

Bulgaria

Electrical Engineering and Electronics

Profile



**Opportunities
for
Investment**

STABILITY..... OPPORTUNITY..... PROFITABILITY.....

Bulgarian Foreign Investment Agency

BULGARIA A RELIABLE BUSINESS LOCATION



Form of Government	Parliamentary Republic, One Chamber 240 seats
Area	110,912 sq. km
Population	7.93 million people
Capital city	Sofia (1.3 million people)
Official language	Bulgarian
Currency	Lev (BGN); EUR 1 = 1.95583 BGN
Time	GMT+2
Country telephone code	+359 (Bulgaria); (2) Sofia; (32) Plovdiv
Public holidays	January 1st, March 3rd, Easter Day, May 1st, May 24th, September 6th, September 22nd, Christmas Day
Ethnic groups	Bulgarian 83%; Turk 8.5%; Roma 2.6%; Macedonian, Armenian, Tatar, Gagauz, other
Religions	Bulgarian Orthodox 83.5% Muslim 13% Roman Catholic 1.5% Uniate Catholic, Jewish, Protestant, Gregorian-Armenian, other 2%

Easy Movement of Goods and People

- The Customs Law is based on the EU Customs Code
- The Bulgarian Customs Tariff is based on the international Harmonized Commodity Description and Coding System, and on the EU Combined Nomenclature
- The customs clearance of goods requires presentation of a customs declaration, similar to the EU Single Administrative Document, accompanied by the requested commercial documents (invoice, certificate of origin, transport document or any other relevant official papers).
- No customs duties are charged for exported goods or services.
- Tariffs for imports of industrial goods:
 - 8.51% on average from countries treated according to the Most Favoured Nation principle;

- duty-free from EU, EFTA, CEFTA countries and Turkey.

- Bulgaria has traditionally excellent trading relationships with other East European countries and hence is an ideal location for companies wishing to sell their products and services into those markets.
- Bulgaria's major trade partner has traditionally been the EU with 54.8% of total exports and 49.4% of total imports in 2001
- Inter-regional trade between Bulgaria and the rest of SE Europe accounted in 2001 for about 27% of Bulgaria's exports and 13% of its imports
- As for individual countries, Bulgaria mainly exports to Italy, Germany, Greece and Turkey and imports from Russia, Germany, Italy, Greece and France
- As far as tourism sector is concerned, most international visitors to Bulgaria come from the EU countries.

Easy Movement of Capital

Bulgaria recognises that the ability to move capital in and out of Bulgaria is a key issue for most investors. In Bulgaria you can get advantage of:

- no constraints on the trade of hard currency within the country
- stable exchange rate - the Bulgarian Lev is pegged to the Euro at a rate EUR 1:BGN 1.95583
- each local or foreign person may own an unlimited number of accounts in any currency, in any bank in or outside Bulgaria
- a foreign exchange regime based on the principle of freedom of effecting transactions, actions and payments
- Bulgarian citizens as well as foreigners may take Bulgarian Leva and foreign currency of up to BGN 20,000 or its foreign exchange equivalent out of the country without documentation
- Export of Leva and foreign currency between BGN 5,001 and BGN 20,000 or its foreign exchange equivalent is liable to customs declaration
- Transfers above BGN 20,000 must have a prior approval of the Bulgarian National Bank
- Foreigners are permitted to export as much currency over the foreign currency equivalent of BGN 20,000 as they have imported into Bulgaria without prior approval
- Payments abroad made by businesses (or self-employed business people) can be executed only through bank transfers
- Under the Law on Foreign Investment, there are no restrictions on the transfer of investment-related funds

The Electrical Engineering in Bulgaria has a long history

The roots

The history of electrical engineering in Bulgaria starts as early as the first years of the young established state with the participation of European companies from Belgium, Germany and France. Bulgarian engineers obtain education at German, French, Italian and Czech universities.

