utilization of national and Community financial facilities to pay for the scale of intervention required. National and Community facilities are stipulated in PL 675/77 and 183/76, as well as in the regional fund. The latter was designed and adopted not as a substitute for, but rather as an adjunct to the social fund, drawing on the available capital in the European Investment Bank (BEI), the NIC infrastructure funds, and the interest accrued from the compensation measures called for under the SME agreements. This means that areas for implementation of these "integrated" interventions will be chosen on the basis of suitable conditions for their siting, and that they will be considered priority projects in the management of a process of restoring regional balance.

XII. Use of Macro-components and Standardized Parts

Plant redesign must also take account of the likely trend in productivity there and of the volume of production the makers are aiming at in the next few years. In this context, preference must go to technical collaboration arrangements between automotive companies and component makers which will call specifically for close coordination from the early design phase right through to the time the new models start rolling off the assembly line.

This kind of rationalization of the production processes is the necessary condition for gaining the advantages of component and component cluster modularity. On the other hand, Italian automakers must begin standardizing parts and components, and stop using odd-ball designs to build up their brand image, if they are to be able to count on adequate supplies from the parts and component makers.

XII. Streamlining the Components Industry

Bringing integrated components groups into existence is going to call for industry-wide coordination of the production schedules among the components producers. That move can be backed up by

encouraging formation of the kind of consortia whose purposes are spelled out in Article 6 of PL 347 (10 May 1976), whose extension is now under discussion in parliament.

In line with the purposes of this legislation, mergers might be proposed among components companies, with priority going to those in the Mezzogiorno, designed to further the integration of plant production and distribution systems. In any case, plans for this sort of undertaking should be completed within 3 years of approval of the current program. The ministry for industry is expected to introduce a proposal for legislation to foster such consolidation moves, perhaps drawing on Community funds for them.

It would be equally desirable to take steps toward coordination -- in the form of consortia or explicit technical collaboration agreements -- among assembly firms, component makers, and producers of intermediate equipment or production systems. In that connection, it would be well to opt for patterns similar to those of the "groupements d'interet economique" [joint subsidiary groups] provided for in French law. A proposal for such a move should be forthcoming shortly from the ministry of industry.

Rationalizing the industry will involve action designed to boost the competitive level of components -- including spare parts -- on foreign markets. This might be a way to avoid the job concentration often accompanying mergers.

XIV. Restoring Territorial Balance in Industry

The unsatisfactory rate of utilization of existing assembly lines and the heated competition that has developed in an international market in which demand can scarcely be called lively makes it hard to predict the need for swift expansion in production capacity. Intervention aimed at upgrading the production structure, furthermore, will have to allow for the need to stick to specific guidelines both from the technological angle and from that of territorial siting.

The very heavy concentrations formed in the northern regions have brought with them of recent years a number of management problems which have markedly cut into the expected benefits of economy of scale. The procedure followed by U.S. and European automakers in seeking more modest dimensions for plants, at least for some phases of production, and steadily increasing resort to components and part clusters pre-assembled off-line, would seem to indicate a production cycle that will be more cleanly articulated and more evenly distributed geographically.

Opting for a long-term effort at restoring regional balance by means of action to "thin out" the more congested situations in

the north while building activity in the south thus emerges as an essential one in the industry-wide turnaround. In practical terms, this policy must be implemented with action which, beginning with the current state of under-utilization in southern plants, provides opportunities for expansion of operations in the production cycles of the new models.

The presence in the south of automotive production plants owned by the two biggest Italian corporations calls for creation of a center for component and parts production so as to cut down the distance -- and hence the costs -- between the parts-makers and the assembly line. Another problem to be solved in boosting the competitive level of production in the Mezzogiorno has to do with eliminating the higher shipping costs involved in getting the product to market. The proper place to approach this particular question would seem to be the regulations approved to replace PL 183, which lapses at the end of the year.

XV. Amendments to PL 675

It must first of all be emphasized that there is need for immediate emergency appropriations and/or amendments under PL 675/77, due to lapse soon, partly in order to allow for the increase in the number of sectors for which CIPI has completed programs.

A comparison of the objectives for the industry with the procedures laid down for achieving them points to the need to back up intervention under PL 675/77 with additional measures designed to encourage recovery in productivity and production flexibility, to support and foster research and development, to beef up marketing and promotion of our exports, and to bring our technical regulations into line with those of the Community.

A. Recovering Productivity

Recovering productivity makes necessary, in addition to intervention in the production process itself, additional measures -- some of them feasible under PL 675/77 and others to be taken by the government.

PL 675's article 22 calls for establishment in every region of a commission on mobility (referred to in PL 479/1978 as the Regional Commissions for Employment). In cases where restructuring and reconversion activities produce an excess of manpower, it authorizes access to the "Manpower Mobility Fund" embodied in article 28 of the act.

The labor ministry should move swiftly to complete setting up the commissions. For those regions principally affected by restructuring, furthermore, inquiries should be made as to their

eligibility to draw on the European Fund for Regional Development.

