"RESUMÉE"
RICARDO HENRIQUE KOZAK

A. SUMMARY

BS degree in chemical engineering in December 1962 and Process Engineer Specialized in Petroleum Refining in February 1963 with 52 years of experience performing professional activities such as: process research at bench, pilot and/or prototype units for industrial scale-up, economics & technical feasibility studies, process design and process engineering, procurement technical support, process supervision/inspection of industrial projects, preparation of operating manuals, technical training of operating personnel, conditioning, preparation for initial start-up, simulated start-up and normal start-up of equipment and/or complete process units troubleshooting and de-bottleneck of existing units, process optimization, cost engineering.

Solid knowledge for project scope development and definition, interfacing with client to develop process and control features, preparation of heat and material balances using hand calculations, spreadsheets, proprietary or commercial software developing and applying process data for equipment sizing, performing hydraulic, thermal and other process design calculations, development of PFD's and P&ID's for new facilities or modifications to existing, process control scheme definition and development, preparation of screening and budget cost estimates, review of drawings and specifications prepared by other engineering disciplines to ensure compliance with process requirements and preparation of technical.

Expertise in Sulfur Management Solutions for chemical process plants mainly for Petroleum Refineries and Shale Processing.

B. EXPERIENCE

The experience was acquired by exercising the above activities to various customers through the companies listed below:

1. **January 1962 – February 1963:**

   PETROBRAS/CENAP/UNIVERSITY OF BRAZIL (Federal University of Rio de Janeiro- UFRJ) – Rio de Janeiro – RJ: Course of Specialization in Petroleum Refining.

2. **March 1963 – October 1963:**

   PETROBRAS - Landulpho Alves Refinery – RLAM - Mataripe – BA: Assistant Professor of the disciplines of Unit Operations, Process Calculations and Thermodynamics in the Course of Specialization in Petroleum Refining.

3. **November 1963 – June 1966:**

   PETROBRAS Shale Industrialization Superintendence - Tremembé – SP: Process Engineer and Chief Engineer responsible for the complete design of the Units of Pyrolysis Gas Treatment and Sulphur Recovery of Irati Prototype Plant,-located in São Mateus do Sul-PR

4. **June 1966 – August 1967:**

   FOSTER WHEELER CORPORATION – Livingston – NJ – USA: Trainee specializing in process design and process engineering, additionally training in the field of cost estimates for equipment and industrial projects, as well as training in programming for electronic computers. During this period served as "process design engineer" in several contracts including the following types of process industrial units: Nitric Acid, Hydrogen, Petroleum Refineries, Ammonia, Sulphur Recovery, Complex Fertilizers and Treatment of Acidic Gases.

5. **September 1967 – November 1972:**

   FOSTER WHEELER LTDA - Rio de Janeiro – RJ: Chief Engineer of the Process Department, responsible for technical-economic studies, process design, process engineering and other specialized activities of chemical engineering.

6. **January 1974 - December 1975:**

   IPARDES - Instituto Paranaense de Desenvolvimento Econômico e Social – Curitiba – PR: Technical Consultant, responsible for carrying out the following studies of the "" in conjunction with the "BADEP-Banco de Desenvolvimento do Parana S. A.": a). "Study on the implantation of a petrochemical pole in Paraná"; b). "Petrochemical Pole in Paraná - Considerations for regionalization of demand.

7. **Since June 1974:**

   PROJEPRO - Projetos de Processamento Ltda. –Curitiba – PR: Technical Manager for all specialized chemical engineering activities and since July 2012 also a partner of the Company.

8. **March 1992 – December 2000:**

   Catholic University of Parana State – PUCPR – Curitiba – PR: Teacher of the Fundamentals of Process Engineering, Unit Operations and Iindustrial Projects disciplines in the Departments of Chemical Engineering and Food Engineering.