Some dates and facts are interesting from a contemporary point of view:

- 1878-1879 - First electrical lighting of the palace is commissioned. The first facilities for establishment of a telegraph network delivered by Siemens. Until World War II Siemens is the main supplier of telegraph equipment to Bulgaria
- 1888-1899 - First electrified factories in Gabrovo and Kazanlak, public buildings, collieries etc.
- 1900-1902 - First hydroelectric power station for the capital Sofia with a 7 kV transmission line. First tramway in Sofia. First thermal power station. The production of isolators hooks for overhead transmission and telephone lines starts in a Rousse factory, which in 1944 has a staff of 98.
- 1909-1911 - Regular import of electric bulbs and utility material from Austria initiated. Siemens wins a tender for the first distribution telephone exchange with 3,000 posts.
- 1917-1919 - Permanent representation agencies of Siemens-Schuckert for HV technique and Siemens-Rheiniger for medical equipment opened in Sofia
- 1923 - The "Bulgarian Limited Company for electricity-Siemens" established
- 1925-1926 - First regular import of radio receivers and radio parts. First X-ray device imported
- 1926-1935 - Start of petty production of small sized electric motors, dynamos, transformers, and chandeliers. A factory in Sevlievo for twisted copper cords for welding machines and cables for domestic installations starts production. First factory for electric bulbs with a daily capacity of 2000 pcs is commissioned. First oil-immersed 320 kVA transformer was produced. Start of a production of bakelite parts, sockets and switchgear
- 1934-1943 - Construction of the country's first automatic telephone exchange begins, parts of which are still in operation. First exchanges in all important settlements, first communication transmission cable- and high-frequency installations
- 1936-1945 - Supply of X-ray and EC equipment for military hospitals and private clinics; repair & maintenance workshops for radio sets, telephone and telegraph apparatuses, electric motors, transformers, heating devices multiplication.

1945-1980

Nationalization of industry at the end of 1947 is a determinant moment for the post-war development of the Bulgarian electrical industry. The state concentrates large investments into creation of significant production capacities with high rates of serial manufacturing.

The country's available engineering staff managed to transform the electrical industry into a sector playing a decisive role in technical progress. From 500 types of products in 1948, in 1957 they were already 6000, reaching 8000 in 1980. For the period of 1970-1980, the output increased with 277%. However, it should not be forgotten, that the development of this particular production was taking place in the frame of an administrative market with all its negatives, concerning competitiveness, quality and cost value.

1980 - 1990

Period of modernization of the electrical industry, opening the country to technological cooperation with developed industrial countries, of boom in the industrial electronics, the appearance on new markets.

A series of licenses from AEG, ABB, FANUC, TOSHIBA etc. had been procured. Modern equipment from European, Japanese and American companies was imported. Significant contribution to the innovation process was made by the well-organized centralized research and design institutes. As a result, the production structure was changed toward higher technological products. A significant example of this process was the organizing of mass production of controlled electric drives with permanent-magnet motors for CNC machine tools, exceeding an annual output of 40 000 pcs.

Particularly large investments were made in the industrial branch of information technologies.

Illustrative for the development and the realization of the electrical industrial markets was the design, construction and commissioning of complete projects in more than 15 countries in Asia, Africa, America and Europe.

From USD 57 mln in the previous twenty years, projects of more than USD 270 mls had been carried out in the referable decade.

1990 - 1998

Owing to the strong positions of electrical engineering in Bulgaria, this sector is undergoing a successful reconstruction. Indicative is the fact, that the electrical factories were the first to be privatised. Privatisation of the electrical industry was practically completed in 1997. Although without large foreign investment inputs, ABB, SCHNEIDER, HYUNDAI, SPARKY and others have purchased important manufacturing enterprises.

Strong negative factors, still affecting the branch were as follows:

- Liquidation of the administrative markets, especially those in the former Soviet Union
- General economic, financial and political instability
- Crisis in traditional markets and the supply of raw materials and energy
- Dissolution of technological links and clusters with the change in property
- Deficit of operational capital
- Inconsiderable direct foreign investments

General Features of the branch

It's a well-known fact, that the electrical and electronic industries strongly influence the level and standard of each country, being directly linked with all remaining industrial sectors in terms of their scientific & technical development. Moreover, the production of ecologically clean, energy- and materials saving products supports innovation processes in other industrial branches.

