



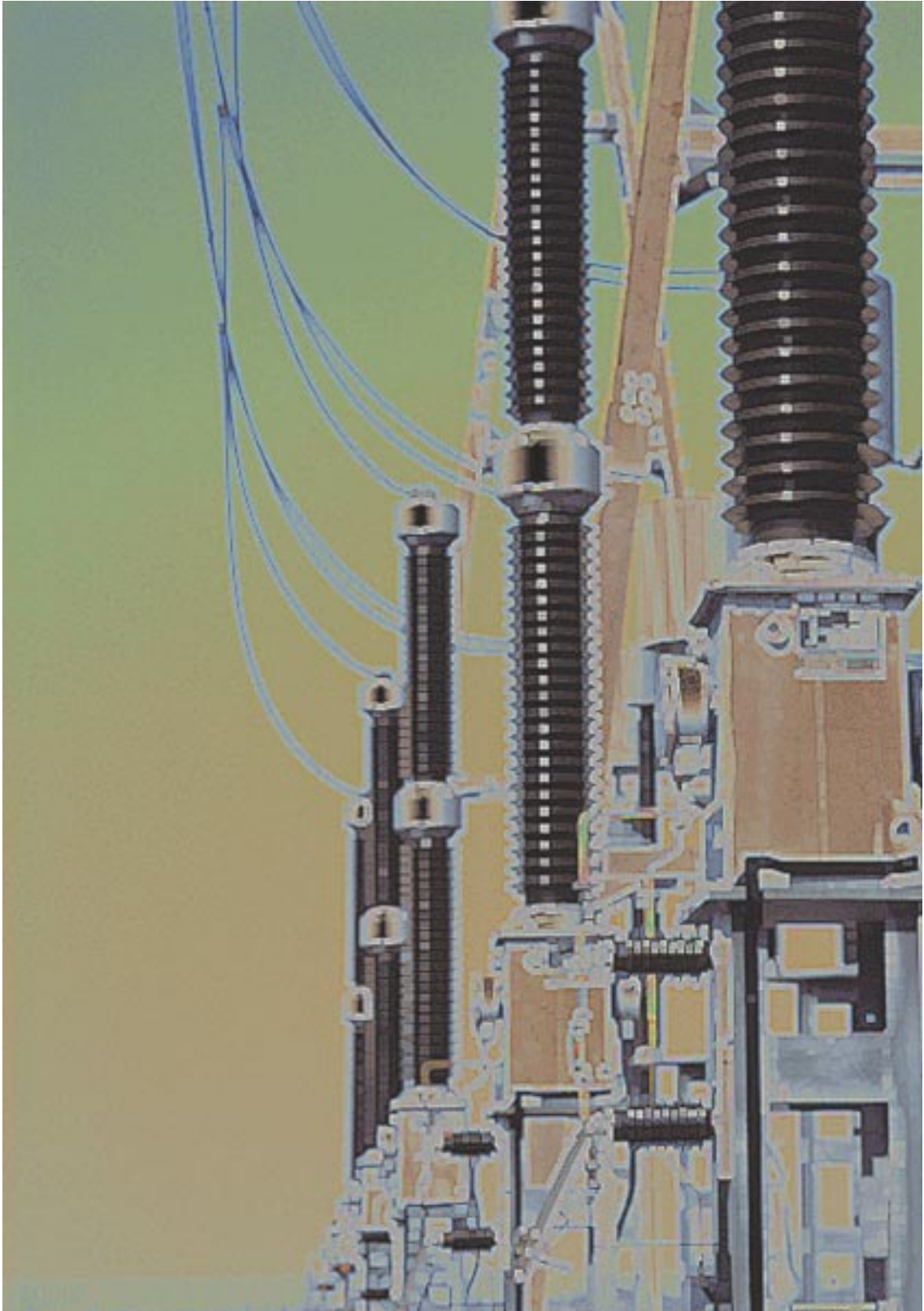
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RED ELECTRICA

Annual Report 1997



Technological research and development





Projects completed

Projects completed in 1997 include:

- **Research, basic design and specification of flexible power control systems for the Spanish electricity system:** A guideline model was achieved for network planning related to behaviour analysis of the different FACTS devices in electric power systems. This model makes it possible to design, dimension and analyse the features of the power control devices (active and reactive) which add flexibility to the power system.
- **Extension of the Expert System for Programming Outages (SEDPES):** This system, which has been in use since 1993, has been improved by adding features such as analysis modules for multiple contingencies, cost and service quality optimisation, integration with Oracle, graphic user interfaces and connection to the Power System Status Prediction System.

Resources and the R&D institutional framework

R&D activities were represented by a portfolio of 31 active projects which directly involved more than 3,200 million pesetas of RED ELECTRICA's resources. Close co-operation continued with other utility companies or companies in sectors which are directly related. Their participation in 70% of the projects results in the investment of additional resources of the same order of magnitude as those employed by RED ELECTRICA. As a consequence, the total resources dedicated to these projects are considerably greater than 7,000 million pesetas.

Although the PIE Program has ceased to be the main framework for R&D activity it still covers 65% of the on-going projects. The remainder are exclusively in-house projects or come under the programs of the European Union. Of the company's total R&D budget, 20% is earmarked for the latter projects.

Projects underway

Projects in hand which were still in progress at the end of the year included:

- **Prototype of a 1 MJ magnetic superconductor storage device for stabilising the network:** Construction of a 1 MJ device has been completed and various trials have been carried out with the 25 kJ prototype in the test network. This has demonstrated that its performance is suitable for moderating voltage fluctuations and correcting load imbalances, leading to significant improvements in the quality of service.
- **A system for recording and analysing the dynamic response of the power system to disturbances:** A dynamic analysis system was developed for the power system in a disturbed state. Its features are very competitive compared to those of other products in the international market. Up until the end of 1997, two prototypes for the remote recording equipment (ERR) were designed, built and installed in the field for verification under real service conditions. The first fully-functioning version of the central control station (PCG) was also delivered. In 1998 verification of the ERRs and debugging of all the software related to the PCG will be completed.

- **Research on electricity demand:** During the year preparations were made for a book which will be published in 1998 and which will contain the conclusions reached on the most significant factors affecting mainland electricity demand, the load curve and the uses of power, broken down into residential and commercial sectors, tourism, services and industry. Work continues on the creation of new panels to identify additional factors which explain the behaviour of the different sectors.