9. **December 2008 - December 2009:**

   Instituto Copel Geração e Transmissão S.A. – Curitiba – PR: Technical Consultant on Renewable Energy Coordination-CER.

10. **December 2008 - December 2010:**

    Instituto de Pesquisa Econômica Aplicada – IPEA / Secretaria de Assuntos Estratégicos da Presidência da República – Brasília – DF: Senior Professional Researcher in the Area of Chemical and Petrochemical Industries.

C. DIPLOMAS OF MERIT

1. **Regional Council of Engineering, Architecture and Agronomy of State of Paraná – Brazil (11/12/1997):**

   Diploma of Merit for services rendered, considering that during the life No penalties ethical by CREA and practiced with boldness and dedication, making use of their scientific and technological knowledge for the community.

2. **Regional Council of Engineering, Architecture and Agronomy of State of Paraná – Brazil (07/01/2002):**

   Diploma of Merit for Services Rendered Relevant to Engineering, Architecture and Agronomy of Paraná State, in accordance with the provisions of Act no. º 39/94, and by decision of the Plenary of CREA, adopted in the Ordinary Session n. # 790 held on July 10, 2001.

3. **Regional Council of Engineering, Architecture and Agronomy of State of Paraná – Brazil (02/04/2012):**

   Professional Emeritus in the following terms: "Chemical Engineer Ricardo Henrique Kozak, Carrier Registration No. PR-1527 / D, whereas for more than 50 years of full professional activity, to date, suffered no penalty ethics on the part of the Regional Council, exercising the profession with boldness and dedication, making use of their scientific and technological knowledge for the community. "

Further details are presented in the attached "curriculum vitae" to follow.

A. PERSONAL DATA

1. **BORN:** Ponta Grossa, State of Paraná, Brazil, January 29, 1939.
2. **CIVIL STATUS:** Married, 5 sons.
3. **OFFICE ADDRESS:**

   Rua Tocantins, 37 - Bairro Cristo Rei

   80050-430 - Curitiba - PR - Brazil

   Tel.: 0xx-41-3262-2945 Fax.: 0xx-41-3263-3712 Mobil: 0xx-41 9968-7579

4. **EDUCATION:**
   1. Chemical Engineering Degree from Federal University of Paraná, 1961.
   2. Process Engineer Specialized in Petroleum Refining from University of Brazil / PETROBRAS, 1963.
5. **LANGUAGES:** Portuguese and English

B. PROFESSIONAL REGISTRATION (BRAZIL)

1. Regional Council of Chemistry- 4th Region - Registry # 01250568.
2. Regional Council of Engineering, Architecture and Agronomy of State of Paraná – Brazil - 7th Region - Registry # 3999/61.

C. PROFESSIONAL ACTIVITIES

1. Testing and Research at Bench, Pilot and/or Prototype Units for Industrial Scale-up.
2. Economics & Technical Feasibility Studies.
3. Process Design and Process Engineering.
4. Procurement Technical Support.
5. Process Supervision/Inspection of Industrial Projects.
6. Preparation of Operating Manuals.
7. Technical Training of Operating Personnel.
8. Conditioning, Preparation for Initial Start-up, Simulated Start-up and Normal Start-up of Equipment and/or Complete Process Units.
9. Troubleshooting and De-Bottleneck of Existing Units.
10. Process Optimization.
11. Cost Engineering.

D. PROFESSIONAL EXPERIENCE

1. Petróleo Brasileiro S.A. - PETROBRAS (January 1962/June 1966)

a. 1962 (CENAP - Rio de Janeiro - RJ)

Course in Petroleum Refining.

b. 1963 (RLAM - Mataripe - BA)

Unit Operations, Process Calculations and Thermodynamics Assistant Professor for the Course of Petroleum Refining.

c. 1964-1966 (SIX - Tremembé - SP)

Chief Process Engineer for the Process Design and Engineering of the Gas Treating and Sulfur Recovery Units for the Shale Oil Prototype Plant located in São Mateus do Sul-PR-Brazil.

