Iskra

ANNUAL REPORT '83

Contents

President's Statement

In 1983 Iskra had to face a difficult domestic and international economic situation. Despite an overall recession and a hard economic position of Yugoslavia we can be satisfied with the results achieved: we managed to implement some of our key development strategies leading into a dynamical production, more exports, greater competitiveness and accumulativeness. Our output increased by 18.4 per cent; one third of the output has been directed into exports, which totalled 215 million dollars in 1983, i.e. 8.5 per cent more than in previous year. We are especially satisfied with the exports to the hard currency area. These totalled 153.6 million dollars, which is an increase of 27.3 per cent over the year 1982. This places Iskra on the second position among Yugoslav exporters and among companies with the most favourable foreign-currency balance. The fact that our exports include sophisticated equipment and systems in the most propulsive field of industry, that of professional electronics, gives additional weight to our export results.

As concerns our production strategy in 1983, we continued with an intense professionalization of products, taking the microelectronic and computer techniques as their basis, and increasing the participation of own knowledge.

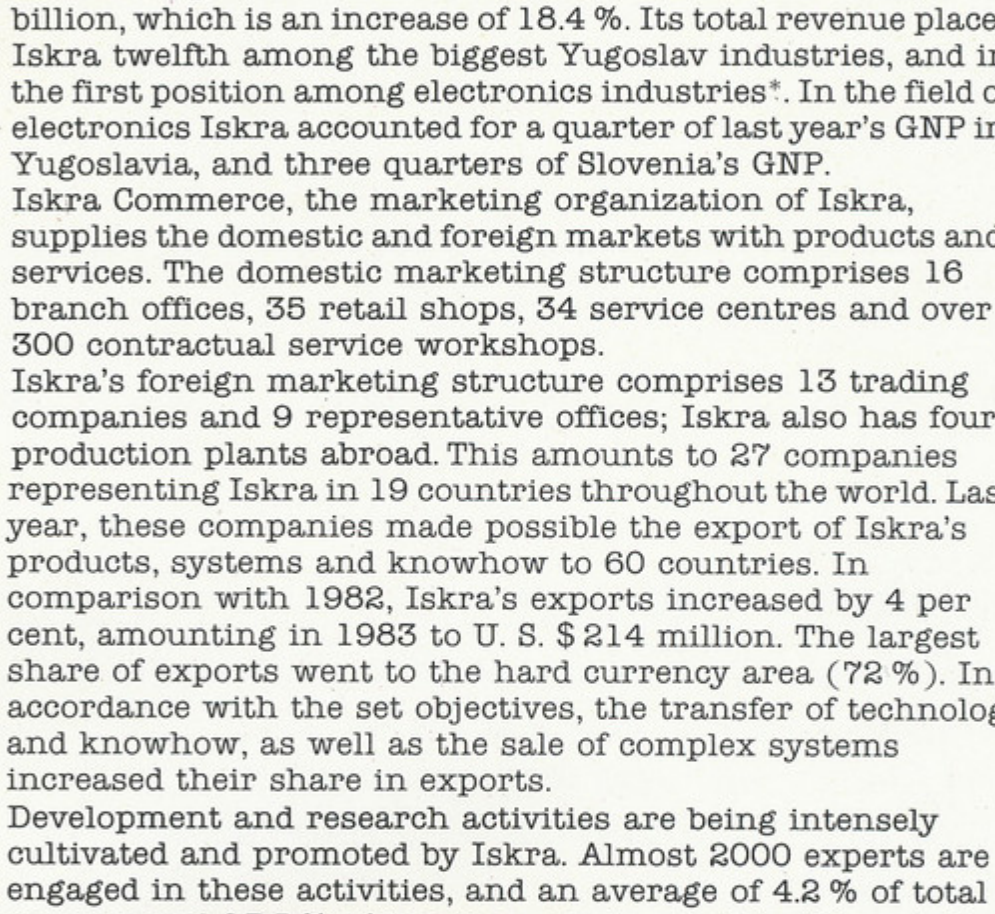
Visible results have also been achieved in business linking with related Yugoslav firms, where important projects of a uniform appearance of Yugoslav economy on demanding foreign markets are being carried out. It is my belief that the promising results and the efficient business strategy of Iskra provide a sound basis for a successful start in the business year 1984, as well as for the implementation of Iskra's medium-term plan for the period 1980–1985.

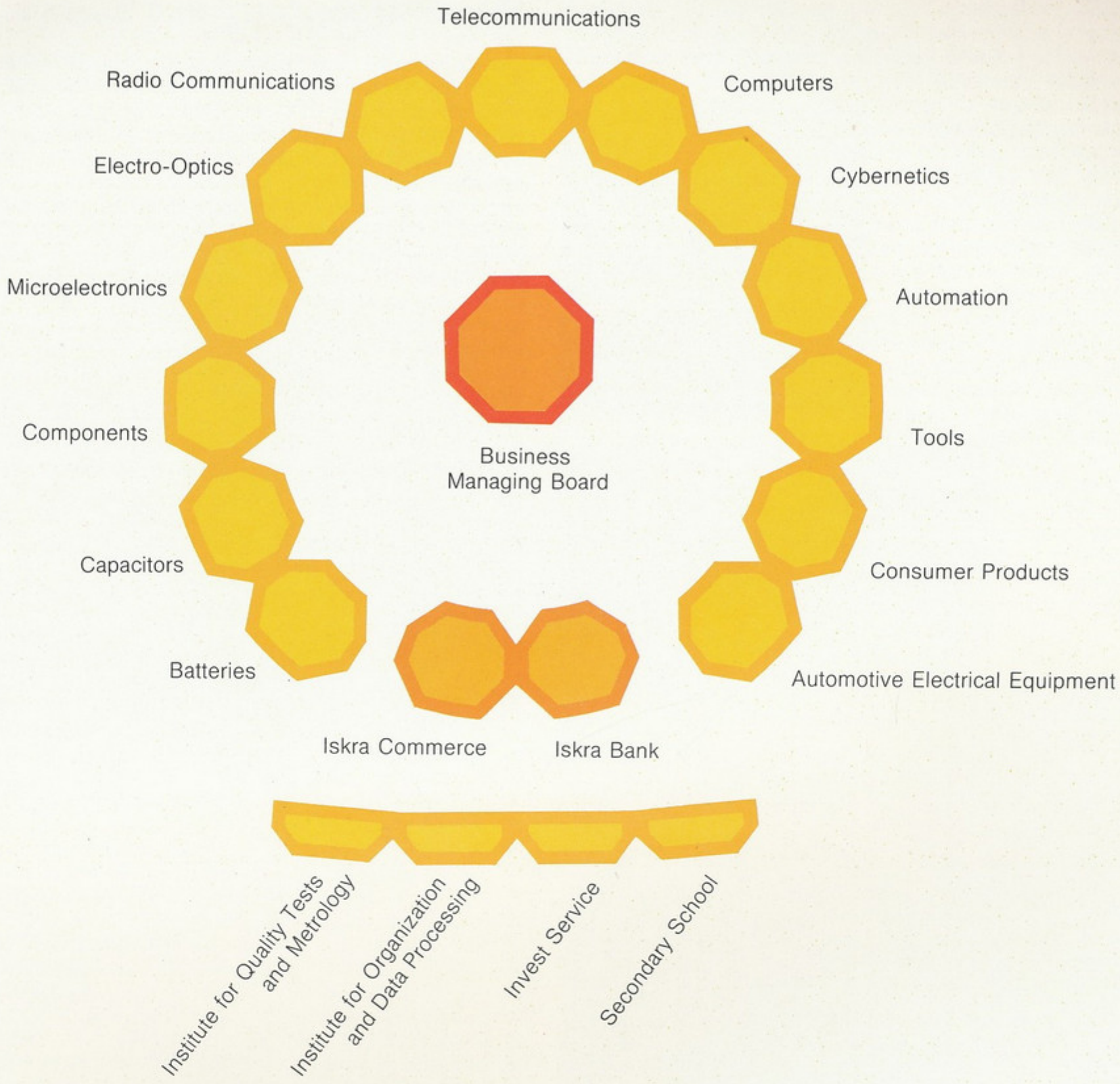
Boris Lasič
President of Business Managing Board