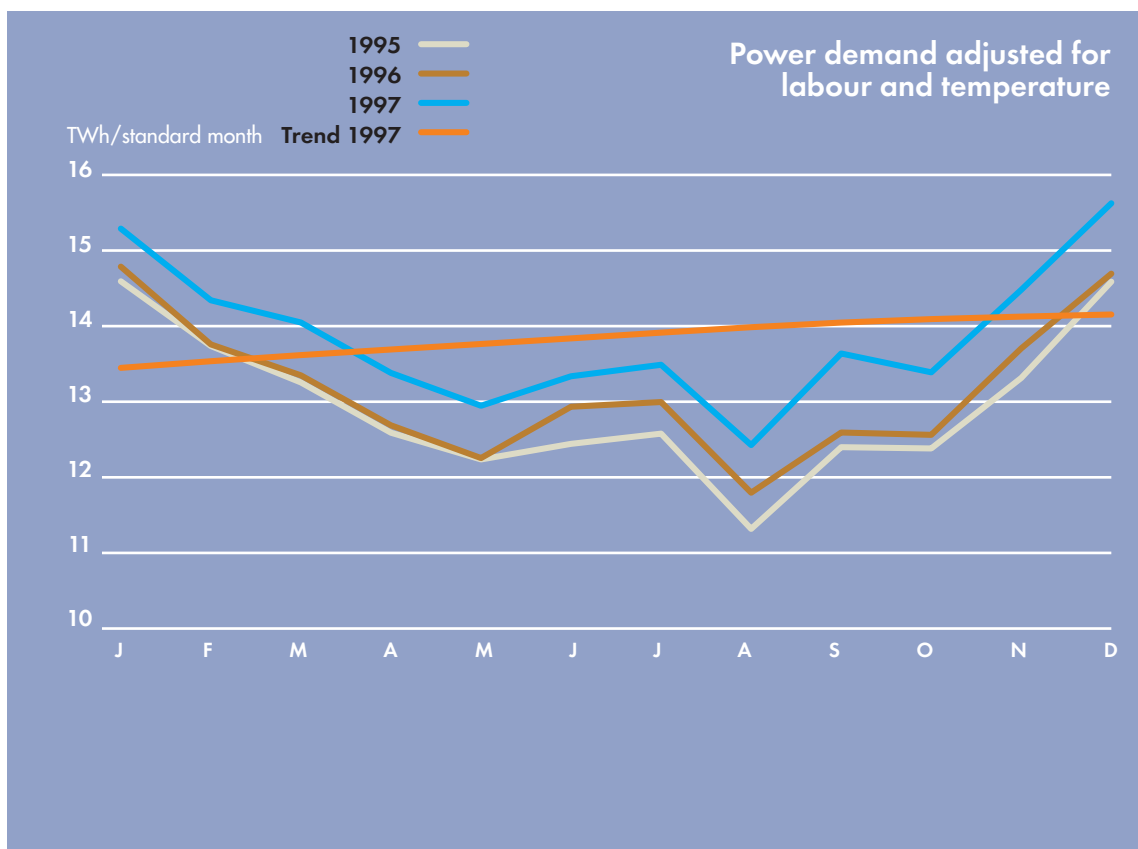
New projects commenced

New projects started in 1997 include the following:

- **Photonic devices based on high critical temperature superconducting materials:** The object of this project is to develop the necessary technology to manufacture optical-electronic devices which will enable very high transmission speeds over fibre-optic lines (in the order of 100 Gb) using an external Match-Zender modulator based on electro-optical materials and high critical temperature superconductors. The PIRELLI company is participating in the project and provides experience in optical-electrical components and conventional materials (optic fibres, modulators, etc.) which are needed in the testing stage.

- **General system for restoring service:** The basic objective of this project, in which the utility companies, FECSA, SEVILLANA and UNIÓN FENOSA, are participating, is a system to aid in restoring supply in transmission and distribution networks. The tool will be based on previous developments in systems for restoring supply in transmission networks and new developments in secondary networks.

- **Complementary activities in the MIDAS project for «development and manufacture of power devices based on superconductors»:** This project aims at evaluating the industrial potential of a hybrid fault current inductive limiter (secondary mixed metal-superconductor) which was a result of the final work in the previous MIDAS project and involves the same research team. Two demonstration models are being manufactured at different scales (220V-100A and 100V-5A) to study their capability to comply with the operating requirements of the protection system of the transmission network.



European Union programs

The following project is still underway::

- **High voltage electrical network information exchange for planning and analysis:** This project, also known as ELECTRONET, is part of the ESPRIT program of the European Union. Work was started in October 1996 and the planned duration is 36 months. RED ELECTRICA is joined in this project by IBERDROLA, LBEIN and ten other European companies. The objective is to establish a standard format for database representation for generation and transmission electric power systems which can be used in planning and in operation activities and will facilitate the exchange of data between different companies.

The following projects have been commenced:

- **The EFICOM Project-efficiency in the commercial retail sector:** This project is financed by the SAVE Program. Apart from RED ELECTRICA, the Portuguese Energy Conservation Centre and the Joint Research Centre, a research organisation belonging to the European Community, are also involved. The goal is to evaluate the efficiency of electrical equipment in small shops under real conditions of use and the possibilities for improvements.
- **The minimisation of transmission losses in regional power systems:** the project, which was started at the end of the year, falls under the THERMIE Program and it is carried out in co-operation with ENEL, ENDESA and the University of Strathclyde (Scotland). The aim is to demonstrate the industrial feasibility of an automatic and distributed system for control of voltage and reactive power management which will significantly reduce transmission losses and guarantee continuity of service. The design of the system was carried out under the «Integrated multi-level power network voltage control project» (ESPRIT III), which finished in 1996.
- **Voltage measurement transformer based on active ceramic materials:** This project comes under the framework of the European BRITE/EURAM III Program and it is organised by RED ELECTRICA. It consists of the design, construction and field trials of a voltage measurement transformer based on ceramic piezoelectric sensors-instead of electric components (capacitor dividers, windings and magnetic core) and the associated insulation, which are currently used.