As a result of shrinkage in local markets, mass imports of commodities and the sheer loss of foreign markets, the enterprises of the electric and electronic industry are utilizing only 30-35% of their capacity.

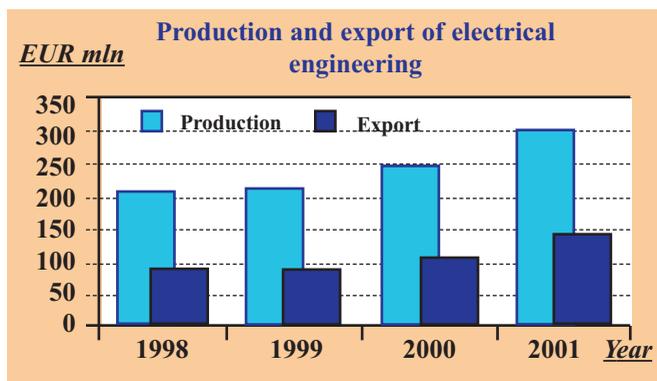
Manpower in the sector has strongly decreased in number in recent years and compared to 1989 has dropped off several times. Some studies cite a number of about 30,000 staff. This

is probably obsolete data, as a study by the Bulgarian Chamber of Electrical Engineering BCEE investigation of 110 of most important companies shows a figure of 13,000 in 2001, while labour force in 1998 was estimated to reach 18,000.

Amongst existing active enterprises in 2000, about 95% are small, 1% medium and 4% - large, with a 99% private ownership.

Position in industry

An important feature of the electrical industry in Bulgaria is its traditional export orientated trend. Traditional markets are Asian and African countries. It should be reminded, that Bulgarian-made electric motors enjoy a good long-term reputation in the countries of the European Union. Export to CIS has dropped sharply, as many sub-sectors have lost their importance.

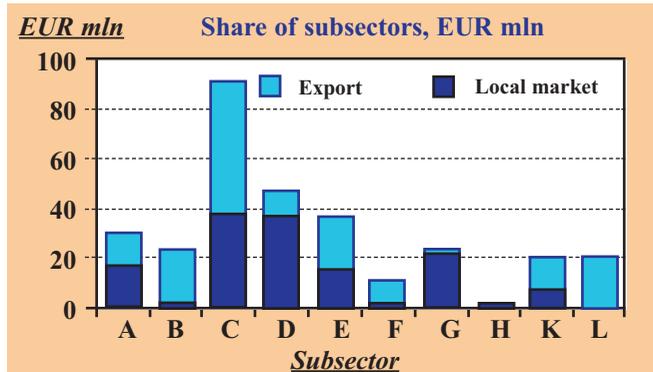


Production volume of the sector and the relevant export rate for the last years is shown in the figure above. After a certain drop in 1998/1999, a real tendency of growth both for the total output and the export is lately noticeable.

Local market has grown by 31.9% due mainly to rise in import. Actual import growth in current prices between 1997 and 2000 was about USD 60 mln. Envisaging the fact, that turnover in industry has not increased significantly; this growth is not related to Bulgarian manufactures but to foreign imported commodities. Export of electrical engineering products and electronics has changed insignificantly as a whole during the period 1997-2000. In spite of regression in 1998 and 1999, export has recovered in 2000 with a growth rate of 45.1%.