Iskra's Profile

Iskra is a composite organization based in Ljubljana, dealing with the electronic and electromechanical industry. Its production range covers telecommunications, computers, automation, electro-optics, measurement and control, electronic and electromechanical components and apparatus, components used in electronics, and consumer products.
According to the medium-term plan set by Iskra for the period 1981–1985, the following objectives are to he achieved: the restructuring of production in order to attain higher professionalism; the promotion of export-oriented production; the development of production which would assure rational consumption of raw materials and energy, and would not affect the environment. The Composite Organization Iskra comprises 13 production organizations, the Iskra internal bank, and 5 service organizations. These comprise a total of 99 basic organizations of associated labour and/or working communities. By the end of 1983 Iskra employed 32,492 self-managing workers. Iskra's revenue in 1983 totalled Yu Din 81,0 billion, which shows an increase of 50.6 % over 1982. Industrial production in 1983 reached the value of 29,5 billion, which is an increase of 18.4 %. Its total revenue places Iskra twelfth among the biggest Yugoslav industries, and in the first position among electronics industries*. In the field of electronics Iskra accounted for a quarter of last year's GNP in Yugoslavia, and three quarters of Slovenia's GNP.
Iskra Commerce, the marketing organization of Iskra, supplies the domestic and foreign markets with products and services. The domestic marketing structure comprises 16 branch offices, 35 retail shops, 34 service centres and over 300 contractual service workshops.
Iskra's foreign marketing structure comprises 13 trading companies and 9 representative offices; Iskra also has four production plants abroad. This amounts to 27 companies representing Iskra in 19 countries throughout the world. Last year, these companies made possible the export of Iskra's products, systems and knowhow to 60 countries. In comparison with 1982, Iskra's exports increased by 4 per cent, amounting in 1983 to U. S. $ 214 million. The largest share of exports went to the hard currency area (72 %). In accordance with the set objectives, the transfer of technology and knowhow, as well as the sale of complex systems increased their share in exports.
Development and research activities are being intensely cultivated and promoted by Iskra. Almost 2000 experts are engaged in these activities, and an average of 4.2 % of total revenue and 13.5 % of income were invested in this category in 1983, with the percentage rate constantly rising.

* according to the publication »200 Largest«, Ekonomska politika





Organizational Structure

On the basis of their marketing, manufacture and technological characteristics, organizations within Iskra are combined together in production divisions and common services divisions. Both the production and the common services divisions have agreed to be joined together in the Iskra composite organization, where joint planning, financing, management and united activities are carried out, works and production plans are brought into line, common targets and interests are striven for, all in order to attain better management and the satisfaction of our own needs as well as those of society.

The composite organization incorporates 13 production divisions, which carry our their manufacturing programmes of electronic and electrical engineering in accordance with the agreed upon division of labour, with their own development and technology. All joint activities are performed by 7 common services divisions.

Within the framework of the composite organization, a common services department is organized whose function is to assist the managing and socio-political bodies and to inform the workers of common affairs. Its work is managed and coordinated by a president. Members of the business managing board advise and coordinate within individual fields of the board's activity. Iskra Bank is in charge of financial and banking operations within Iskra.

Iskra Commerce as a common marketing organization performs the activities of contemporary marketing, and is backed up by a network of representative offices at home and abroad. It is in charge of Iskra's exports, imports, representation of foreign firms, sale and purchase on the domestic market, and servicing of products. It also conducts market research and communicates with the market through a uniform Iskra design. The Institute for Quality Tests and Metrology as a specialized research institution examines final products and their components regarding quality, reliability, safety, performance, etc., researches measuring and test methods, and verifies measuring apparatus and equipment. On the basis of the authorizations of the competent state authorities it tests, delivers certificates and other public documents. The Institute for Organization and Data Processing developes and introduces up-to-date work organizing processes, methods of work eveluation, as well as a uniform information system within Iskra, individual computer programmes, a system of technical documentation and standards, and provides the informative literature.

Iskra Invest Service is responsible for investment and construction work, and provides for the maintenance of business and industrial buildings.

Iskra's Secondary School provides for the training of employees and apprentices for specialized professions within Iskra.

Fields of Activity and Basic Strategy

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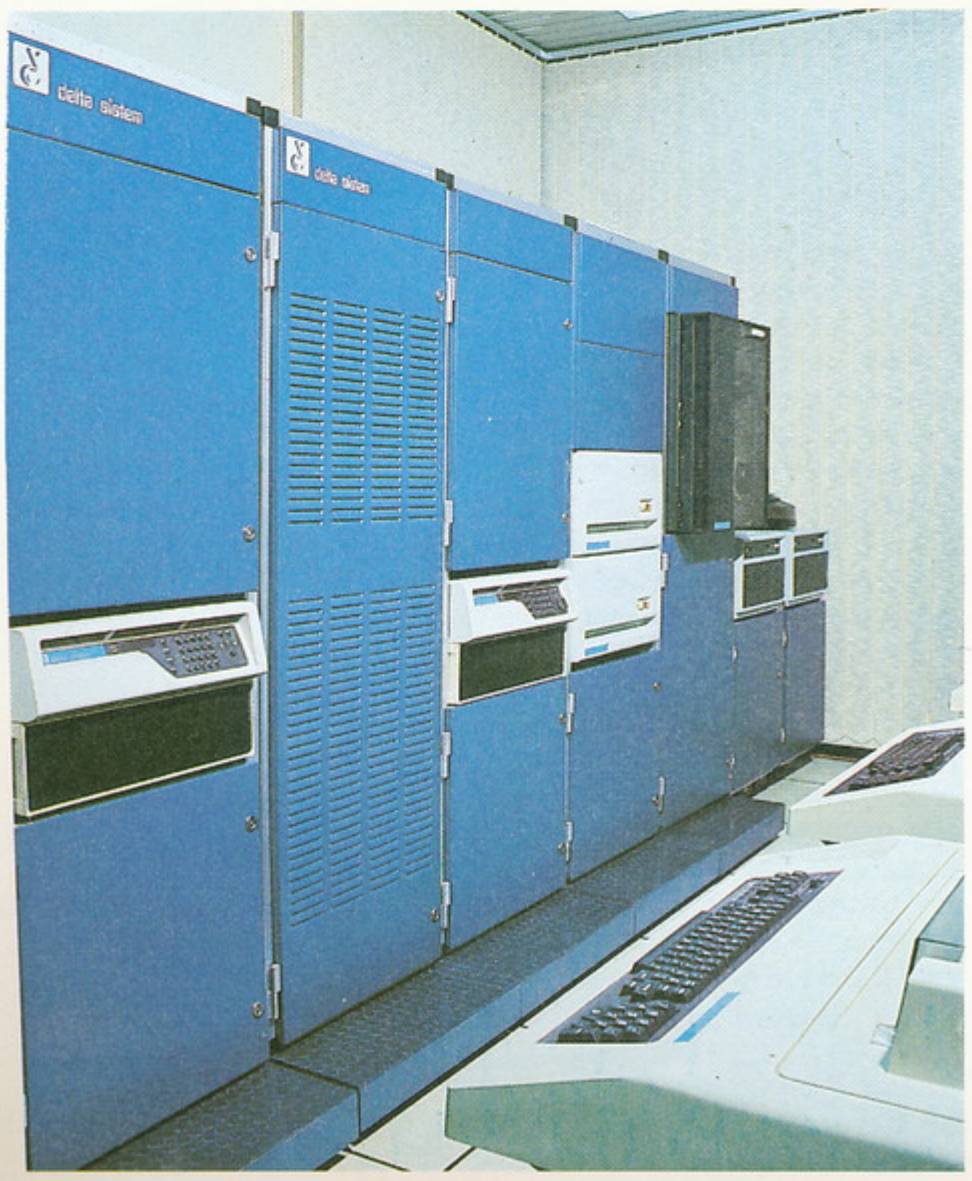
1. Weather observation and hail protection control via Iskra Delta computer system.
2. An integrated computerized radar system for protection against hail is the result of cooperation between Iskra and Hydrological Institute of SR Slovenia.
3. An Iskra Delta computer system installed in the remote control centre of Elektroistra power distribution plant in Pula.