The environment





Electromagnetic fields

The most important activities in this area were:

- Completion of the study on the level of cellular calcium and experiments with chicken embryos in the biological research program **Effects of low frequency electromagnetic fields on cellular and molecular mechanisms which control cellular proliferation and differentiation**. This project was started in 1995 and it is conducted in co-operation with the Institute of Biology and Molecular Genetics of the Faculty of Medicine of the University of Valladolid and the Association for Medicine and Safety in the Workplace. In 1998 the methodology and experiments will be extended to mammal embryos.
- The organisation of the summer course on **Electromagnetic fields, health and the environment** with the Castile and Leon regional government, the University of Valladolid and the Supreme Council for Scientific Research. This course included the participation of notable Spanish and foreign speakers, experts on electromagnetic theory, on epidemiology, biological laboratory studies, standards and on the international situation, among other subjects dealt with.
- Preparation of a bi-monthly bulletin on new events related to electric and magnetic fields which collects international information on research into the possible effects of electric and magnetic fields on human health, on publications, on legislation and other important items.
- Co-operation on the editing of an informative leaflet entitled **Electromagnetic fields in our environment**, published by the UNESA working group on electromagnetic fields, whose objective is the spread of information on the basic concepts of this subject and the conclusions of numerous scientific organisations. At the current time, another leaflet with a more technical content is in preparation.
- Preparation of an Action Plan for Electric and Magnetic Fields and Audible Noise related to the lines and substations of RED ELECTRICA proving that the international recommendations on exposure of the public and employees are complied with.
- Attendance and participation in various national and international meetings including the seminar on **Perception and communication regarding risk and its application to exposure to electrical and magnetic fields** sponsored by the World Health Organisation (WHO).

Environmental management

RED ELECTRICA has developed an Environmental Management System in accordance with the UNE-EN-ISO-14000 series of standards, whose certificate issued by AENOR is expected in 1998.

During 1997, apart from identifying the RED ELECTRICA activities which should be integrated in the system, the corresponding documentation (manual, procedures, instructions, records, etc.) was defined and prepared. A training program covering environmental management and audits was developed as required by the UNE-EN-ISO-14001 standard.

Protection of birdlife

During 1997 the following studies and projects were carried out:

- **Monitoring of operations with environmental implications on the 400 kV Pinar-Estrecho line.**
Effect on birdlife. A study was made of the effect of the line on the bird population in the Alcornocales Park, in the south of Cadiz province, which is of great ornithological value as one of the main routes between Europe and Africa for migratory birds. It was found that, in line with the studies made prior to the construction and commissioning of the facility, the effect has been minimum.
- **Design and testing of methods of discouraging the nesting of storks in the towers of the transmission lines.** This project is part of the extensive studies which are being carried out on the effect of bird nesting on transmission lines. With the object of finding a way to accommodate both the nesting habits of the white stork and the normal operation of the facilities, a group of measures to discourage nesting was designed for testing in towers which have been expressly erected near the existing nesting colonies, thus creating the first «natural laboratory» for the study of interactions between birdlife and the power lines.
- **A study of the incidence of collision of the partridge eagle with the power lines.** This study was carried out with the Faculty of Biology of the University of Barcelona.

Co-operation is also being maintained with associations related to the study and preservation of birdlife. There is co-operation with the Spanish Ornithological Society (SEO/Birdlife) in a study on the great bustard in the Madrid region and also with the Aragon Nature Association where RED ELECTRICA has made some towers available as supports for stork nests transferred from buildings.

Vegetation

In order to optimise maintenance in the right of ways, preserve the present vegetation in the best way possible and to reduce long term costs of maintenance labour, work has continued on the project known generically as the **Proposal for the environmental management of the rights of way of RED ELECTRICA's lines**, carried out with the Polytechnic University of Madrid. The aim is to classify the existing forest types along the right of ways and to design the actions which will allow the lines and the vegetation to co-exist. It is hoped that this will lead to an increase in the interval between two maintenance operations in the same area and reduce their impact.



Moreover, the publication, **Inventory of Iberian Flora Compatible with HV Lines**, in co-operation with the Polytechnic University of Madrid, was designed, edited and distributed.

The project known as **Computerised Prevention and Detection of Forest Fires Using HV Lines** was completed. This project demonstrated that the transmission infrastructure can be used to install fire detection systems in areas of special interest to forestry and to transmit images and alarms to the control and watch centres. The tested equipment will shortly be available for installation.