2. FOSTER WHEELER (June 1966/December 1973)

a. FOSTER WHEELER CORPORATION, Livingston - NJ - USA

One year work with FWC Process Department, specializing in process design, cost estimating and computer programming. During the stay in Livingston, has participated as **process design engineer** for the following jobs:

1) **SHAHPUR CHEMICAL Co.:** 1500 metric tons/day Sulfur Plant (Proposal).
2) **DORR OLIVER INC.:** Sulfur Recovery Plant (Study).
3) **KNPC:** Sulfur Plant (Operating Manual).
4) **KNPC:** Hydrogen Plant.
5) **HERCULES INC:** Ammonium Nitrate and Nitric Acid Plant.
6) **ULTRAFERTIL:** Fertilizer Complex (Proposal).
7) **CONOCO:** Fertilizer Complex (Cost Estimate).
8) **TPAO:** 66,000 BPSD Petroleum Refinery.
9) **ULTRAFERTIL:** Fertilizer Complex - Ammonia Plant.

b. FOSTER WHEELER LTDA., in Rio de Janeiro - RJ

CHIEF OF **PROCESS DEPARTMENT** being responsible for execution of studies, process designs and thermal ratings for the following jobs:

1) **PETROBRAS-SIX (São Mateus do Sul - PR)**

Shale Oil Prototype Plant: Conclusive Study of Air Pollution by the Tail Gases from Plant, sizing of all Chimneys and the Flare to minimize the effects of the pollution on the environment.

2) **PETROBRAS-REPLAN (Paulinea - SP)**

Atmospheric and Vacuum Distillation Units: Accompaniment and check of the complete process design developed in FOSTER WHEELER Limited Office in London - England.

3) **PETROBRAS-REPLAN/FAFER (Paulinea - SP/Cubatão - SP)**

Sulfur Units: Complete Process Design, including thermal ratings of Waste Heat Boilers and Sulfur Condensers, and preparation of the operating manuals for the Units.

4) **PETROBRAS-REFAP/REGAP (Canoas - RS/Betim - MG)**

Fuel Gas Treating Plants: Complete Process Design.

5) **PETROBRAS-REFAP/REGAP (Canoas - RS/Betim - MG)**

Sulfur Units: Complete Process Design, including thermal ratings of the package waste heat exchangers which include the Boilers and Sulfur Condensers in a common shell.

6) **PROSINT (Rio de Janeiro - RJ)**

Methanol Plant: Complete Process Design of the Utilities Systems (water treating, fuel oil, instrument air, cooling water, etc.).

7) **JARAGUÁ (São Paulo - SP)**

Thermal Rating of heat exchangers for **PROSINT**.

8) **FEBO (Argentina)**

Thermal Rating of heat exchangers, reboilers and condensers for Yacimientos Petrolíferos Fiscales - Mendoza - Argentina.

PROJECT MANAGER for the following jobs:

1) **PROSINT (Rio de Janeiro - SP)**

Methanol Plant: Off-site Facilities.

2) **PETROBRAS-REPLAN/FAFER (Paulinea - SP/Cubatão - SP)**

Sulfur Units: Until the delivery and Client's approval of the front-end-package.

3) **PETROBRAS-REFAP/REGAP (Canoas - RS/Betim- MG)**

Fuel Gas Treating and Sulfur Units: Until the delivery and Client's approval of the front-end-package.

TECHNICAL ASSISTANCE FOR PROCUREMENT for the following jobs:

1) **ULTRAFÉRTIL (Piaçaguera - SP)**

Fertilizer Complex.

2) **PROSINT (Rio de Janeiro)**

Methanol Plant: Off-site Facilities.

3) **PETROBRAS-SIX (São Mateus do Sul - PR)**

Fuel Gas Treating and Sulfur Units.

4) **PETROBRAS-REPLAN (Paulinea - SP)**

Atmospheric and Vacuum Distillation Units.