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The Composite Organization of Associated Labour Iskra, Ljubljana, is the largest organization in Yugoslavia in the field of electronics and in the electrical industry.
Iskra's basic marketing strategy is to offer systems and system parts for integrated communications, computers, cybernetics, robots, for control of industrial processes, power engineering, traffic and environmental protection. The tendency in all these activities is to use as much domestic development and production of components and integrated circuits as possible, and to attain their successful placement on international markets. This task is successfully being carried out by means of an output which does not affect the environment, requires little energy investment and is independent of raw materials; an output of high quality products, for domestic and foreign markets, in which a great deal of own knowhow is incorporated. It is therefore not a coincidence that Iskra has declared itself for the »production of knowhow« in its programmes. With research and development activities being closely related to production and marketing activities, Iskra is capable of recognizing and solving many problems which occur in the relationship between man and his environment. Today, Iskra can compete with the greatest manufacturers of electronic products in the world.
Among Iskra's production divisions, Telecommunications is the largest and the most important. Many users of telecommunication systems in the country and abroad, such as PTT companies, power engineering companies, RTVs, national defence forces and others who use their own telecommunication networks and business automation, are equipped with Iskra's products. As special supplier of professional equipment to the Winter Olympic Games in Sarajevo Iskra has, among other telecommunication equipment, supplied eight optical fibre links enabling direct TV broadcasting of events. The international telephone exchange installed at the first Yugoslav Olympics is likewise the result of Iskra's technology.
An important step forward was made when Iskra started the production of Iskra 2000, a system of modular, fully electronic digital telephone exchanges, which are applied in private networks, special-purpose networks and in public switching systems. A whole range of products, from the telephone set to the largest exchange, all being fully electronic and incoporating home-made integrated circuits, use the up-to-date digital technique, which is developing into integrated communications and data transmission systems.
Optical communications as one of the bases for future telecommunication systems are also appearing in Iskra. Data transmission via glass fibres has been under research since 1975. Iskra has also developed a transformer of electric pulses to light pulses. The first 32-channel link via optical cable was tested as early as in 1980.
Apart from systems serving various economic and non-economic purposes, Iskra supplies users of special telecommunication equipment. The security and defence capability of a country depends in many respects on its technical fitness. Our armed forces are therefore furnished with high-quality electronic equipment.
The development and production of multichannel transmission equipment was initiated in 1960. Iskra's transmission equipment is widely used by PTTs, railways, electrical engineering companies and others. In the past period, systems based on frequency division multiplexing (FDM) of voice telephone channels were prevailing. In accordance with the present digitalization tendency, however, Iskra has adopted the time division multiplexing PCM transmission techniques.
It is in the field of electro-optics that Iskra has made remarkable developments in an extremely short period of time. Iskra is today among the leading manufacturers of laser rangefinders. Research and development activities are being carried out in the field of thermovision (infrared technique), holography and CO_2 laser equipment for metrology and treatment of materials. Scientific cooperation between Iskra

and the Swiss Institute for Weights and Measures gave rise to laser interferometer, the most advanced element of computer controlled machines.
Iskra's computer industry has its roots in the production of second generation computers back in 1962. Its basic aim from the very beginning has been to supply the domestic market. It has lately grown into a strong industry of process control computers. The knowledge acquired in the production of process computers for electronic telephone exchanges provided one of the bases for the development of up-to-date business computers. Yet another basis are the research and development achievements of other organizations integrated into a uniform business and production system.
Iskra manufactures today a range of small and medium computer systems whose technology can compare with the best in the world. The basic concept of Iskra's computer systems »Delta« lies in the manufacture of systems and their periphery, with the maximum possible application of Iskra's own technology and knowledge, and with the application of recent world achievements in this field.
Modularity and compatibility of hardware, of system and problem oriented software, interactive functionning as well as simplicity of application and maintenance, are the outstanding features of Iskra Delta computers. Iskra produces a family of computer systems which includes microcomputers, and 16 and 32-bit computer systems. These represent the basis of information systems for applicative production lines in the field of technical, production and business processing. These computers are also very convenient for educational and R & D activities. They can make up distributed data processing networks with distributed data banks in large business, organizational and social systems. Apart from hardware Iskra is designing and introducing the corresponding problem oriented software. An important fact is that computer systems are not only being developed and manufactured by Iskra, but also accompanied by a complete range of computer services. Iskra provides training for all kinds of personnel, and performs the maintenance of other computer systems. Several quite original solutions have been found in the field of complete informatics systems, which are a perfect demonstration of how up-to-date microcomputer technology can be applied.
Production and business informatics includes activities which round up an offer by providing advice, standard applications or complete information engineering, meeting in this way the requirements of customers who are building up their own computer-aided data processing systems.
The computer is not only applied for business purposes. It is more and more widely used for process control in power engineering, chemistry and pharmacy, in food industry, wood, paper and textile industries, in radar meteorology, computer graphics and numerical control. The Delta computer systems are represented on foreign markets by their microcomputer families and their software.
Microcomputer supervision and control systems are used in railway and road traffic automation. A countless number of railway stations, junctions, many kilometers of railway lines, roads and crossings are automated and remotely controlled by Iskra's equipment. This is installed in Yugoslavia and abroad in Turkey, Bulgaria and Greece. Up-to-date microcomputer devices for the control of machine tools have been developed and manufactured by Iskra.
Other automation fields are covered too, such as automation, protection and processing of power engineering, automation of technological processes for various branches of industry, automation of welding, burglar and fire alarm systems. Together with new, continuous power supply systems, with electronic measuring instruments incorporating microcomputers and digital displays, closed-circuit TV and other modern components and devices developed and manufactured by Iskra, automation systems form the basis for a whole range of engineering centres organized within Iskra. These design complex automation systems for power generation, distribution and transmission, for traffic and industry, as well as systems for the supervision and protection of buildings. Today's energy problems, the necessity for quality and low-cost production, ecological and other problems, call for a greater cybernation of work and life. Iskra has been dedicating a considerable part of its R & D activities to the solution of these problems. Instruments for the measurement and optimization of energy consumption are Iskra's traditional products. Today, they are much more sophisticated than they used to be. They have a greater intelligence and make work easier, better and more reliable. The same applies to other products; an optimum solution has been achieved with mechanisms, sensors and switches, by a combination of electronics and precision mechanics. Installation robots have been partly developed in parallel with the CAD/CAM computer-aided production. Sophisticated production devices with computer control, digital display and Iskra made integrated circuits are now coming into being at Iskra. Electronic measuring and control devices and instruments thus provide a sound basis for the growth of cybernetic systems. Here belong also watthour meters (manufactured with Iskra's licence in Turkey, Spain, and with Iskra's technology in Tunisia). New products, such as liquid-crystal displays, programmable devices and planer optical devices, are offering new possibilities for the production of modern optical and switching equipment. Our integrated circuits have been mentioned several times. They are present in telecommunication equipment, electro-optical devices, computers, as well as in automation and cybernation

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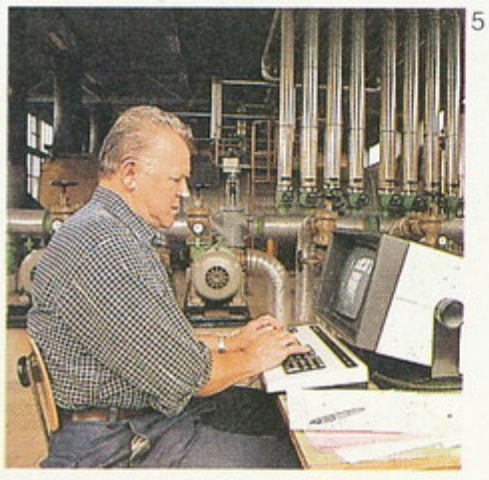
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4. A modularly designed program package which provides interactive data acquisition and calculation of optimal mixture structure.
5. A Partner microcomputer for the control of technological processes.