Environmental impact studies

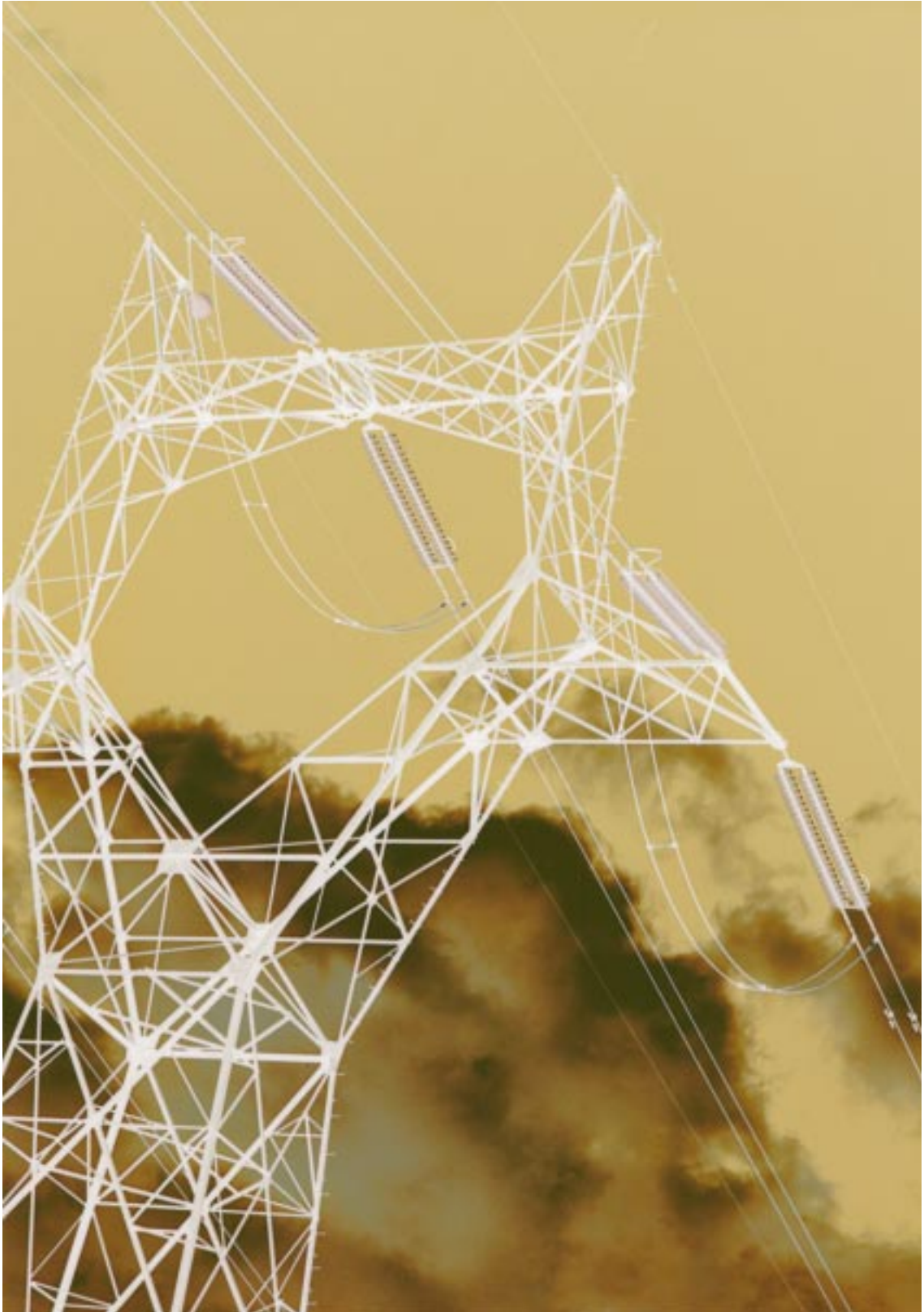
During 1997 the following were completed: The Environmental Impact Study (EIS) on the 400 kV Sentmenat-Bescanó line, the EIS on the 220 kV Cartelle-L/Castrelo-Pazos and Cartelle-Castrelo-Velles lines (which form part of the infrastructure needed for development of the Wind Power Project of the Galician Regional Government) and the simplified EIS for the conversion of the Cordovilla-Orcoyen I and II lines to double circuit and the Almazán substation. Work is currently underway on the EIS for 12 lines and 4 substations.

Other activities

A book was published containing the **Lectures and Discussions of the II Working Sessions on Power Lines and the Environment. May 1996.**

RED ELECTRICA also continues to sponsor various activities related to environmental awareness, such as the School of Ecology at the Menéndez Pelayo International University and the Environmental Awareness Class in co-operation with the Madrid Regional Government and the Boadilla Town Hall.

International co-operation



Participation in international organisations

In line with previous years, the active participation of RED ELECTRICA technical staff and management continued in various international organisations. These included:

- **EURELECTRIC (European Grouping of the Electricity Supply Industry-EEIG)/UNIPEDE (International Union of Producers and distributors of Electrical Energy):** In 1997, a complete restructuring of both institutions took place and this has meant, apart from a new organisation and the simplification of the working groups, the creation of a unified secretariat for both organisations with its headquarters at Brussels. RED ELECTRICA as a founder member is part of the Executive Committee of EURELECTRIC. It chairs one of the four sections of the new organisation (Market Structure and Regulation).
- **UCPTE (Union for the Coordination of Production and Transmission of Electricity):** This organisation is composed of 15 countries of Continental Europe which have power interconnections. RED ELECTRICA holds the office of Chairman and Secretary of the Spanish Committee.
- **IESOE (Interconnexion électrique du Sud-ouest de l'Europe):** This consists of Electricité de France, Electricidade de Portugal and the Spanish utility companies. RED ELECTRICA is the Secretary and chairs the Spanish Delegation.
- **CIGRE (International Conference on Large Power Networks):** this consists of utility companies and manufacturers of electrical capital goods world-wide. In June 1997 the Spanish National Committee was reorganised and RED ELECTRICA assumed the role of Permanent Secretary.
- **OME (Observatoire Méditerranéen de l'Énergie):** This organisation was created in 1991 and comprises the utilities companies and gas and oil companies from the Mediterranean rim. It sponsors and promotes co-operation in power matters between Mediterranean countries.



Participation in international projects

During 1997 RED ELECTRICA participated in the following projects:

- **Consulting project for the creation of a power transmission company in the Ukraine:** The consulting project, which was awarded to RED ELECTRICA by the European Commission under the TACIS Program in 1995 for the creation of the Ukraine National Electricity Company for high voltage transmission, was completed in January 1997.
- **Study of the consequences of a controlled shut-down of the Chernobyl units on the Ukraine transmission grid:** The European Union Commission awarded (also under the TACIS Program) RED ELECTRICA this study in May 1997. RED ELECTRICA created a model of the transmission network and the principal units of generation in the Ukraine in order to study the behaviour of the generation-transmission system in various operating scenarios. These were based on different generation and demand schemes, loading, international exchanges and strategies for modifying the network. If, as a result of the study, the power system is found to be inadequate, RED ELECTRICA will propose technical solutions which could include specific instructions for the generation dispatch and proposals for new transmission installations. The project will end in April 1998.
- **Institutional and economic aspects of the power sector development of the Magreb countries:** The EU Commission-under the SYNERGY Program for international co-operation in the power sector, asked RED ELECTRICA in October 1997 to prepare a study on the institutional and economic reforms needed for development of the power sector in general and the power exchanges in particular in the countries of the Magreb: Morocco, Algeria and Tunisia. This study will be conducted in co-operation with the OME and will take eighteen months to complete.
- **South American power interconnection in the framework of market integration needed to optimise the use of possible synergies in the energy sectors of the region:** This study is being carried out by the Wholesale Markets Working Group of CIER (an organisation which groups the utility companies of South America). RED ELECTRICA will furnish its experience and knowledge of the more useful aspects of regional power integration in Europe, the internal power market in Europe, the European Energy Charter, the role of the UCPTTE and the promotion of Trans-European Networks.

