

## **BACKGROUND**

### **FIRST TECHNOLOGICAL STEPS**

[Let me go over old memories]

Period 1952...1954

My interest in electrical, communications, and mechanical techniques begins.

Several old telephones were available, from the 1900s...1920s (see [here](#)).

A cable network was extended, together with friends, on the roofs of houses to be able to communicate between neighbor's houses. Already, then, organizing a "Social Network..."

With old, disused equipment, some Galena receivers were assembled, with which local AM stations could be listened to.

I has been attended, as an occasional apprentice, the MV Network Protections Laboratory of the then "Sociedad de Electricidad de Rosario", the former local electricity generating and distributing utility company.

During the attendance at the Laboratory I have learned to handle and operate hand tools and a small manual lathe, and to make different electrical connections and to perform little transformer windings, completing a unit that would be used to power a model train.

Period 1954...1962

There was continued the interest in the already mentioned techniques, using vacuum tubes at first and, then, also germanium transistors.

With vacuum tubes were built:

A regenerative receiver with double triode, with which signals from AM stations were received.  
Radio frequency oscillators.

A signal generator for measuring radio frequencies.

A 40 W, CW, in the 80-40 m band radio transmitter, for using in radiotelegraph communications.

Other experiences related to radio frequency equipment were carried out, also with vacuum tubes, heating some metallic objects by this means.

Subsequently, experiences were carried out with high-frequency AF127 germanium transistors, building an oscillator and transmitter in the TV Channel 7 frequency band, 180 MHz, almost a novelty for transistors at that time. The signal could be examined from a television set.

A Radio Listening registration is obtained:

LU-057-A

Issued by the Radio Club Argentino.

Some AM vacuum tube radio receivers, common models in those years, were assembled for own use and to be offered to neighbors who purchased them. A small phonograph transmitter was also built and sold to broadcast music to different receivers in local environments.

On October 4, 1957, at night, during a listening session to Short Wave stations, the first news of the placement in orbit of Sputnik-1, the first Artificial Earth Satellite, was received through Radio Moscow.

## **PROFESSIONAL ACTIVITIES**

### **SUMMARY:**

Graduate on Electrical Engineering.

Consulting engineer of industrial companies on:

- Electric and electronic systems and equipment.
- Electric Furnaces.
- Electric Furnace Transformers.
- Other areas related to this profession.

Former project manager of an electric furnace and industrial electronic equipment manufacturing plant.

Proven experience in:

- Melting and heating induction furnaces.
- Electric arc furnaces.
- Ferroalloy electric smelting furnaces.
- Boosting and conditioning electric equipment for glass furnaces.
- Electric and electronic industrial systems and equipment.

Experience in projects about:

- Power and metering electric transformers.
- Electrohydraulic equipment.
- Water-Oil/Water-Air Heat exchangers, and evaporative tower cooling systems.
- Fumes and dust collecting equipment for electric furnaces plants.

### **TECHNICAL ASSISTANCE:**

Regular and eventual assistance to iron, steel, metallurgical, electromechanical, glass and transformer industries located in the Argentine provinces of Buenos Aires, Santa Fe, Córdoba, San Luis, Entre Rios, Mendoza and Chubut, and in the cities of Montevideo (Uruguay), Asunción (Paraguay), Santiago de Chile and Salvador de Bahía (Brazil).

Technical assistance covers the following areas:

- High, medium and low voltage electric systems and equipment.
- Induction and arc electric furnaces.
- Ferroalloy electric smelting furnaces.
- Boosting and conditioning electric equipment for glass furnaces.
- Construction, maintenance and repairing of power and metering transformers and other electric equipment.
- Measuring and control systems.
- Electric power tariffs and costs.
- Studies on electric network harmonic and flicker disturbances.
- Studies and advising work toward obtaining registration to M.E.M. (Argentine Wholesale Electric Market).
- Studies on electric power autogeneration and cogeneration.