Considering the deep structural changes in the electrical industry in Bulgaria during the last 12 years, its pattern nowadays is featured by the following product sub-sectors of dominant importance:

- A. HV/MV electric power equipment, switchgear
- B. LV/Switchgear, electric utilities, (installation appliances), lighting fixtures and sources
- C. Cables and wires
- D. Electric motors, hand tools, hoisting & haulage and transport technique
- E. Batteries
- F. Automation, control & measurement appliances
- G. Subcontractors of elements, parts, materials
- H. Electric thermal equipment
- K. Engineering, complete projects, consultancy
- L. Trade companies without manufacturing activities



With reference to electric household appliances, television & radio technique, production at the moment is marginal and non-competing even to local market conditions and is not included in the present survey. Exception is made for the electric geysers and boilers.

The relative share of the different sub-sectors in the total output and the export is shown in the figure above. It is obvious that the sub-sectors of cables, motors and power engineering equipment have a dominant share in production and export.

Average Salary

The average year salary of USD 1,266 in the electrical engineering and electronics branch is levelled with that in industry as a whole. It should be taken into consideration, that large differences in remuneration among different companies are being observed. The system of labour insurance is also undergoing thorough reforming. This is one of the cause's salary data not to be handed-out willingly or not to be very trustworthy.

Investments

The inflow of investments in tangible fixed assets during the period of 1997-2000 reaches USD 53 million, whereas 70% are expenditures for new manufacturing facilities.

The investment share in industry is lower than that of gross output and reached 2.9% in 2000. This is due mainly to foreign direct investments FDI, which, for a four-year period reached USD 135 mln. The level of FDI remains unchanged - about USD 40 mln per year.

The fact that the interest of world business concentrates in the electrical industry is worth to be mentioned and companies such as ABB, SCHNEIDER, HYUNDAI, SPARKY and EPIQ have purchased existing factories, while LIEBHERR and FESTO have built entirely new ones showing significant output.

Productivity

Productivity showed a constant growth during the period 1997-2000 resulting from redundancies. FDI have also affected positively the labour productivity. Redundancy is considered to be a result of change in ownership.

Summarizing, it could be stated, that the Bulgarian electrical & electronic industry maintains its competitiveness in terms of labour productivity.

Strengths

- Well-qualified and trained engineering and other staff with good technical experience
- Long-term tradition in some particular productions, as power and distribution transformers, electric motors,

cables, etc.

- Available equipment from reputable West European, American and Japanese firms, still in good technical shape
- Constructions, design and technologies in the production traditionally harmonized with West European standards
- Good general education of the population
- Good positions on traditional markets and a strong motivation to enter new ones
- Real possibilities to achieve low-rated prime-costs on account of the many times lower cost of labour compared with developed countries.

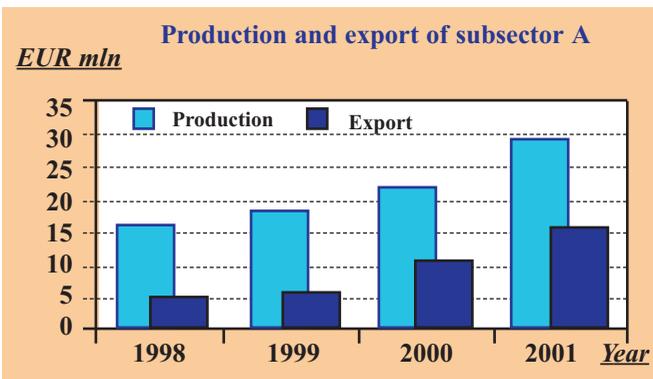
Weakness

- Still continuing process of restructuring and establishment of new technological clusters
- Lack of capital for investments in rehabilitation of equipment and innovation
- Established manufacturing capacities and organization of large-series production, while the relevant markets have ceased to exist
- Inadequate managing proficiency in the new conditions of free market economy

MAIN FEATURES OF THE BRANCH SUB-SECTORS

A. HV/MV electric power equipment, distribution switchgear

One of the traditional productions in Bulgaria. It is not by fortuitousness, that two of the largest plants were procured by ABB (ABB-AVANGARD) and HYUNDAI. Well-known is the only manufacturer of distribution transformers ELPROM TRAFO. Some smaller companies also show a successful development, producing MV equipment for the country's electric distribution network.