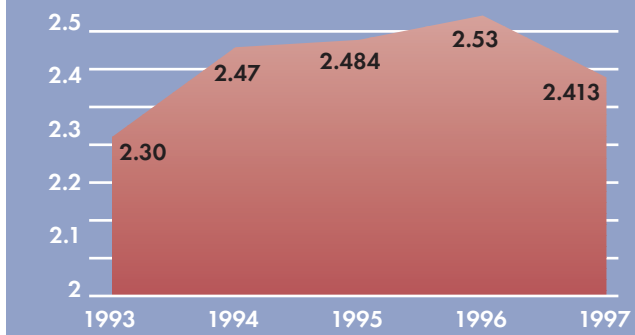
International analysis of electricity transmission efficiency

The systematic co-operation of RED ELECTRICA with utility companies from other countries in this field started in 1991. The company currently participates in the following projects: Definition and comparison of indicators of power transmission efficiency and Analysis of costs and operation and maintenance techniques for transmission facilities. These projects allow RED ELECTRICA to compare its activities with those of the 18 companies worldwide which are specialised in transmission or are vertically integrated.

Administration and financial management



Evolution of RED ELECTRICA's share of power sector revenues resulting from the electricity tariff (%)



Results

In 1997 profit before tax reached 14,003 million pesetas which was close to the previous year. The figure illustrates the efforts in the management of income and costs which were made to compensate the drop of 2,500 million pesetas, compared to 1996, in the company's income caused by the new electricity tariff and the increase in depreciation which resulted from the revaluation of the balance sheet.

The after tax profit was 9,540 million pesetas - 9.5% less than 1996. The figures of the last three years are shown in Table 11.

Income

Turnover in 1997 came to 63,107 million pesetas. The decrease compared to the preceding year was essentially due to the lower volume of international exchanges under the supply contract signed with EDF. The principal items are as follows:

- Income from transmission and system operation services of the power system came to 49,624 million pesetas. This income is the company's share of the total sales of electricity to end users on the Spanish mainland.
- Income derived from the sale of power related to the contracts with EDF was 11,173 million pesetas, 63.9% less than 1996 and this was mainly due to the lower volume of energy supplied and the agreement to modify the supply contract.
- Income from short term international power exchange operations was 1,055 million pesetas, the result of efforts by management to run the power system in a way which would facilitate compliance with energy policy instructions.

Table 11

Profits (Million pesetas)	1997	1996	1995	97/96 (%)
Profit before tax	14,003	14,434	12,548	(3.0)
Profit after tax	9,540	10,547	9,636	(9.5)

Table 12

Total income (Million pesetas)

	1997	1996	1995	97/96 (%)
TURNOVER	63,107	84,401	75,010	(25.2)
Other income	3,240	3,607	3,226	(10.2)
INCOME				
FROM OPERATIONS ...	66,347	88,008	78,236	(24.6)
Financial income	653	350	463	86.6
ORDINARY				
INCOME	67,000	88,358	78,699	(24.2)
Extraordinary				
Income	1,777	842	1,157	111.0
TOTAL INCOME	68,777	89,200	79,856	(22.9)

- Income from other activities was 1,255 million pesetas. Important contributions to this came from: the income attributable to the contract related to leasing and maintenance of the excess capacity of the telecommunications network (656 million pesetas), transmission network modifications requested by private parties or public administrations (287 million pesetas) and maintenance services for electric installations (174 million pesetas).

Other Income, which came to 3,240 million pesetas, included the following:

- The work carried out by the company on its fixed assets which included 1,496 million pesetas of

capitalised interest, 712 million pesetas of work, carried out directly by the company, which could be capitalised and 119 million pesetas of stock materials destined for investments.

- R&D expense of 219 million pesetas capitalised as intangible fixed assets.
- Additional operating income of 694 million pesetas related to indemnities and operating subsidies.

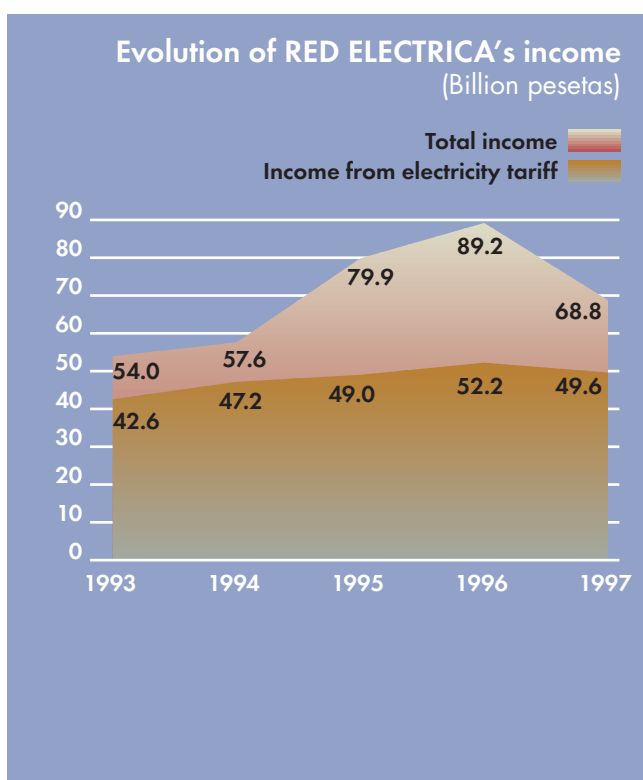
The above income was supplemented by 653 million pesetas of Financial Income and 1,777 million pesetas of Extraordinary Income.

Table 12 shows the evolution of income in recent years.

Expenses

Total expenses before tax, included in the Profit and Loss Account, came to 54,774 million pesetas. The breakdown of expenses is as follows:

- Salaries and wages in 1997 came to 8,521 million pesetas.
- Purchases and external services came to 20,666 million pesetas. This includes 10,397 million pesetas for power purchases under the EDF contracts.
- Depreciation came to 15,720 million pesetas, 14.9% more than the preceding year. This was fundamentally due to the revaluation of the balance sheet carried out in December 1996.



- Financial expenses related to external financing came to 8,577 million pesetas for all concepts and this includes capitalised interest corresponding to the current investments mentioned under Income.

The above figures do not include 485 million pesetas for Other Operating Expenses and 805 million pesetas for Extraordinary Expenses.

Table 13 shows the details of expenses.

Financing

Cash flow before tax was 30,240 million pesetas which was 2.6% higher than the previous year and represented 44.0% of RED ELECTRICA's income.