**PROFESSIONAL EXPERIENCE AT COMPANIES:**

**EATON I.C.S.A. - SPICER EJES PESADOS S.A.**

Manufacturing Company of Heavy Axles, Transmissions and related equipment and parts

Periods 1996...2004 (Eaton)  
2004...2013 (Spicer)

Eaton, having decided to expand its foundry plant with the installation of electric furnaces, they contracted me for the feasibility study related to the use of induction or arc furnaces. This last alternative was ruled out, among other details, due to the type of product to be melted.

Offers were requested from different manufacturers. Then the technical evaluation and comparison of the proposals received was carried out, in relation to the specifications requested by Eaton.

In October 1996, on behalf of Eaton, I was attended the "Ajax Magnethermic" plant in Richmond, KY, USA, to witness the final tests of the 6500 kW, 10 MT furnace, which was opportunely acquired to expand the foundry plant.

In September 2004, now representing Spicer, I was attended the plant of the former "EMI, Erie Malleable Iron Company", in Erie, PA, USA, in order to witness the disassembly the then acquired 4000 kW, 10 MT Ajax Induction Furnace.

Between 2006 and 2007, several reports were carried out with reference to a 6000 kW Inductotherm power supply, purchased by Spicer in the USA, to be adapted to the coils of existing Ajax furnaces.

Other coil calculations were also performed in order to verify their adaptation to existing equipment.

It was studied and provided assistance related to the influence and possible disturbances caused to the electrical supply network by the foundry electronic equipment.

Between 1996 and 2013, the year Spicer closed the foundry, technical assistance was provided related to the installation, start-up, operation and maintenance of the melting furnaces and related electrical and electronic equipment.

**METALMECANICA S.A.**

Manufacturing Company of Sucker Rods and Accessories for oil pumping systems

Period 1997...2013:

Technical consultant of the Engineering and Maintenance Departments.

Technical assistance upon Induction Heating Furnaces for Rod Forging. Studies and works for improving existing coils and equipment operation.

**ACEROS CHILE S.A.**

Manufacturing Company of Wear Resistant Cast Steel products for Mills and the Mining Industry

## Eng. AMADEO R. CRISI

Period 2010...2011:

Technical consultant of the Engineering and Maintenance Departments.

Technical assistance upon new Electric Melting Equipment in order to increase the melting capability. Studies and works for improving existing Electric Arc Furnaces equipment and operation.

### TUBOS TRANS ELECTRIC S.A.

Transformer Manufacturing Company

Period 2009...2011:

Technical consultant of the Engineering Department.

Technical assistance upon project of a single phase Transformer for a Ferroalloy Electric Smelting Furnace regarding the Low Voltage Winding and Busbars, 25 / 8 MVA, 132 kV / 10 kV / 86...300 V, 50 Hz.

Transformer and Booster Reactance Calculation using Finite Elements, a Linear Equation System and Matrix Solutions with a MS Excel Worksheet. [Download Link](#)

### CINTOLO HNOS. METALURGICA S.A.I.yC.

Steel Butt-Weld Pipe Fittings Manufacturing Company

Period 2003...2009:

Technical consultant of the Engineering Department about applying Induction Heating Equipment and Coils in order to improve steel butt-weld bent tubes and elbows manufacturing process. An important production increase was then achieved.

### TUBOS ARGENTINOS S.A.

First Argentine Manufacturing Company of Welded Steel Pipes

Period 1997...2001:

Technical advice to the Engineering and Maintenance Departments on medium and low voltage and power electronic equipment and installations.

General grounding project for the El Talar plant and, in particular, sheds 7 and 9, this already under construction

Study and technical evaluation of the specifications and proposals for the provision of equipment for the expansion of existing electrical installations.

Technical advice on purchasing energy in the Wholesale Electricity Market (M.E.M.), including the request for prices and the study of offers.

Collaboration, during the assembly, installation and testing of new equipment, to determine the normal evolution of the tasks and their subsequent correct operation.

## Eng. AMADEO R. CRISI

Study and advice related to the influence and possible disturbances on the electrical supply network, of existing electrical equipment and those to be installed, to achieve compliance with the corresponding regulations and avoid penalties.