In production are:

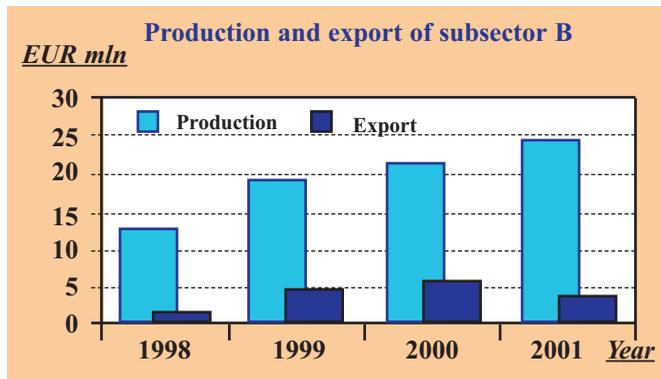
- Power transformers up to 250 MVA and up to 400 kV
- Distribution transformers up to 1600 kVA/36 kV and up to 5 MVA/110 kV
- Special transformers, accuracy class 0.2 measuring transformers
- On-load tap-changers
- Disconnectors up to 550 kV, reconstruction, motor drives for, LV/MV fuses, porcelain insulators
- Medium voltage switchgear 6-36 kV, reconstruction
- Electro-generating sets up to 200 kW
- Distribution cabinets and switchboards

B. LV switchgear, electric utility & installation products, materials, lighting fixtures, and luminaries

The production of LV switchgear, incl. utility accessories shows significant growth in recent years but actually the sub-

sector is in a deep crisis. Production has dropped several times, innovation process is strongly impeded, and many of the former administrated markets are lost. Nevertheless, comeback is due to the good technical characteristics of the products, which maintain their good reputation on traditional markets in CIS and the Near East.

Labour productivity has increased with 48% resulting from a drop in the number of employed personnel with 20.1%. The existence of a considerable internal market related to modernization of the country's power system is worth mentioning.



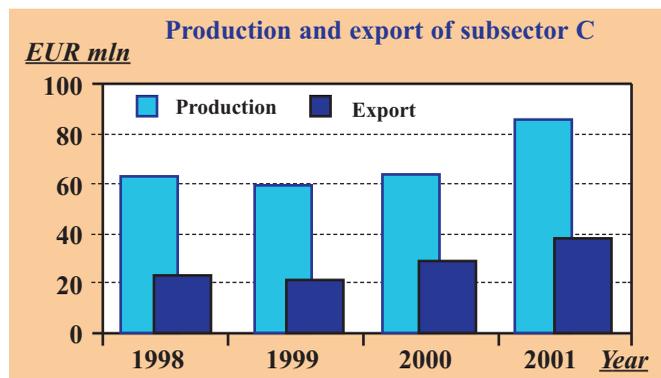
Some more important products are: circuit breakers, moulded-case circuit breakers, air contactors, mini circuit breakers and contactors, wiring accessories, thermal motor protection, etc.

The sector of lighting fixtures and lamps has increased its gross output and turnover, mainly due to rise in export. The local market is strongly influenced by dumping and unfair import mainly from the former Soviet republics.

Halogen, fluorescent, high-intensity discharge lamps, special lamps, vehicle lamps, incandescent lamps, outdoor and industrial lighting fixtures, etc. are manufactured.

C. Cables and wires

This is probably the most satisfactorily developing sub-sector. An increase of labour productivity of 16.9% to USD 5,894 (the highest in the whole industry) has been reached by way of cutting down working places with 43.8%. Productivity compared to tariff rates is higher than that for the three leading countries in the European Union.