5) **PETROBRAS-REFAP/REGAP (Canoas - RS/Betim- MG)**

Fuel Gas Treating and Sulfur Units.

EQUIPMENT CONDITIONING, STAR-UP PREPARATION, SIMULATED OPERATION AND STAR-UP of the following Plants:

1) **PETROBRAS-SIX-UPI (São Mateus do Sul -PR)**

Fuel Gas Treating.

2) **PETROBRAS-SIX-UPI (São Mateus do Sul - PR)**

Sulfur Units.

3. **Paraná State Government – Brazil (January 1974/December 1975)**

TECHNICAL CONSULTANT for **IPARDES** (Paraná State Institute for Economical and Social Development) and for **BADEP** (Paraná State Development Bank), responsible for the studies with the purpose to attract the implantation's of Petrochemical Industries in Paraná Sate.

4. **PROJEPRO - Projetos de Processamento Ltda. (June 1974 up to now)**

TECHNICAL RESPONSIBILITY for chemical engineering work performed by PROJEPRO since its foundation.

a. **Contracts with Petroleo Brasileiro S.A. - PETROBRAS**

1) **PETROBRAS - SIX (Oil-Shale Industrialization Superintendence) (1975)**

Project Title: Pyrolysis Gas Treatment Unit for Shale Oil Industrial Plant.

Unit Capacity: 13,000,000 Nm^3/day of raw gas.

Description: Supplying of preliminary process design packages for cost estimation, comprising process flow sheets, heat and material balances, P&I diagrams, summary process descriptions, and equipment design and specifications for the Light-oil, Hydrocarbon and Sulfur Recovery Units, and Gas Treating Unit.

2) PETROBRAS - SIX (Oil-Shale Industrialization Superintendence) (1977)

Project Title: Sulfur Recovery Unit of the Irati Shale Oil Prototype Plant.

Unit Capacity: 40 metric tons/day of sulfur

Description: Operational analysis and equipment re-design in order to achieve a better sulfur recovery flexibility at lower operational capacities. Based on operational data, the theoretical/practical correlations were set, and a computer re-design of the waste-heat boiler and sulfur condensers along with the calculation of the new heat balances were performed.

3) PETROBRAS - SIX (Oil-Shale Industrialization Superintendence) (1977/1978)

Project Title: Shale Oil Industrial Plant - Pyrolysis Gas Application Perspectives.

Capacity: 13,000,000 Nm^3/day of Pyrolysis Gas.

Description: Preliminary design of the primary and secondary treatment steps of the pyrolysis gas, anticipating its usage as a fuel and/or as a petrochemical raw material. Recovery schemes for the pyrolysis gas were defined along with technical-economical evaluations.

4) PETROBRAS - REPAR (President Getúlio Vargas Refinery) (1979)

Project Title: REPAR - Global Re-evaluation of the Sulfur Recovery Unit.

Unit Capacity: 60 metric tons/day of sulfur.

Description: Computer analysis of the unit operational data and equipment re-design for a better performance of the sulfur recovery unit was performed. After the modifications were introduced and new operational data analyzed, computer simulations of the unit with material and heat balances were made in order to define the best operational conditions for the unit.

5) PETROBRAS - REPAR (President Getúlio Vargas Refinery) (1980/1981)

Project Title: REPAR - Condensate System Redesign.

Refinery Capacity: 20,000 m^3/day of crude oil.

Description: All the condensate systems of the atmospheric and vacuum distillation, fluid catalytic, sulfur recovery and gas treating units were re-designed for the elimination of process bottlenecks.

6) PETROBRAS - REPAR (President Getúlio Vargas Refinery) (1981/1982)

Project Title: REPAR - Asphaltic Residue Burning System.

System Capacity: 11 metric tons/hour of Asphaltic Residue.