### INDUSTRIAS SIDERURGICAS GRASSI S.A.

Ferroalloy Manufacturing Company

Period 1980...1997:

Technical consultant of the Engineering Department.

Technical assistance upon the electric systems of ferroalloy plants "Fray L. Beltrán", "El Nihuil" and "Gral. San Martín" of Mendoza province.

Contracted electric power supply: 45 MW.

Systems include:

132/13.2 kV transformer substation, 13.2 kV distribution networks, switchboard and transformer posts for 14 electric smelting furnaces, measuring, control and ancillary systems equipment.

Responsible for planning and performing upgraded and new electric installations.

In charge of study, design, preliminary tests, performing and start up, in collaboration with Eng. Jorge Sica, of a glass fabric dust collecting bag filter installation for "Fray Luis Beltrán" ferroalloy plant, capacity 30.000 Nm<sup>3</sup>/h.

In charge of the electric upgrading project of "El Nihuil" ferroalloy plant, two folding the current capacity of 25 MW.

In charge of the 24 MW electric planning for the new ferroalloy plant that had to be settled in Ramallo (Bs. As.) or, alternately, in Asunción (Paraguay).

Project manager and planning consultant at "Industrial Equipment Division", manufacturing facility of induction and arc electric furnaces, electric smelting ferroalloy furnaces and electric and electronic industrial equipment.

Responsible for the development, basic and detail engineering planning, manufacture supervision, installation, start up and maintenance of furnaces and equipment supplied for customers of that Division.

### E.M.E. EQUIPOS MODULARES ELECTRONICOS S.A.

Manufacturing Company of Arc and Induction Electric Furnaces, Special Electric and Electronic Equipment and Metering Transformers up to 33 kV. Acquired in 1982 by Industrias Siderúrgicas Grassi S.A. for establishing their "Industrial Equipment Division"

Period 1969...1980:

Development and Project Manager.

Responsible for basic and detail engineering planning, control, testing, installation, start up and maintenance of the projected systems and manufactured equipment.

## **Eng. AMADEO R. CRISI**

### **GALILEO FERRARIS S.A.C.I.T.**

Power and Metering Electric Transformers Manufacturing Company. Production range up to 3000 kVA and 33 kV equipment

Period 1965...1968:

Staff member of the technical and quality control department.

Participation in calculus, projects, measuring and typical tests related to the project department and testing laboratory of a transformer factory.

### **CRISTALERIAS DE CUYO S.A.**

Glass Bottles and Containers Manufacturing Company

Period 1962...1965:

Qualified plant instrumentalist. Assistant to the engineering department in instrumentation, electric and electronic areas.

## **MAIN PROJECTS CARRIED OUT DURING THE PROFESSIONAL CAREER:**

- Arc furnaces, up to 10 T, 4000 kVA, for steel melting.
- Electrical Consultant in a 25 T, 6000 kVA arc furnace project, with special participation in the details of Low Voltage Busbars design in order to achieve the best symmetrical system for preventing the Wild Phase effect. The work included:  
Medium and Low Voltage electric project.  
Complete project and manufacture supervision of the electrode regulation system, including the special electrohydraulic – electronic regulation valves and related electronic equipment.  
Outline of the several flicker compensation systems suitable for this project.  
General Arc Furnace start up.
- Electrical Consultant in the Medium Voltage installation of a 40 MVA arc furnace project.
- Induction melting furnaces, up to 5 T, 2.000 kW.
- Induction heating furnaces, up to 2000 kg/h of steel billets, 1.200 kW, for forging plants.
- 3000 kVA electric smelting ferroalloy furnaces.
- 5400 to 9000 kVA upgrading of an electric smelting furnace.
- Thyristorized static power supplies, up to 2.000 kW, 10.000 Hz, for induction furnaces.
- Automatic electromechanical and electrohydraulic electrode regulation equipment, with electronic control, for arc and electric smelting furnaces.
- Quick acting electronic controlled electrohydraulic servovalves with continuous flow modulation for electrohydraulic systems control.
- D.C. Servomotors for Arc and Smelting Furnaces Electrode Regulators.