The main production is concentrated in four large enterprises:

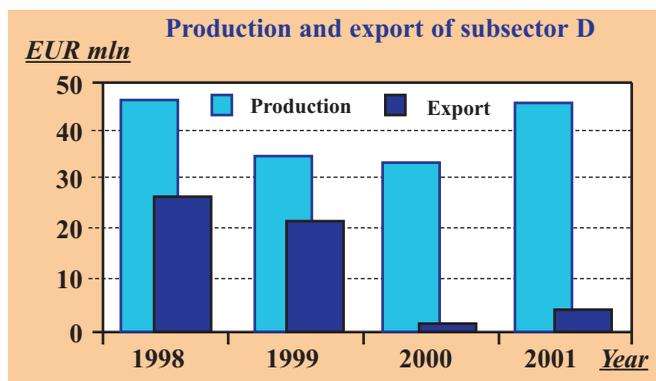
- ENERGOCABEL - hard drawn wire and bare conductors
- GAMAKABEL - low power and voltage cables
- ELKABEL - high power and voltage cables
- EMKA - enamelled wires

Produced are:

- Copper wire rod 8, 10, 14 mm; aluminium wire rod 9, 12, 15 mm; aluminium conductors steel reinforced; all aluminium conductors; hard drawn stranded copper conductors
- Power cables - low, middle, high voltage
- Cables for telecommunication and data processing systems, RF, TV and SAT cables
- Flexible cables, rubber- silicon- sheathed
- Circular stranded conductors, installation conductors, cords for household appliances
- Power ship wiring, cables for submersible pumps

D. Electric motors, electric hand tools, haulage, hoisting and transport technique

This is the production with greatest tradition in Bulgaria. Seven large former state-owned factories and new smaller companies are still existing and developing. Practically all groups are represented: AC, DC - wide power range, standard, special, and permanent magnet servo. Three-phase synchronous and asynchronous machines are with a power up to 1 MW and 6 kV. Asynchronous motors in the range of 50 W to 37 kW are mass-produced. The production of asynchronous electric motors with special designation, such as telpher motors with cone rotor and built-in brake, single- and two-speed, with a power from 0.12 kW up to 30 kW, crane motors up to 30 kW is also reasonably well developed.



Traction DC motors are produced for maintaining in-service electric cars and for needs of their dropping production.

DC servo motors and complete electric drive systems for CNC controlled machine tools are produced by the DYNAMO SL Company.

SPARKY, proprietors of the only large factory for hand tools in this country and BOSCH are leading on the market. Unfair import of products with unclear quality and origin create problems to these companies as well.

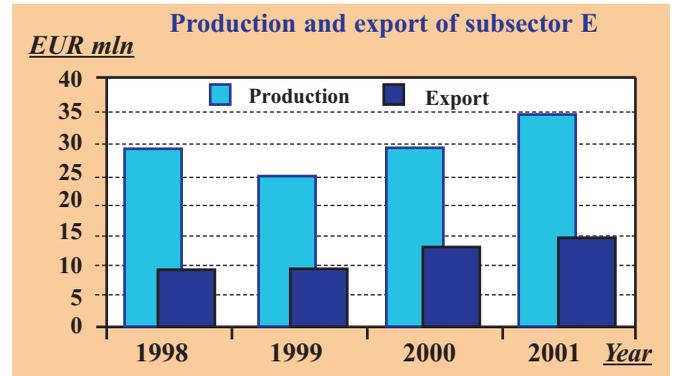
E. Batteries

The production programs of the main manufacturers comprise the following types of lead-acid storage and primary batteries:

- Starter batteries for all types of vehicles and diesel locomotives
- Traction batteries for all types of electric cars and mining trucks
- Stationary batteries for telecommunication
- Railway batteries for RW-rolling stock.

The companies START, MONBAT, ELHIM-ISKRA are engaged in the production of car starter storage batteries,

which comply with the requirements of the European and world standards and have found excellent markets in Greece, Macedonia, Moldova, Belarus, Ukraine, Yugoslavia, etc. They have been main suppliers to the former Soviet Union automobile industry till 1990. Here, the experience in free-of-maintenance batteries is a marking point. MONBAT is the single producer of a specific type of starter battery for military armoured vehicles without analogue in the global practice.