Those regions which have been vested, under current law, with authority over "vocational training," under direct coordination from the prime minister's office -- secretariat for relations with the regions -- should have ready within 5 months following approval of the Plan, programs for vocational retraining for possible job transfers between corporations and between divisions in the same corporation. Such programs would then be submitted for approval to the regional commissions on employment and made available on a priority basis to all companies that have asked for relief under PL 675. The government should, furthermore, provide the necessary coordination with the regulations on vocational training laid down by the Community and in connection with recourse to the European Labor Fund.

Pending legislative enactment of decree law 760 on mobility, the existing provisional regulations must be fully applied. Article 4-bis of PL 36 (9/2/79) already sanctions the inter-company mobility called for under the collective bargaining contract signed by the metalworkers on 16 July 1979. Article 4 of that contract in fact covers mobility with explicit reference to PL 675 "to deal in a consistent and practical way with employment problems stemming from the processes of restructuring and reconversion in production and from corporate crises with particularly heavy labor impact as defined by PL 675 of 12 August 1977."

Finally, to cut down on absenteeism, which is particularly widespread in the huge plants typical of the automobile industry, the labor ministry should expeditiously come up with a plan to standardize procedures of verification for absences due to illness.

Above and beyond the regulatory machinery described above, there absolutely must be an improvement in the industry's labor relations, as already noted in the first paragraph of this chapter, so as to enable them to operate efficaciously.

B1. Support and Encouragement for Innovation and Development

Innovation in product and processes is destined to play an ever-expanding role in shaping strategy for the automobile makers. The next few years will be marked, as recent years have been, by intensive innovations both in product and in the technologies of production.

The tide of innovation will reach out to the design of new families of automobiles, to research on active components (drive systems), and to the discovery of new materials and fuels. The

goals of reducing energy consumption and increasing safety and comfort, factors upon which competition is largely based, call for major research programs in materials, in engine design, and in body aerodynamics.

The end producers will have to mount research programs tailored to a small number of basic models, in which minor changes can be made at will. Components producers, on the contrary, will have to devote themselves to developing integrated plans for producing highly specialized parts and standardized sub-assemblies, which perhaps can be used by foreign producers as well.

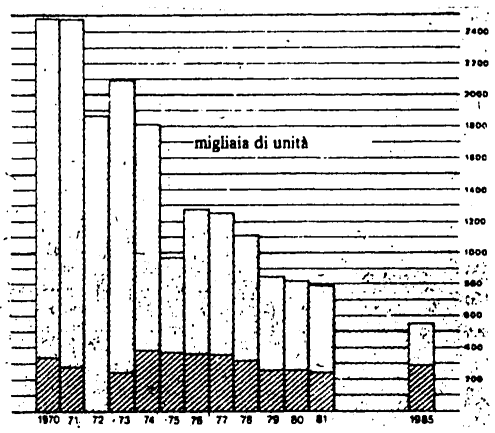
Financial assistance for research and development must therefore be extended to components producers. Specifically, priority must be given to the design of components with greater technological content, with broad resort to electronics and to the uses of interchangeability. Research activities might also be conducted under association or consortium arrangements among producers at the same level of production or among those operating at different stages of production (producers of materials, of components, or of the finished product).

DL 503 (30/8/80) calls in artcle 37 for appropriation of 1,500 billion lire for a government sinking fund to support programs for development, design, testing, and experimental building of new products and production processes in such industries as may be singled out on a yearly basis by CIPI among those for which the plan applies. This provision would have made it possible to get early planning on and to accelerate those programs of research and innovation deemed crucial to the goals of this completed Program.

The expiration of DL 503 has thus left a great gap in the array of tools available for swift restoration of real and lasting conditions for competitive capacity in our automobile industry. The need for restoring adequate financial backing for stepping up our strategic planning for innovation and development thus emerges as an essential condition for achieving the industry's goals.

B2. Support and Encouragement for Medium and Long-Term Research

The objectives for medium-term industry research should find appropriate support forthcoming from the IMI Fund for applied research, suitably refinanced, or from similar intervention sources. The goals of long- and very long-term research should find their needs covered in the final programs for energy and transport drawn up by the National Research Council (CNR).



Net Automobile Exports in Western Europe

(in thousands of units)

The crisis in the automotive industry affects every aspect of the European economy: one starkly clear signal comes from the precipitous decline in total exports over the past 10 years. According to the ECONOMIST's Economic Intelligence Unit, we have gone from almost 2.5 million units exported in 1970 to less than 1 mill[illegible] since 1978. Forecasts for the next several years are ev[illegible]eaker: in 1985, we shall come close to a skeletal 500,0[illegible] (commercial vehicles are shown in the shaded portions of the bar graph).

C. Support for Marketing and Export Promotion

Support for Italy's automobile marketing abroad calls for expanding their distribution systems and for more effective marketing structures. Approval of the final program for "Building up the organizational structures for marketing the products of the manufacturing industries abroad" will make financial underpinning available for this effort.