## **Eng. AMADEO R. CRISI**

- Mechanical equipment of arc and induction furnaces, including metallic structures, mechanisms, hydraulic control devices and cooling systems.
- Reversible power controllers for D. C. motors, including automatic control of torque, speed, position and recuperative braking.
- Saturating reactors 800 kVA electric power controls.
- Electric boosting equipment for glass melting furnaces, capacity up to 30 T/d.
- Glass feeder electric conditioning equipment, up to 100 T/d, for glass melting furnaces.
- Medium and low voltage electric systems for the furnaces and installations above indicated.
- Dust collecting equipment, capacity 30.000 Nm<sup>3</sup>/h, in collaboration with Eng. Jorge Sica for a ferroalloy electric smelting plant.
- Modular air-water heat exchangers, unitary module rating: 160.000 kCal/h.

### **OTHER PERFORMED PROJECTS:**

- Induction electric system for a centrifugal steel casting equipment in order to improve casting homogeneity.
- Power and metering transformers, up to 33 kV.
- Water cooled 2000 kVA power medium frequency and other special transformers.
- Water cooled power medium frequency capacitors.
- Electric power demand controls.
- Data acquisition system for the S.M.E.C., Commercial Metering Energy System, for applying by users at the M.E.M., Argentine Electric Wholesale Market.
- Electronic analog FET wattmeters, up to Class 0,5.
- Temperature measuring, automatic control and flame guard systems of natural gas furnaces for annealing and label melting of glass bottles and containers.
- Special thermocouples for melting glass furnaces.
- Automatic level control, by sound detection, for a manganese dioxide ball mill.

### **MAIN STUDIES, CALCULATIONS AND TESTS RELATED WITH THE PROFESSION:**

- Electric systems for arc and induction furnaces, including medium and low voltage and medium and low frequency sections.
- Arc furnaces electrode regulating systems.
- Electric network disturbances compensation, including harmonic filters and electromechanical and power electronics flicker compensators.
- Preliminary project of a 500 kVA ESR, electroslag refining furnace.

## **Eng. AMADEO R. CRISI**

- Analog, digital and power electronic circuits.
- Survey and tests upon different dust collection systems, wet and dry, for metallurgical furnaces.
- Evaporative cooling towers with counter current flow.
- Rural electrification system, 160 km extension for 150 users, covering 200 sq.km of "Las Parejas" district, Santa Fe province, in collaboration with Eng. Manuel Crisi.
- Permeameter for testing low  $[\mu]$  austenitic steel casting material according to ASTM Standards.
- Thermal exchange and fluid flow calculations.
- Conductive and light modulating safety flame devices.

## **OTHER STUDIES, PRACTICES AND EXPERIENCE TOPICS:**

- Testing and start up of two Scherbius groups, for speed regulating of three-phase rolling mill electric motors, 950 and 700 HP, at "La Cantábrica" steel mill, Haedo (Buenos Aires).
- Start up of high frequency electronic power supplies for heating and welding.
- Computer programs for calculating: Induction coils and heavy current busbars, high power electronic switched circuits, heating and cooling transitory thermal systems, furnace fume stacks, marginal cost consumption in electric furnaces, and other related developments.
- Managing and intensive use of computer applications: Technical programs, CAD and graphic systems, HTML writing language (as was written this Site), worksheets and word processors.
- PLC programming for industrial applications.
- Surveys about electric tariffs and electric energy acquisition in the M.E.M., Argentine Electric Wholesale Market.
- Studies upon economical feasibility of auto- and co-generation of electric energy.
- Early studies about the subjects: "Low drift electronic FET choppers for microvolt level DC measuring equipment (1970)", "Electronic analog FET multipliers for wattmeter devices (1969)", "Small drift transistor direct current amplifiers (1969)", "Thermal parameters of glass label vitrifying continuous furnaces (1968)", "Distribution and temperature tolerance in glass label vitrifying furnaces (1968)", "Electric conductivity of flames (1968)", "High speed direct current electromagnets for control and braking (1965)", "Temperature measurement errors in thermocouples (1963)".
- Trial survey and engineering outlook review about the Currency Convertibility achieved in Argentina since 1991. Website developed finding and carefully processing extensive referenced information. Written in plain, native HTML language, and published since May/2000 in <https://www.convertibilidad.com.ar/>