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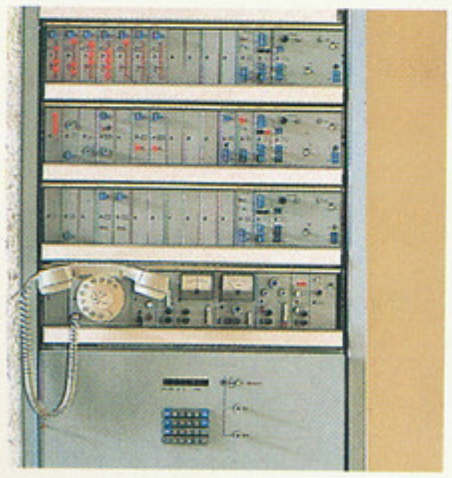

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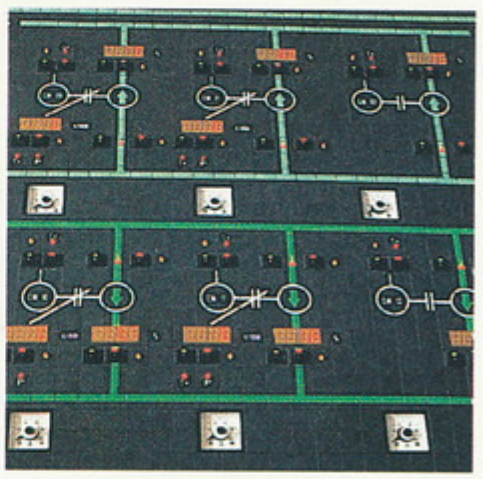

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6. The control and maintenance centre of the Ljubljana Electricity Distribution Plant is equipped with Iskra's control systems.
7. The Ljubljana Heating Plant distribution control and supervision centre.
8. TM-15 telemechanical device for the transmission of commands, signalling and measurements in the Ljubljana Heating Plant distribution centre.
9. A switchboard detail.

systems. They are also incorporated in consumer products and automotive electrical products, which will be discussed later. According to its business strategy, Iskra manufactures integrated circuits itself. Microelectronics being the basis of up-to-date electronics production, Iskra has mastered this technology mainly to meet its own needs, and also for export. Licences have gradually been extended into business and technical cooperations, some of the technology, however, has been fully mastered by Iskra. Iskra's programme in the field of microelectronics includes the design and manufacture of all important non-standard monolithic and hybrid integrated circuits with large and very large scales of integration, MOS and super C-MOS circuits, as well as combined circuits where one chip performs both linear and digital functions. The manufacture of thick-film hybrid integrated circuits has become especially extensive.

Electronic components and assemblies have the same importance for the production of electronic equipment as microelectronics does for the development of electronics. Iskra is paying special attention to the high quality and reliability of its components and component assemblies. Modernized components are not only incorporated in Iskra's products but also in the products of many other manufacturers of electronics in the world. Among other components there are metal film and chip resistors, resistor components, all sorts of capacitors, inductive components, semiconductors, magnetic materials and technical ceramics. Here belongs also the production of liquid-crystal displays for incorporation in instruments. Iskra has also entered an entirely new field of production, that of optical fibres. New technology is also being applied in the production of miniaturized dry-cell batteries for commercial and professional use.

Among other electronic components used in power engineering Iskra has developed special capacitors for the improvement of cos φ power factor, and offers, within the scope of engineering, complete equipment for automatic adjustment of this parameter. The production range of capacitors also includes capacitors used in the automotive industry. Iskra supplies the manufacturers of cars and motors with a range or high quality end products, such as generators, alternators, regulators, starters, electric motors, ignition coils and many others. All these products are being exported in large quantities. Iskra has cooperation agreements with such important world manufacturers as Bosch, Renault, Citroen, Volkswagen, etc., whereas the developing countries with their own growing car industry are especially interested in the transfer of knowhow and technology. Also in this branch of industry Iskra is placing its own microelectronic products, which are based on its own knowledge and its own development and research capacities, and therefore competitive in the demanding Western markets. An inportant portion of production is covered by Iskra's plants outside the country. Electric power tools, for instance, are not only being manufactured at home, but also in Iskra's factories in Switzerland, Spain and Ecuador. They manufacture professional as well as hobby tools.

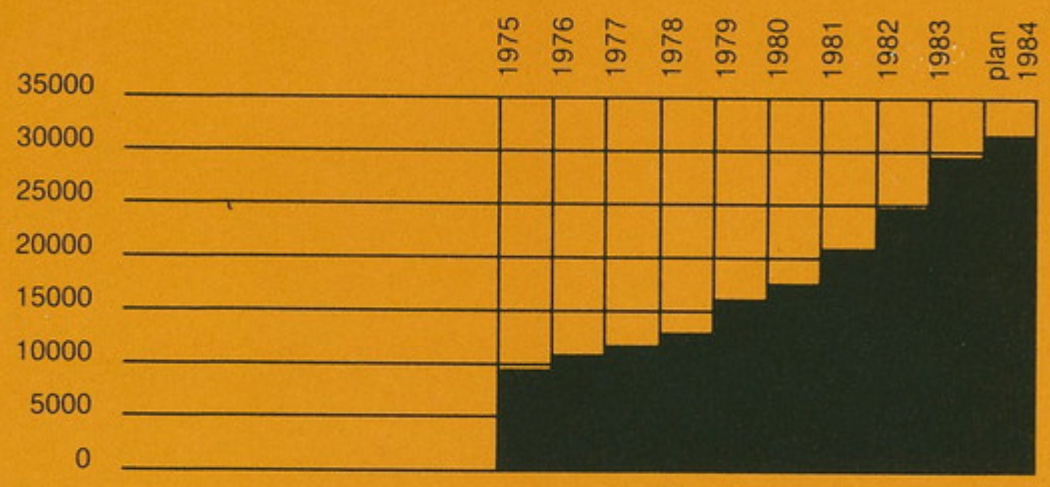
Iskra is an important European manufacturer of electric motors and aggregates, which are not only incorporated in all domestic professional and consumer products but also widely used in the appliances of foreign firms. Several cooperation agreements, among others with AEG, Braun, Girmi and Elektro Praga, are based on electric motors. Iskra's consumer products feature high quality and outstanding workmanship. Various electrical kitchen appliances, personal care appliances, home entertainment products and other home appliances are manufactured on the basis of electronic, microelectronic and computer techniques. Small power consumption, minimum environmental pollution, easy handling, and functional, beautiful shapes, are their outstanding features. To round up this survey of Iskra's production, let us add that Iskra manufactures electronic equipment for audio and video computer devices. This is where the digital technique as a means of data processing comes in, bringing us back to the beginning, where we spoke about telecommunications.

Business Management in 1983

In the past year, business was handicapped by difficult economic conditions, yet the results obtained in production as well as in business were satisfactory.

Production

A survey of our production, made on the basis of permanent prices in 1980, shows that its growth in 1983 was satisfactory too, and that the favourable trend of growth of the preceding years was continued. The production output value was 29,562 million dinars, which is an increase of 18,4 per cent over 1982. Production in the last three months was especially successful.



Production Growth in Yu Din Million

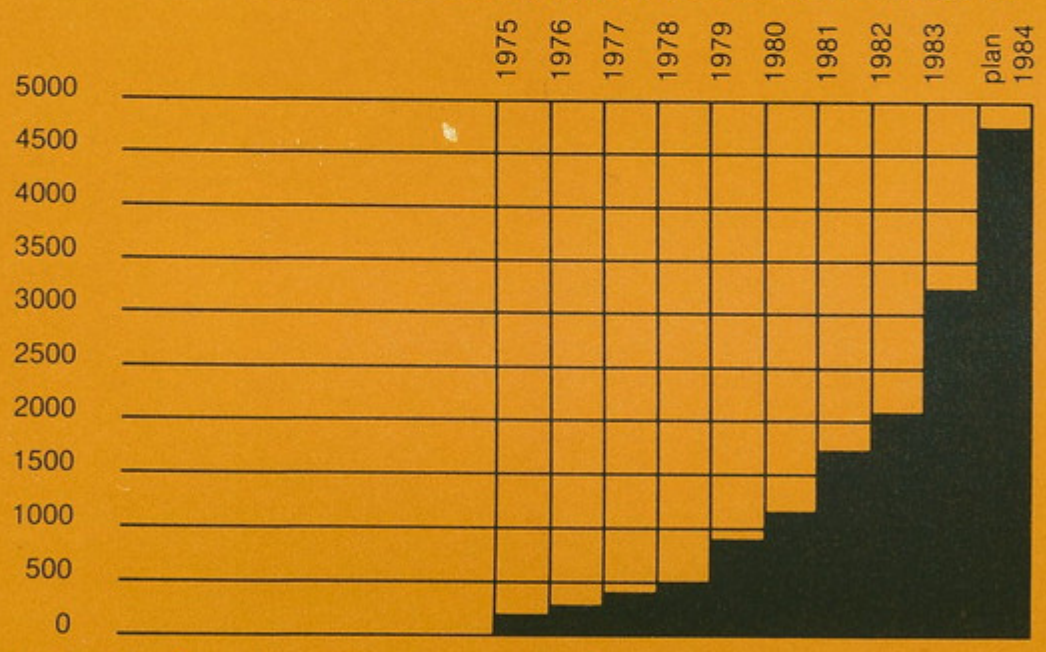
Iskra can be satissfied with this result, particularly as the growth was achieved in aggravated business conditions, due to unfavourable domestic and foreign economic trends. With regard to Iskra's large production range, output was different in different areas. It grew faster in those areas which have a key significance for the further development of Iskra. This is an early result of the endeavours invested into the restructuring of production, the introduction of new technologies and the stimulation of our own research and development planning.