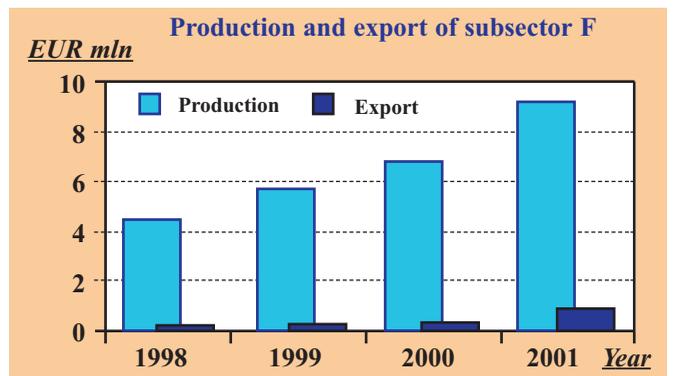
The production of traction batteries is concentrated in ENERGIA and ELHIM ISKRA. Pasted and panzer batteries complying with European standards are being produced.

Introduction of stationary and traction batteries for the mining industry into the production list of ENERGIA compensates for the drastic drops in the demand for electric car traction batteries. The company produces railway batteries and starter batteries for diesel low motives & rolling stock exported to Russia, Ukraine, and Romania.

The sector suffered losses in output in 1997 - 2000. Labour productivity however, has been improved with 11.7% showing a higher rate than that of drop in employment - 39.8%. The sector offers a good example of opportunities to improve effectiveness, even at shrinkages in internal and external markets.

F. Automation, control, measurement means

Companies with diverse production are forming this sub-sector: controlled electric drives, pulse coders, electric meters, peripheral devices, sensors, controllers, alarm systems, etc. The former state-owned enterprises are well equipped with modern appliances, but have been oriented to administrated markets and are looking now for international partners.

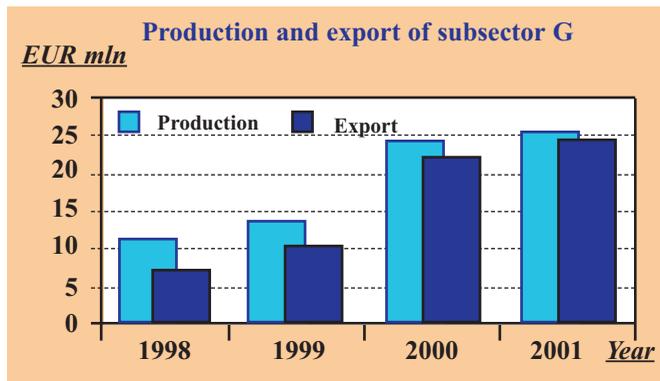


At the same time, a number of smaller companies have concentrated an important intellectual potential and are in a position to meet significant technological and manufacturing challenges. Some of the enterprises, as TELETEK-ELECTRONICS, have invested in state-of-the-art equipment. The firm is in possession of the latest version SMD-line.

A significant group of companies cover the full range of electric meters, both electromechanical and electronic with a wide variety of functions. Although, very much restrained in volume, the production of controlled drives, accessories for automation, pulse coders, cash machines, alarm systems, thermal and proximity coders, measuring devices, custom design PCBs is still existing.

G. Subcontractors of elements, parts, materials

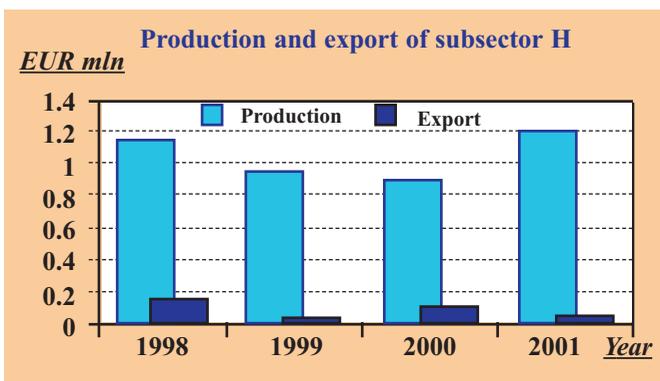
Most of the former state-owned enterprises have been organized in a way to maintain their own production of most of the parts required and hence, dispose of good proper equipment. At present, they play very successfully the role of sub-contractors of plastic parts, castings, mouldings, small feeding and special transformers, electric contact elements, a wide range of capacitors for the electronics. The factories are well equipped for stamping, galvanic coating, wiring, etc. The production of small transformers is particularly well developing, probably due to the considerably extended manual operations.