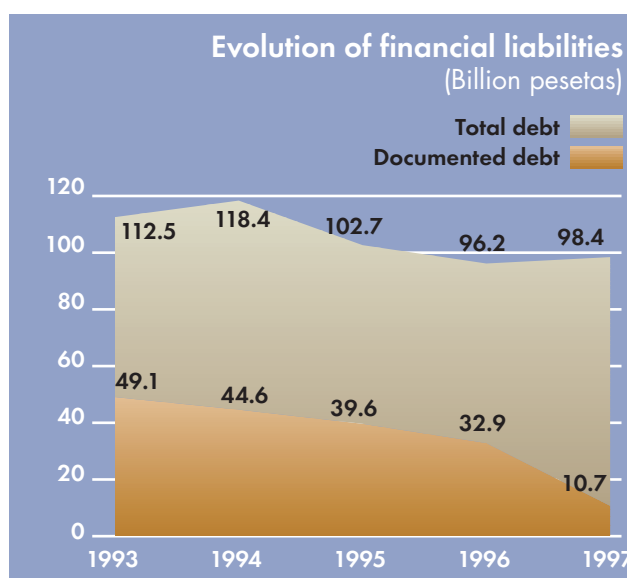
The total volume of debt was similar to the previous year despite the distribution of an extraordinary dividend of 22,000 million pesetas which was paid at the end of June. However, the composition of the debt changed. The financing needs reflected a trend towards short-term finance through the Promissory Note Program and short-term loans, plus long-term financing-especially to cover the replacement of debt with similar characteristics.

In line with previous years, use was again made of the bond market in September 1997 and an issue was arranged for 7,500 million pesetas. This issue, aimed at the retail market, incorporated a novel tax aspect for mixed returns, an explicit dividend warrant of 3.65% and a structure involving derivatives, which resulted in a final cost of MIBOR less 0.16%.

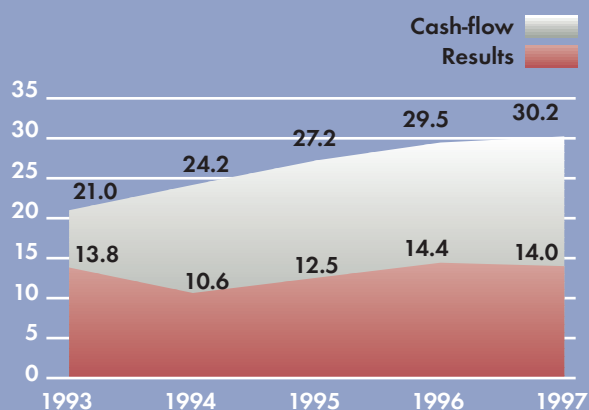
	1997	1996	1995	97/96 (%)
Personnel expenses	8,521	8,141	7,734	4.7
Purchases (*)	11,875	31,363	25,174	(62.1)
Outside services	8,791	9,835	8,258	(10.6)
Fixed assets depreciation	15,720	13,676	13,579	14.9
Other expenses	485	341	232	42.2
OPERATING EXPENSES	45,392	63,356	54,977	(28.4)
Financial expenses	8,577	9,600	11,032	(10.7)
ORDINARY EXPENSES	53,969	72,956	66,009	(26.0)
Extraordinary expenses ...	805	1,810	1,299	(55.5)
TOTAL EXPENSES	54,774	74,766	67,308	(26.7)

(*) Includes the variation in trading provisions.

A loan of 4,000 million pesetas was also arranged with the European Investment Bank (EIB). Half the total was arranged at variable interest and the other half at 5.63%, renegotiable after five years. It should also be noted that in February 1997 a bilateral loan operation was renewed with Caja Madrid which matures in 1999 at an interest rate related to MIBOR.



Evolution of RED ELECTRICA's profits and cash flow (Billion pesetas)



Continuing the policy of using more flexible sources of finance, in September 1997 the renewal of the 20,000 million peseta Syndicated Credit was signed which reduced costs by half. In addition, and with the object of maintaining a stable relationship with the EIB which is an important source of finance for investment projects, in November 1997 the Bank approved a new line of finance («the Spain-Morocco Interconnection») of 8,500 million pesetas. A novel aspect of this loan was the greater duration (up to 18 years) and the absence of the need for a bank guarantee.

Lastly, it should be noted that the requirements related to the long-term supply contract signed with EDF and the underlying development of financing needs, have led to significant use of the Promissory Note Program, as mentioned at the beginning of this section. The program has recorded an average balance of 17,200 million pesetas. The use of this source of finance and others with variable interest rates has allowed the company to benefit from the important fall in the latter during the year and reduced the average cost of bank debt by 1.16%.

Investments

Investments by RED ELECTRICA during 1997 came to 13,423 million pesetas. Of this amount, 90.2% corresponds to investments in the transmission network. Of the total investment figure, 12,994 million pesetas can be attributed to tangible fixed assets and the remaining 429 million pesetas, to intangible assets, mainly R&D projects.

	1997	1996	1995	97/96 (%)
Debt on acquisition of fixed assets	8,974	27,022	32,865	(66.8)
Credit facilities and loans	27,859	24,696	29,253	12.8
Debentures and other negot, securities	18,517	24,432	24,501	(24.2)
LONG TERM FUNDS	55,350	76,150	86,619	(27.3)
SHORT TERM FUNDS	43,094	20,036	16,043	115.1
TOTAL FUNDS	98,444	96,186	102,662	2.3
LONG TERM CREDITORS	6,911	6,404	5,788	7.9
SHORT TERM CREDITORS	29,355	33,182	28,991	(11.5)
TOTAL EXTERNAL FUNDS	<u>134,710</u>	<u>135,772</u>	<u>137,441</u>	<u>(0.8)</u>

	1997	1996	1995	97/96 (%)
Share capital	45,090	45,090	45,090	—
Revaluation reserve	41,101	41,101	—	—
Reserves	14,272	30,565	25,778	(53.3)
Net profit for the year	9,540	10,547	9,636	(9.5)
Interim dividend	(3,000)	(2,367)	(2,255)	26.7
TOTAL	<u>107,003</u>	<u>124,936</u>	<u>78,249</u>	<u>(14.4)</u>

Investment in power lines amounted to 10,140 million pesetas and in substations to 1,974 million pesetas. The figure for the power lines includes 6,174 million pesetas for the investment related to the Spain-Morocco Interconnection.