Research and Development, Investment

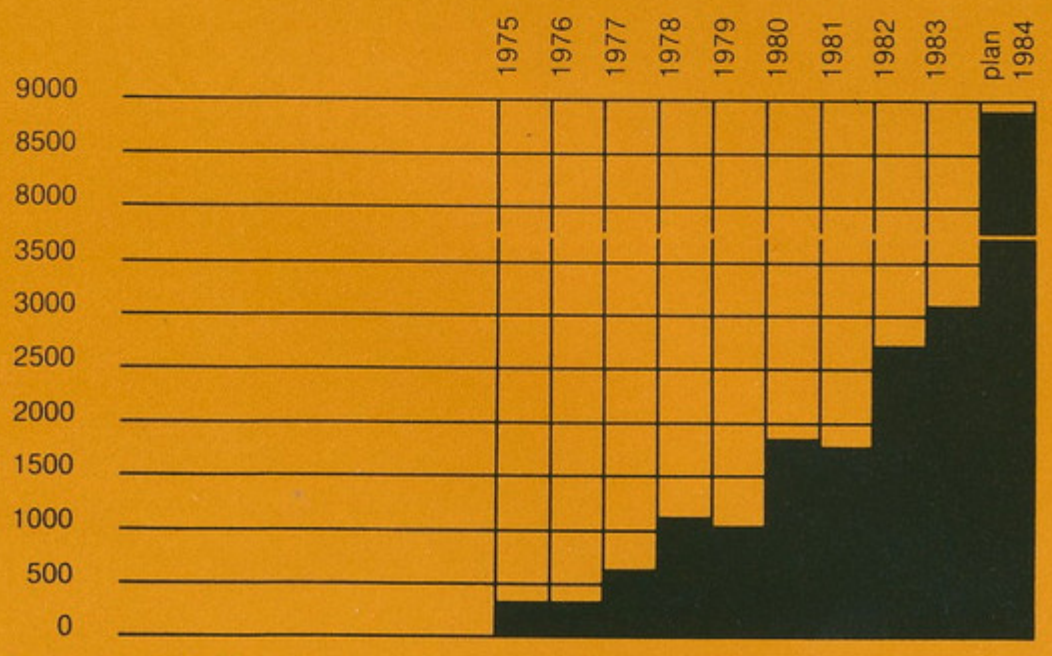
In 1983 Iskra continued its strategy of intense research and developmant activity. Investments in this sector reached the value of 3,645 billion dinars, which represents 4.2 per cent of total income and an increase of 47,5 per cent over investments in 1982. Intensive investments in research and development, as well as a strategy of predominantly self-development, are the basis for the further progress of Iskra. The main research and development activities were focussed on microelectronics, computers, optoelectronics, process automation systems, new generations of telecommunication systems and on new sophisticated electronic and electromechanical devices and components. Additionally, the achievements of research and development work found their way into production and onto the market much faster than they did in previous years. The research and development units and institutes further consolidated themselves in all production divisions; new development planning teams were formed in 1982, which played an important role in the coordination of the research and development activities in individual areas.

Last year, Iskra paid special attention to the quality and reliability of its products by taking measures in the field of reliability testing and metrology, and in quality control, and also by organizing discussion groups for the improvement of quality, which are spreading throughout the firm.

New product ranges, on which most of the research and development activities are focussed, and on which the present and future progress of Iskra depend, are also areas into which most investment has been made in recent years. Investments in new product ranges, products and technologies enabled Iskra to widen its range and consequently, to economize its production. More money has been invested in modern, highly-efficient production and research equipment, which is a significant change in the investment structure.



Investment in Research and Development in Yu Din Million



Investment in Yu Din Million

Consolidated Balance Sheet of SOZD ISKRA as at 31st December 1983

Assets	1983 Din million	1982 Din million
Net fixed assets	17.623	13.085
Bank balances and cash	6.367	5.145
Receivables	56.955	33.684
Inventories	23.198	13.766
Other assets	4.160	1.103
	108.303	66.783

Consolidated Income Statement of SOZD Iskra for the Year Ended 31st December 1983

	1983 Din million
Sales	61.730
Other income	8.282
Total income	70.012
Materials, supplies, services	40.730
Salaries	9.865
Depreciation	2.561
Interest and other financial charges	4.710
Taxes and obligatory contributions to community funds	2.908
Other charges	4.526
Net income	4.712

SOCIAL ACCOUNTANCY SERVICE
of the Socialist Republic of Slovenia, Ljubljana, March 20, 1984
This is to verify that the Consolidated Balance Sheet at 31st December 1983 of SOZD ISKRA and the related statement of income for the year then ended has been prepared pursuant to the existing Yugoslav accounting regulations.

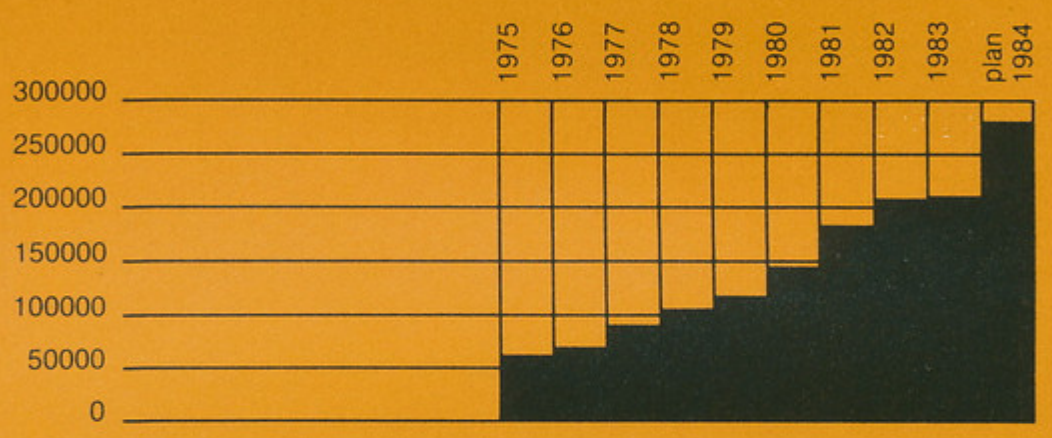
Liabilities and Funds	1983 Din million	1982 Din million
Business fund	18.470	13.945
Other funds	5.143	3.505
Current liabilities	64.553	35.420
Long-term debt	14.140	8.962
Other liabilities	1.285	1.562
Net income	4.712	3.389
	108.303	66.783

1982 Din million
43.757
3.736
47.493
27.223
7.386
1.880
2.355
2.535
2.725
3.389

Director General
Franc Knafelc, M.Sc.

Exports

This year of limited economic potential in the world economy brought a new challenge for Iskra on the world market. Iskra's total exports grew from 197 million dollars in 1982 to 214 million, i.e. by 8,5 per cent. Exports to the hard currency area grew from 120.6 million dollars to 153.6 million, which is an increase of 27.3 per cent. The fact that the increase of exports is mostly due to technologically advanced and sophisticated products and systems, is undoubtedly a great advantage. Despite the restrictions imposed upon the world and Yugoslav economies and international trade by the difficult economic situation, Iskra managed to export much more to the hard currency area than it imported from it.
An essential role in Iskra's successful international trade was played by a network of 27 business units in 19 countries in all 5 continents, to which 85 per cent of Iskra's exports go.
As in previous years, Iskra continued in 1983 the process of technology transfer to those countries which have the most favourable production and marketing facilities.