**STUDIES CARRIED OUT FOR IMPROVING KNOWLEDGE ABOUT:**

- Electro technical topics related with high current and skin effect in electric conductors, bars and coils. Also related with high intensity alternating field in dielectrics.
- Electrothermal topics related with heat production, application and thermal transfer in industrial processes.
- Topics related with fluid flow.
- Fume dust collecting equipment and stacks.
- Transient thermal conduction in solids.
- Electric conductivity of flames.

**COURSES ATTENDED:**

- "Electromagnetic Compatibility in Power Electric Systems". Upgrading course for College Graduates upon Disturbances and Electric Service Quality, dictated by I.T.R.E.E., The Institute of Technological Research for Electric Equipment and Networks, High Voltage Laboratory division of the La Plata National University, sponsored by AGUEERA, Electric Energy Big Users of Argentine Republic, Buenos Aires, October 1996.
- "Data Acquisition Systems", dictated by the School of Graduates of the Engineering College of the Rosario National University, September 1994.
- "Computer Updating Course, Hard-Soft Interface for the IBM PC", dictated by the Computer Society of IEEE, Institute of Electrical and Electronic Engineers, Buenos Aires, September 1993.
- "Technical Workshop on Scientific and Laboratory Instruments", ISTRULAB'87, organised by the Department of Trading of the United States of America, Buenos Aires, April 1987.
- "Microprocessors: Technology, Architecture and Applications", dictated by the Graduate Association of the Rosario College of the National Technological University, Rosario, December 1983.

**TEACHING BACKGROUND:**

- 2015: Course of Induction Furnaces for the engineering and maintenance personnel belonging to FUTURA Hnos. S.R.L., forging plant, Gualaguaychú, Entre Rios Province.
- 2002: Course for upgrading on Industrial Electromechanics and Electronics for the maintenance personnel belonging to FORJA S.A. forging plant, Rosario, Santa Fe Province.
- 1999: Course for upgrading in Power Industrial Electronics for the electronic maintenance personnel belonging to SANDVIK BAHCO Arg. S.A. tools manufacturing plant, Santo Tomé, Santa Fe Province.
- 1969...1983: Head and founder professor of the "Measurement and Control" Chair at the College of Chemistry "Fray R. Bacón" of the Catholic Argentine University, Rosario branch.
- 1967: Assistant at "Electrotechnics I for Mechanical Engineers" Chair of the Rosario National University Engineering College.

**PROFESSIONAL INFORMATION:**

- Electrical Engineer, graduate in 1969 at the College of Sciences, Engineering and Land Surveyors of the Rosario National University.
- Member of C.I.E., Specialist Engineering Council of Santa Fe province.
- Member of the School of Graduates of the College of Sciences, Engineering and Land Surveyors of the Rosario National University.
- Member of A.E.A., Argentine Electrotechnical Association.
- Life Member of IEEE, The Institute of Electrical and Electronics Engineers, Inc., NY.
- Member of PES, Power & Energy Society of IEEE.
- Member of PELS, Power Electronics Society of IEEE.
- Languages: Spanish and Italian, native tongues. Fairly good English, basic French and Portuguese.

**PERSONAL INFORMATION:**

Full Name: Amadeo Ricardo Mario Crisi  
Date of birth: October 27, 1941  
Nationality: Born in Argentine, Italian citizenship.  
Marital status: Married, 1 daughter and 3 sons.

Address: Buenos Aires 2543  
2000 - ROSARIO - ARGENTINA  
Mobile +54-9341-540-2668  
Phone +54-341-481-2804

Email: amadeo@crisi.com

**Rosario, December 2023.-**