The Regional Offices carried out equipment and infrastructure projects with a value of 581 million pesetas.

The remaining amount (728 million pesetas) was invested in various equipment and R&D projects.

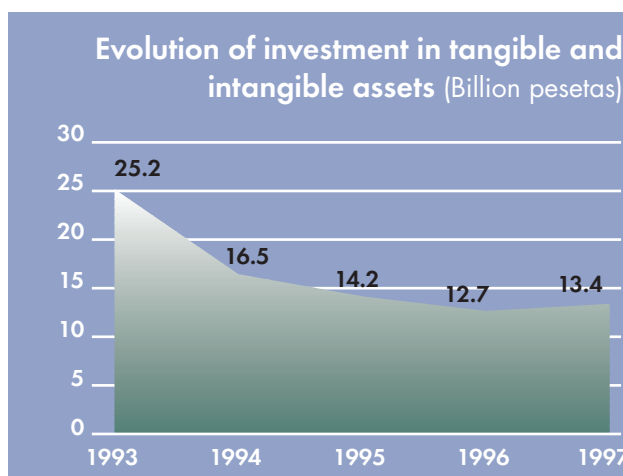
The breakdown of these investments by their principal components is shown in Table 16.

In December the company, Compañía Operadora del Mercado Español de la Electricidad, S.A, was incorporated and the share capital of 300 million pesetas was wholly subscribed by RED ELECTRICA. This holding should be disposed of in the first half of 1998, in accordance with the provisions of the Electricity Act.

Integrated management Information system

This year the question of adapting all the systems and software related to the business and financial management and to the control of resources, was dealt with under an ambitious project aimed at implementing an Integrated Management Information System. The new system will be gradually implemented during the first half of 1998 until it is fully functional.

	1997	1996	1995
Transmission lines	10,140	6,785	8,270
Substations	1,974	4,610	4,917
SUBTOTAL NETWORK INVESTMENT	12,114	11,395	13,187
Regional Offices	581	567	301
R&D projects	219	288	389
Other projects	509	437	314
	1,309	1,292	1,004
TOTAL	13,423	12,687	14,191

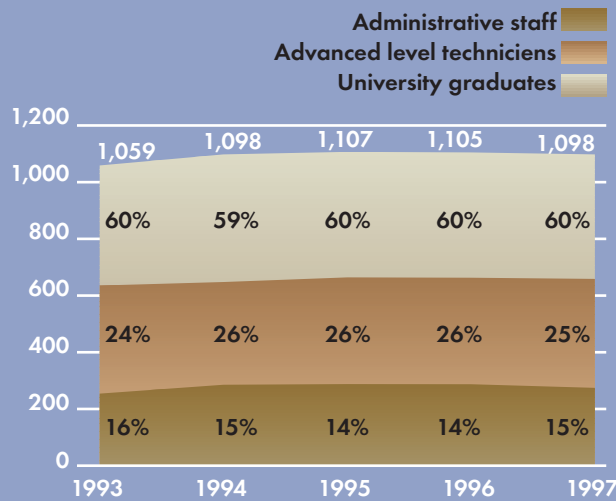


Staff evolution

The staff of RED ELECTRICA at the end of 1997 was composed of 1098 employees, slightly less than the figure at the end of 1996. The average age was 39 years and the average seniority, eight years. This reflects the stability of the workforce over the last four years.

Table 17 shows the distribution of personnel by organisational units.

Evolution of the workforce by graduation



The greatest effort was focussed on the training of technical personnel connected with the new systems related to remote control, telecommunications, protection equipment and systems as well as training for the start up of the new Integrated Management Information Systems. At the same time, efforts continue to be aimed at extensive knowledge of computer tools, environmental aspects and business management techniques.

The investment in training in 1997 was 3.8% of personnel cost and involved 71,500 hours of training in which 88.2% of personnel participated with an average of 65 hours per employee of which 61% took place outside regular working hours, indicating the level of interest demonstrated by staff in their own development.

Staff training and development

The training policy of RED ELECTRICA continues to reinforce the abilities of its staff and keep their technical level up-to-date with regard to the continuously changing demands of the services which the company provides, its organisation, the new technologies and the people themselves.

Training activities during 1997 focussed mainly on supporting the implementation of new operation control and information management systems, which are basic to the development and innovation of technological activities and to the management of the company.

Co-operative educational programs

Since 1987, RED ELECTRICA has been engaged in a program of educational co-operation with various institutions related to its business activities and, in particular with the colleges of technical engineers and graduate schools of Industrial Engineering. These provide nearly 75% of the 159 people who participated in these programs during 1997.

The majority of people who accumulate working experience at RED ELECTRICA under the above programs are final year students. This benefits the company due to the excellent work done by these students and the students themselves who experience their first contact with the workplace.

Table 17

Evolution and breakdown of personnel by organisational units

	1997	% of staff	Variation over 1996
Head office			
Chairman's office (*)	39	3.6	4
Operation	142	12.9	-6
Transmission	292	26.6	1
Administration & Finance	143	13.0	-3
Decentralised offices			
Regional offices	482	43.9	-3
TOTAL	1,098	100.0	-7

(*) Includes the Studies and Strategic Planning Department and Legal Department

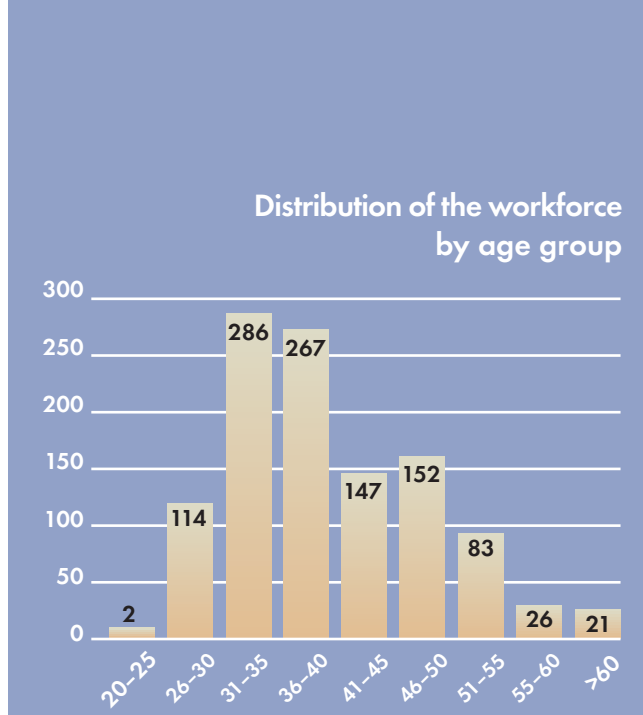
Currently, RED ELECTRICA is involved in co-operation programs with the polytechnic universities of Madrid, Barcelona and Valencia, the Pontifical University of Comillas (ICAHCADE), the Autonomous University and the Carlos III University, both of Madrid, the universities of La Coruña, the Basque Country and Seville, the Public Company Foundation, the School of Industrial Organisation, the Spanish Institute of Energy, the Ortega y Gasset University Institute and the Business Administration University Institute.