Exports in US $ Thousands

Personnel

Iskra employs over 32,000 workers, which is around 20 per cent of the total employed by the Yugoslav electronic and electrical industry. Rapid developments in the field of electronics dictate a new employment policy, oriented towards the improvement of qualifications.
Iskra's development strategy includes a continuous growth of highly-skilled personnel. This target is reached by a sound scholarship policy. Ever year, Iskra grants scholarships to 2,000 students, and about as many employees attend on-the-job training courses. In this way Iskra can cover the increasing need for knowledge in the field of electronics where it represents a means of production of vital importance. The need to acquire new knowledge and to improve existing knowledge, dictated the foundation of our own secondary school, which organizes the training of employees for the performance of demanding work in the field of research and development, quality and reliability control, foreign trade, etc.

Number of Employes

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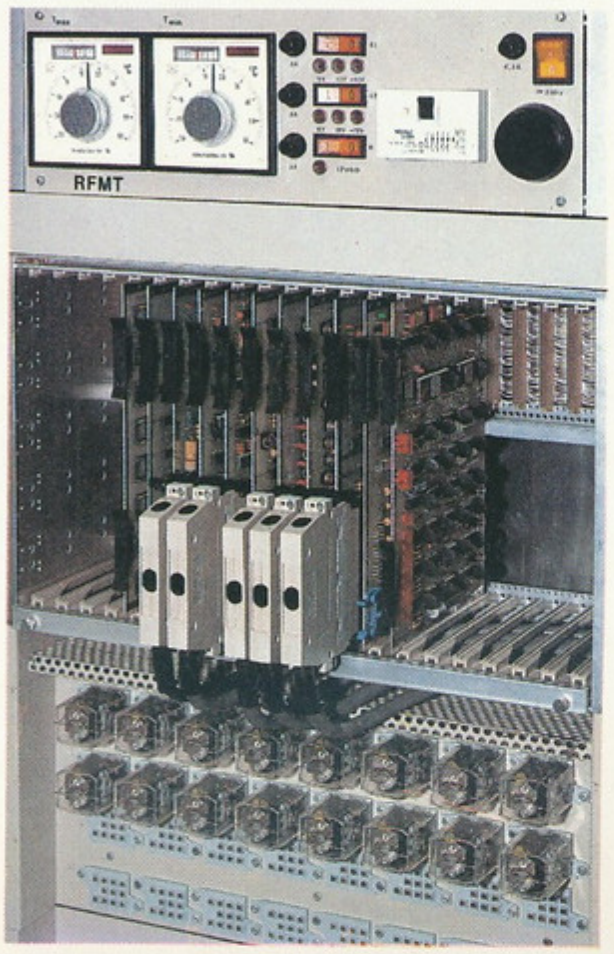

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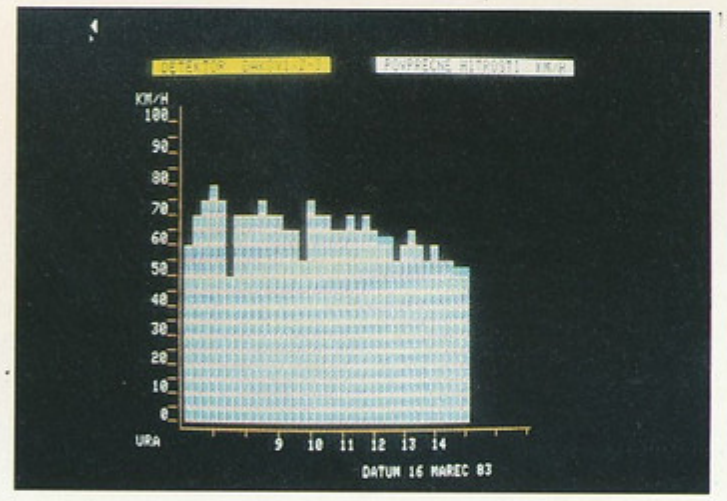

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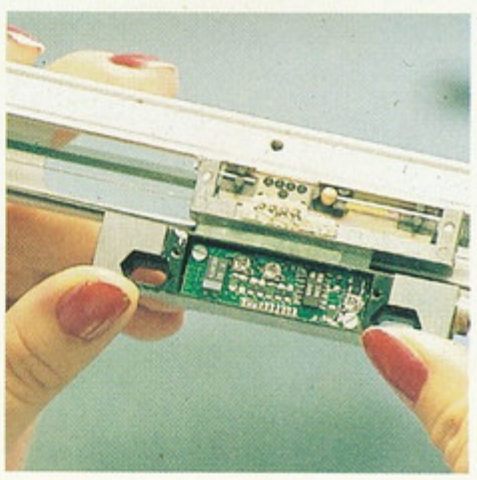
10. TI-30 microcomputer system controlling railway traffic at terminal stations.
11. A detail of TI-30 microcomputer system.
12. LJUMO-PNC 50 digital device for measuring and positioning of coordinate boring and milling machines.
13. Graphic display of average speeds at individual time intervals in a traffic control centre.
14. Production of TGM and TGR incremental measuring transductors.



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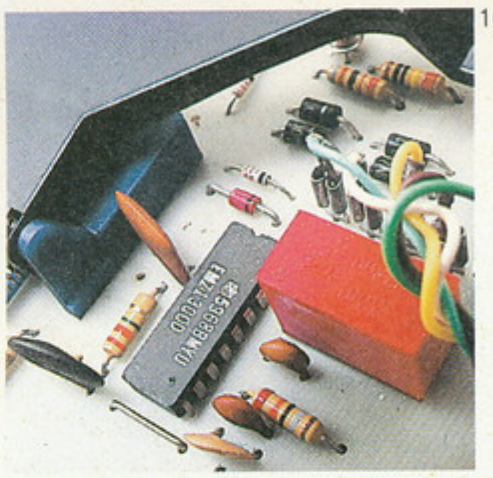
Main Activities

Equipment

Telecommunications
public and private branch exchanges from crossbar types down to
contemporary digital telephone systems with capacities from 16 to several ten thousand extensions
custom designed private branch exchanges and manual switchboards
electronic intercom exchanges and stations
telephone sets with dial or MFC keypad
public coin telephones and a range of electronic telephone key systems
Multichannel telephone transmission equipment, line and cable, analogue and digital
power line carrier equipment
Conference equipment, public address equipment, switchboards, mixing consoles and other sound distribution equipment
radio-relay transmission equipment (fixed and mobile)
radio transceivers (fixed, mobile and portable)
antennas
navigation equipment
infrared devices
optical communication equipment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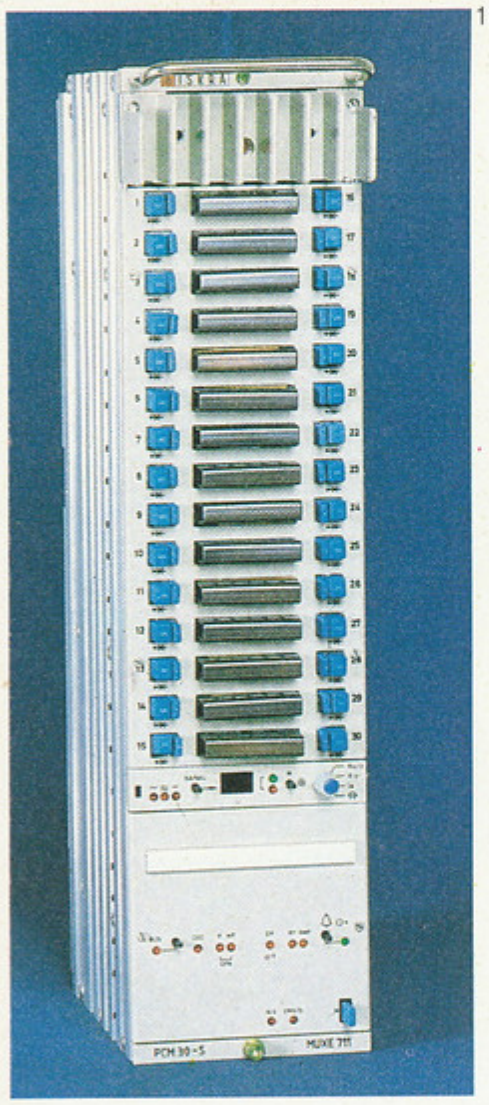
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Computers
business computer systems with the corresponding problem oriented software
process control computers with the corresponding problem oriented software
distributed data processing and networking
design, installation and maintenance of computer hardware and software