Worth to be mentioned is the fact, that this sector has achieved an important rise in productivity with a significant cut in manpower of about 35%.

The newly-built FESTO factory for sensors and other pneumatic systems parts can be outlined.

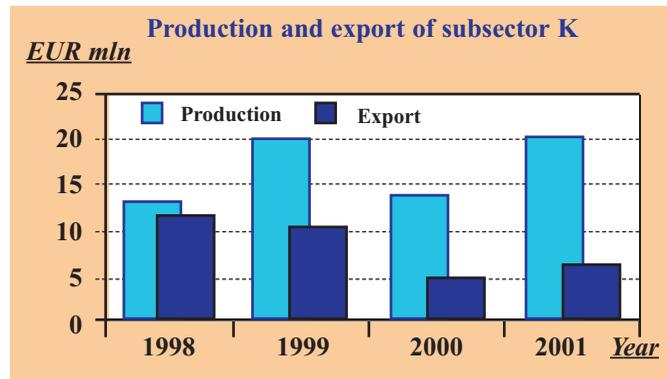
H. Electric thermal devices



This sub-sector obviously plays no significant part nowadays but finds a place in this survey because of its importance in the past, when the production of industrial furnaces and thermal installations with industrial and high frequency was developed on a serious level. Lately, small firms-manufacturers of electric heating appliances, such as boilers, geysers, household cookers and furnaces for special purposes are introduced well into the market.

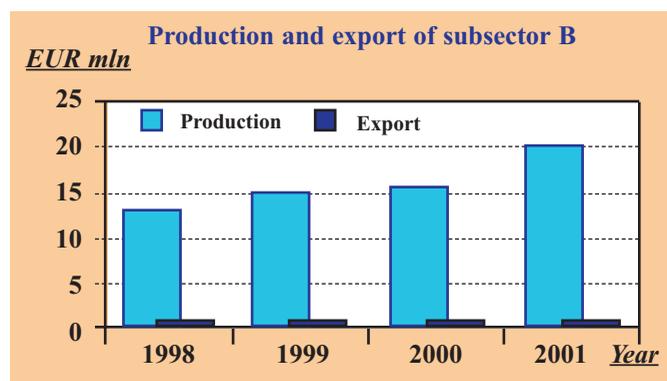
K. Engineering. Complete projects, consultancy

A great number of small companies have been established lately in the field of engineering services, but the two most important amongst them are ELECTROIMPEX and SIEMENS BULGARIA. Keeping in mind the fact that ELECTROIMPEX carry out complete projects outside Bulgaria as a rule, SIEMENS and some holding structures, for which there are no data available in this survey, determine the local market of infrastructural projects.



The small firms operate more in the field of consultancy, innovations, and quality management systems. It should be remembered that a significant intellectual potential is dispersed in this field, which in the past was concentrated in the centralized R&D institutes. Some of the leading lecturers of the technical universities also are involved. Since activities of those companies are not related to significant tangible fixed assets, only a small number of them are discussed in the present survey.

L. Trade companies



Demonopolisation and privatisation of trading activities was the prerequisite for the total reconstruction of the sector and provoked the establishment of an immense number of trade companies, many of them even operating in the shady economy. On that account, it is very difficult their activities to be comprised. Considering the internal market, in the present diagram no notion about its range is given, and only the trend in the development of some leading companies, such as KABELSNAB, BOSCH BULGARIA, FESTO TRADE BULGARIA, TELETEK is shown.



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