Labour relations

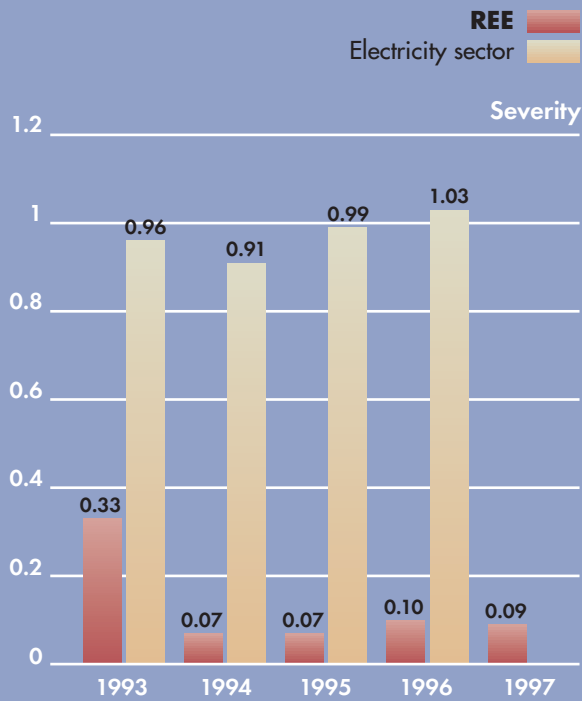
During 1997 various articles of the Fifth Collective Wage Agreement of RED ELECTRICA were revised with the aim of adapting them to the new law on the Prevention of Risk in the Workplace. Moreover, at the beginning of the year, the Labour Safety and Health Committee was created with 12 persons. Subsequently, training of the delegates assigned to prevention was commenced in accordance with the Law.

Initial steps were taken for the negotiation of the next Collective Wage Agreement, proposals were prepared and the members of the negotiating committee were appointed. In this Sixth Wage Agreement, the company hopes to maintain the previously established line of moderation in salary growth and extend the idea of variable remuneration based on the degree of achievement of objectives by the employees' work unit and the individual evaluation of each employee.

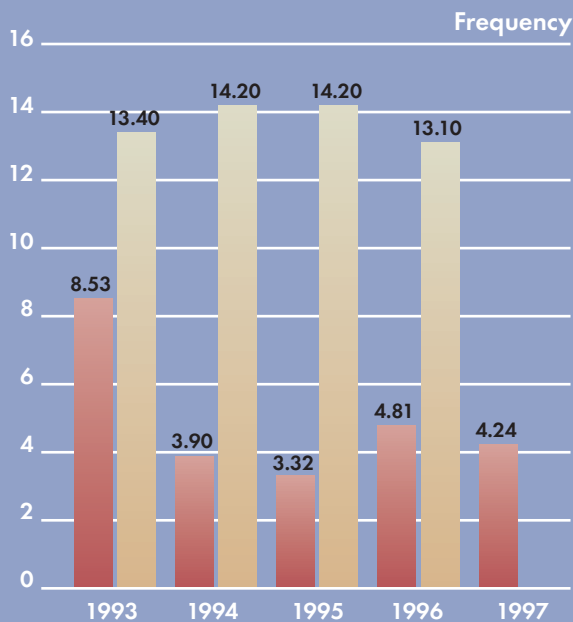
The Wage Agreement will also continue to set the social benefits which include the Pension Plan. This Plan provides for fixed and voluntary contributions and currently covers 62% of the workforce.



Accident rates in RED ELECTRICA compared to those in the power sector (*)



Severity: Days lost per thousand man-hours.



Frequency: Accidents involving absence per million hours worked.

(*) Source: AMYS.

A new social audit was carried out to determine the employees' perception of RED ELECTRICA. This tends to become a regular event and it is hoped that it will contribute to reinforce the climate of confidence and credibility by means of a flow of truthful information, coming directly from those involved. This survey covered more than 72% of the employees and the results reflect the expectations and needs of the employees. This makes it possible to adopt a strategic approach to human resources and achieve greater satisfaction of those involved and, at the same time, to encourage them to identify with the company's objectives.

Employee safety and health

The subject of medical attention in the workplace included periodic information and preventive campaigns aimed at encouraging healthy habits and general and specific first aid training, apart from regular medical check-ups which are available to all employees. These activities included a campaign for the prevention of backaches and flu, and tetanus vaccinations. The first aid program included specific training on heart and lung related resuscitation.

On the question of safety in the workplace, more than 100 inspections were carried out in 1997, checking that in all cases the «life-line» is systematically used for all high level work, for both company and subcontractor crews.

Development was completed of the alarm and emergency graphic management system. This system is composed of more than 160 safety centres and covers all the safety, fire-fighting and access control installations which exist in RED ELECTRICA.

Total absenteeism in 1997 was 3.02 and absenteeism due to common illnesses was 1.88. These figures are slightly less than the preceding year and well below the national average. The accident rate continues to be low at 4.2 accidents (involving absence from work) per million hours of work and 0.09 days lost per thousand hours of work.

Internal information and communications

During 1997, the In-House Communications Bulletin, which is well-established as a medium for communication and information, reflected the multiple activities carried out by RED ELECTRICA and the changes which occurred in the company and in the Spanish power sector.

In order to help the employees as much as possible in their daily tasks, to provide more flexible information and to keep it up-to-date at less cost, all the workstations have access to all the standards and procedures of the company as well as relevant corporate information. During 1997 the Employee Manual, which serves as a guide to administrative and functional aspects and also includes the safety procedures and the current records of safety materials, among others, were converted to this electronic format.