Measurement and Control
measuring instruments
analogue and digital electronic measuring instruments
measuring transducers of electrical variables
cybernetic components and devices

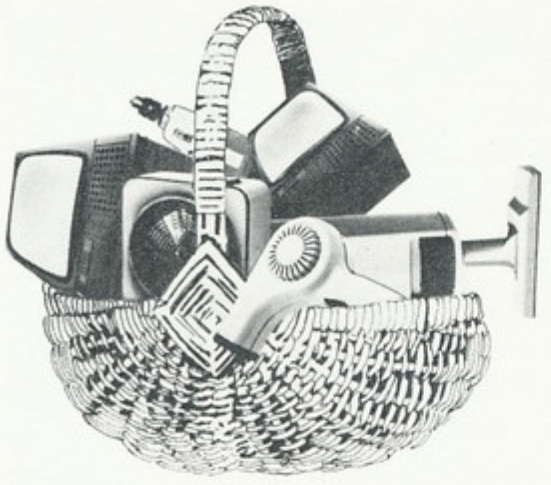

15

15. Iskra developped a modern system of digital branch exchanges of the SI 2000 family, which feature a wide range of applications.

16. In C-MOS technique designed electronic and ringing sections of ETA 80 telephone.

17. ISICOM SUPER is a microcomputer controlled telephone key system which enables internal and external communications.

18. A 30-channel PCM multiplex.



Equipment	**49.5 %**
Telecommunications	15.9 %
Computers	8.1 %
Measurement and Control	12.8 %
Automation	12.7 %

Components	**33.0 %**
Electromechanical Components	13.7 %
Automotive Electric and Electronic Components	6.0 %
Passive Electronic Components	8.3 %
Active Electronic Components	5.0 %

Consumer Electronic Equipment	**17.5 %**
Home Entertainment Products	8.1 %
Household Appliances	3.3 %
Electric Power Tools	6.1 %

watthour meters
electronic counters and accessories
etalonic error meters
instruments for the calibration of meters
data recording devices in power engineering
digital scope multimeters
control systems
distributed control systems
mains control receivers
clocks and time control equipment
mechanisms for meters
timers and recorders
ultrasonic equipment for industry and medicine
optical and glass-blown devices and components
laser rangefinders
laser sources for metrology, treatment of materials and other purposes
holography
equipment for classrooms,
school cabinets and laboratories
diagnostic equipment for car service workshops

Automation
components, devices and systems for: automation, measurement and control of technological processes in industry
automatic handling and use of robots in technological processes
automation and mechanization of welding
automation of traffic
automation, measurement and control of power engineering
mains power factor correction
power supply of equipment and buildings
fire and burglar alarms
telemechanics
synoptics

Components

Active electronic components
design and manufacture of microelectronic integrated circuits in MOS and hybrid technologies (thin- and thick-film types), special integrated circuits for telecommunications, solid-state components: silicon and selenium (low-current and power silicon diodes, silicon and selenium stacks), silicon monocrystals and wafers, liquid-crystsl displays, electronic switches, electronic subassemblies, solar cells and panels, consumer batteries, special batteries

Passive electronic components
optical cables, fixed resistors and potentiometers (carbon-film and metal-film, thick-film and thin-film, wired versions), non-linear resistors (thermistors, posistors, varistors), ceramic capacitors, power factor correction capacitors, motor capacitors and capacitors for fluorescent lamps, foil capacitors

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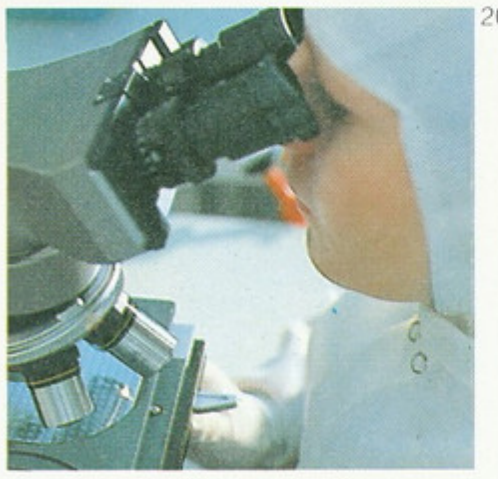

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19. Testing chips by computer.
20. Checking silicon wafers in the production of integrated circuits.

21 used in electronics (polyester, polycarbonate, polypropylene polystyrene), radio interference suppression components, electrolytic capacitors, ferrites, inductive components, wound transformer cores, small transformers, magnets, technical ceramics, special components and materials

Electromechanical components
small electric motors: commutatior types (universal, DC), asynchronous, synchronous, stepping, servo AC and DC, electromechanical, reed and telephone relays, sensors, industrial and installation switches, keys and keyboards switches, parts and accessories for the construction of electronic equipment, plug-in panels, cabinets, consoles, connectors, printed circuits and units, loudspeakers, laboratory glassware

Automotive electrical and electronic components
electrical equipment for motor vehicles: starters, alternators, generators, ignition coils, voltage regulators, magnetic ignitors, spark and glow-action plugs, automotive electronic equipment, lamps, radio interference suppressors

Consumer Electronic Equipment

Home entertainment products
radio and TV receivers, amplifiers, gramophones, stabilizers, sound boxes, antennas, etc.

22

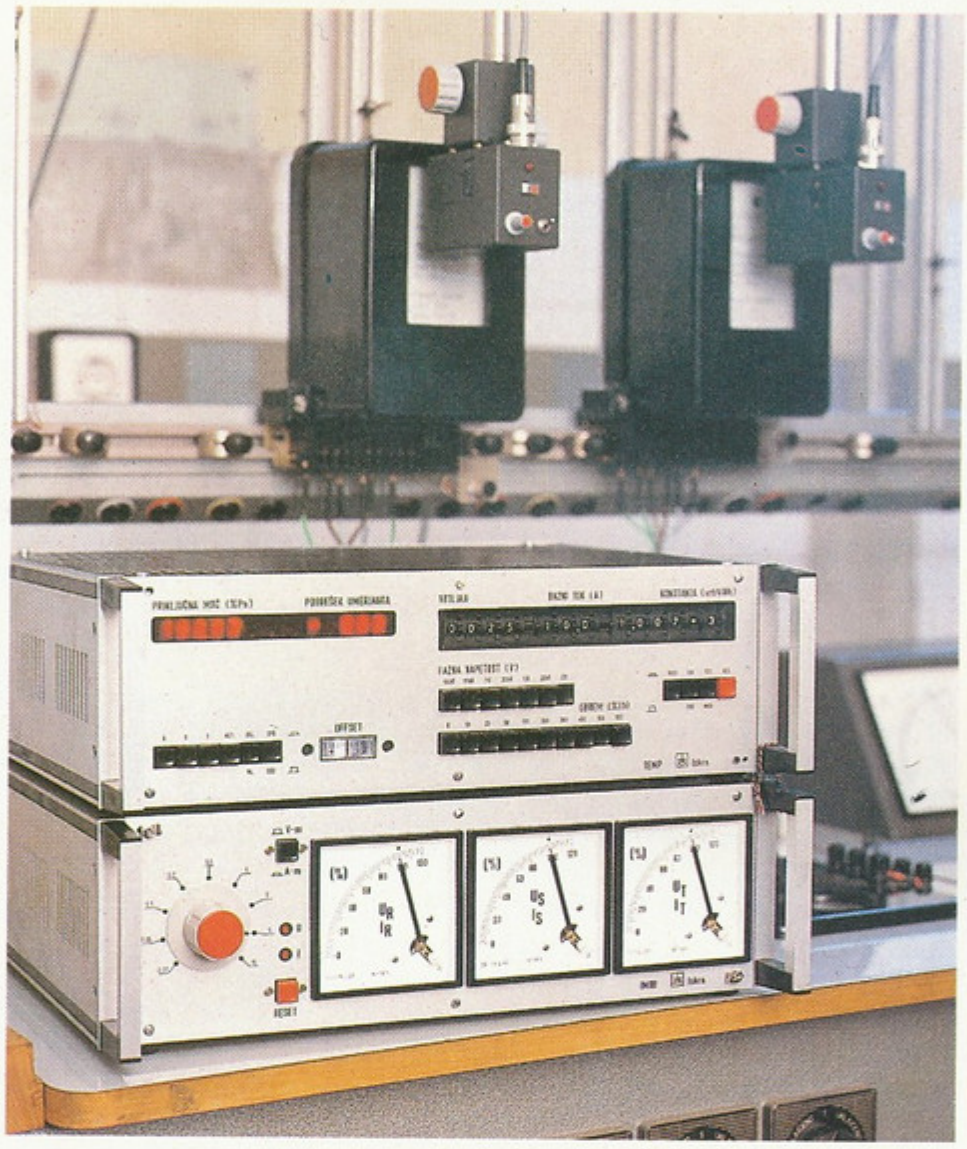
Household appliances
electrical food processing appliances
electrical personal care appliances
electrical household appliances