In addition, priority attention must be given to activating the rule contained in PL 227/1977 covering market research programs. Specifically, taking a leaf from the French book, we might consider the advisability of introducing the target incentive idea.

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TRANSPORTATION

USE OF COMPOSITES IN AIRCRAFT INDUSTRY

Dowty Composite Propellers

Paris AIR & COSMOS in French 13 Sep 80 p 36

[Article: "Dowty Blades Built With Composites"]

[Text] The new series of three-bladed or four-bladed propellers offered by Dowty for the 1,500- to 2,000- horsepower turboprop engines designed to power most of the future commuter aircraft, have blades made entirely of composite materials. The "spars" are of carbon fibres and overlaid with fiberglass, the empty spaces being filled with polyurethane foam. In addition, these blades have a new profile like those (of metal) already on propellers for engines of up to 1,200 HP designed for general aviation aircraft. This new profile and the composites used in the construction of the blades not only make these propellers lighter but offer such other advantages as improved performance at low speeds, a lower sound level, and reduced vibration at cruise speed.

Aircraft manufacturers having already chosen propellers made of composites are Saab and Fairchild for the SF 340, as well as Short Brothers for its SD3-60. Many other aircraft companies already use Dowty metal propellers. These include: Rockwell for its 840 Commander and 980 Commander, Swearingen for its Merlin and Metro, British Aerospace for its Jetstream 31, and Embraer for its stretched version of the Xingu.

Dowty Blades Made of Composites

Model designation	Diameter (cm)	Number of blades	Activity factor	Aircraft	Engine	Power	Remarks
R 322	280	3	103		PT6A-45 and 65	1,100	Under development
R327	282	4	103	Short's SD 3-60	PT6A-65	1,294	On order
R320	320	4	90	Saab-Fairchild SF340	CT7-5E	1,630	On order
R326	325	4	108		TPE 331 -15R	1,600	Under development
R325	325	4	108		PT7A-1R	1,600	Under development

Bristol Composite Materials

Paris AIR & COSMOS in French 13 Sep 80 p 37

[Article: "Bristol Composite Materials on Boeing 767"]

[Text] Bristol Composite Materials (BCM), a British firm , has been awarded a contract to produce carbon-fiber torsion bars for the Boeing 767. The contract calls for 400 aircraft sets with an option of 100 additional sets. Since each set consists of some 40 torsion bars, this contract already means production will reach tens of thousands of units!

The BCM torsion bar is to be used in the mechanism for opening and closing overhead baggage compartments installed above passenger seats in the 767's cabin. To be more exact, the bar is a sort of spring which prevents the compartment from opening inadvertently and at the same time facilitates closing it.

Each bar is made of Toray fibers wound at $\pm 45°$ and molded in an epoxy matrix. Titanium connecters or adapters are attached to each end. The total weight of one bar is 390 grams. This is a 40 percent saving or reduction in the bar's weight without the titanium connecters. Each bar is approximately 1 meter in length and about 40 millimeters in diameter.

Before delivery, twist tests are conducted on each bar to verify its resistance to the twist stress it is subjected to in use.

A most important point is that the composite material used has been flame tested to ensure that it meets Boeing's own specifications and FAA test standards, specifically those in FAR 25853(a).

Bristol Composite Materials is not a newcomer to the composite materials industry. In the early 1970's, it produced VC.10 [transport] floor sections for flight tests, in cooperation with the Farnborough RAE [Royal Aircraft Establishment].

The company also uses composites in manufacturing light shielding materials for helicopters according to British defense ministry specifications.

Products developed by BCM also include the following: fuel tank pods, parts for practice bombs, bullet-proof seats and jackets impervious to fire from guns of up to 57 millimeters, parts for the RB.211 [aircraft engine], aircraft floors, the reflector for the Lynx helicopter's Ferranti radar, flaps for the Viggen aircraft, and fireproof shells for flight data recorders. Lastly, in the BCM display at the Farnborough air show, we noted a floor support rod, a type of product of well-known interest to the aviation community.

A-310 Aileron

Paris AIR & COSMOS in French 13 Sep 80 p 38

[Article: "Aileron for A-310 and V10F"]

[Text] At the Farnborough air show, Aerospatiale displayed two aircraft components: the experimental wing to be tested on the Falcon 10, and a low-speed aileron for the A-310 Airbus. Noteworthy is the fact that the Falcon 10 wing with integrated stringers is probably, along with the Mirage 4000 vertical fin displayed at last year's Paris air show, the largest aircraft structure made of advanced composites ever displayed at an air show. It will be recalled that Aerospatiale and Dassault are closely collaborating on this experimental project as part of the so-called V10F program.

The low-speed aileron for the A-310 consists of a monolithic multirib box. It will be the only carbon-fiber moving surface on the A-310, because airbrakes are already being tested on some of Air France's A-300's. Moreover, VFW-Fokker is currently manufacturing 24 carbon-fiber spoilers. These will be installed on A-300 transports of different airlines so as to more accurately test their aging under different climatic conditions.

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