Electric tools
hobby tools
professional tools

23 21. Computer-aided design of multilayer thick-film circuits.

22, 23. Iskra LMP 600 carbon dioxide gas laser system for cutting all types of metals, woods, plastic materials, stones and similar. Applicable in prototype workshops as well as in series production plants.

24



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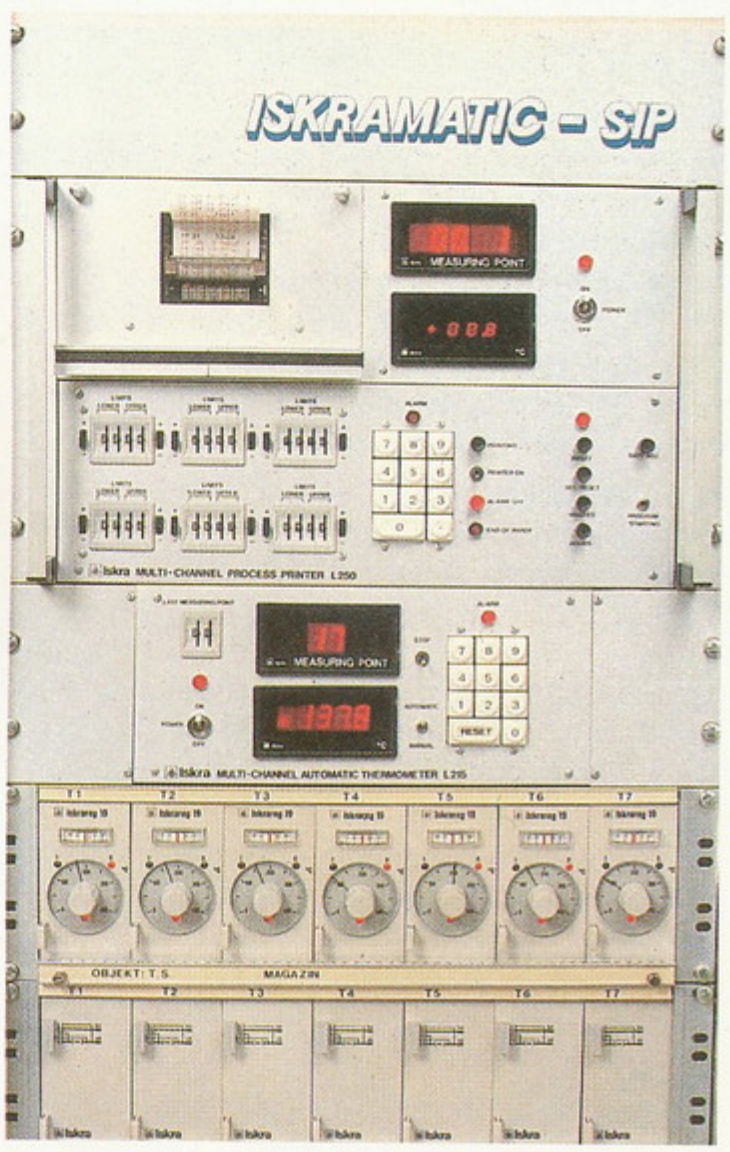

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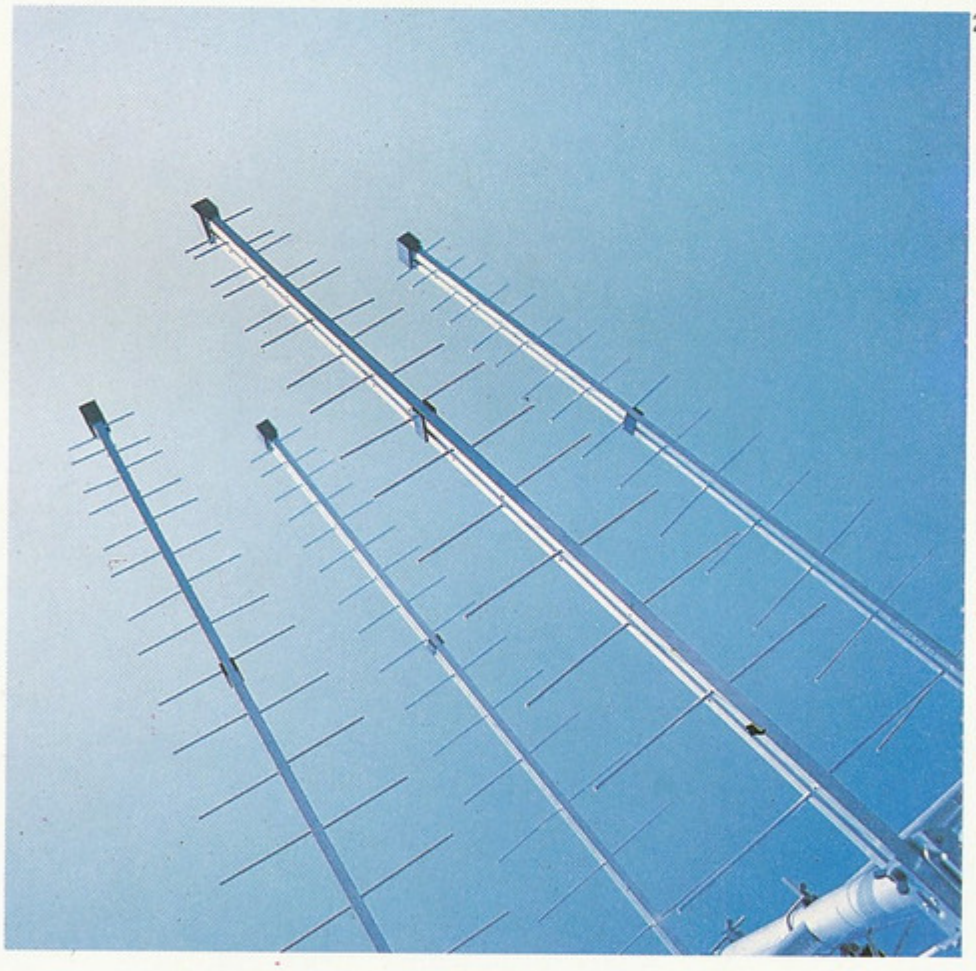

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29

24. Optical fibre transmission of video and audio signals; the device was incorporated in the TV broadcasting system at the Sarajevo Winter Olympic Games.
25. Testing of class 0.2 S electronic counters with an etalonic error meter.
26. ISKRAMATIC SIP, a modular system for the control, measurement and recording of industrial processes. Built in analogue technique.
27. Computer scales for industrial weighing.
28. Logarithmic antennas feature constant gain in the entire frequency range, enabled by a periodical logarithmic dipole array.
29. A combined laboratory pH electrode for measuring pH values ranging between 0 and 10 pH.

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* Subsidiary of Perles AG, Switzerland

DESIGN ISKRA

Published by **Iskra Marketing**
Ljubljana 1984
Printed by **TK Gorenjski tisk,** Kranj

Iskra