Description: Process Design and Engineering of the asphaltic residue burning system of REPAR Refinery. The purpose was to allow the refinery to burn its asphaltic residue in the power plant furnaces so as to save energy.

7) PETROBRAS - REVAP (Henrique Lage Refinery) (1982/1984)

Project Title: REVAP - Global Re-evaluation of the Sulfur Recovery Unit.

Unit Capacity: 200 metric tons/day of sulfur.

Description: Computer analysis of the unit operational data and equipment re-design for a better performance of the sulfur recovery unit was performed. After the modifications were introduced and new operational data analyzed, computer simulations of the unit with material and heat balances were made in order to define the best operational conditions for the unit.

8) PETROBRAS - SIX (Oil-Shale Industrialization Superintendence) (1982/1983)

Project Title: PETROSIX Pilot Plant.

Plant Capacity: 6.67 metric tons/hour of crude shale oil.

Description: Detailed Engineering Design of the PETROSIX Pilot Plant to be installed at the Irati Shale Oil Prototype Plant in São Mateus do Sul - PR.

9) PETROBRAS - SIX (Oil-Shale Industrialization Superintendence) (1983)

Project Title: Home and Industrial Distribution of Shale Pyrolysis Gas.

System Capacity: 6,000 Gigacalories/year.

Description: Survey on the home and industrial LPG consumption in São Mateus do Sul - PR. Process Design with preliminary equipment and piping sizing, and technical-economical evaluation for the proposed system.

10) (PETROBRAS - REPAR (President Getúlio Vargas Refinery) (1983/1984)

Project Title: Home and Industrial Distribution of Shale Pyrolysis Gas.

System Capacity: 600,000 Gigacalories/year.

Description: Survey on the home and industrial LPG consumption levels comprising the Curitiba and Araucaria markets. Process Design with preliminary equipment and piping sizing, and technical-economical evaluation for the proposed system.

11) PETROBRAS - REDUC (Duque de Caxias Refinery) (1984/1985)

Project: Title: Process Engineering Job.

Description: This job comprised the modernization of the Catalytic Cracking Unit instrumentation and evaluation of the Fuel Gas System in order to remove process bottlenecks.

12) PETROBRAS - REPAR -(President Getúlio Vargas Refinery) (1984/1985)

Project: Title: Process Engineering Jobs.

Description: Performed the following services:

- Basic Design of the Vacuum, Crude and Gasoil Residues Tanking Area;
- Checking of the FCC's Steam Generator heat transfer performance;
- Modification of the antistatic additive dosing system for the aviation kerosene;
- Evaluation on an interlinkage for the REPAR and ULTRAFÉRTIL Sulfur Recovery Units so as to reduce air pollution by SO_2 gas during operational interruption of either one.

13) PETROBRAS - DEPIN (Industrial Department) (1984/1986)

Project: Title: Sulfur Recovery Units Optimization.

Description: Overall re-evaluation of the REFAP and REPLAN Sulfur Recovery Units designs, with operational data analysis and the issue of an abnormalities/corrective measures report, so as to achieve better operational efficiencies.

14) PETROBRAS - REPAR (President Getúlio Vargas Refinery) (1986)

Project: Title: Sulfur Recovery Unit Residual Gas Incineration.

Description: Process Design of the new Incineration Chamber.

15) PETROBRAS - SIX (Oil-Shale Industrialization Superintendence) (1986/1988)

Project: Title: Powder from Oil Separation Unit and LPG Tankage.

Description: Detailed engineering for the Powder from Oil Unit (U-251) and LPG Tankage (U-415), which are part of the Shale Oil Industrial Plant.

16) PETROBRAS - SIX (Oil-Shale Industrialization Superintendence) (2000)

Project Title: Water LPG Washing System

System Capacity: 2,300 kg/h of LPG.

Description: Process Design of the Water LPG Washing System of the Desulfurization Unit (U-241) of the Shale Oil Plant.

17) PETROBRAS - REPAR (President Getúlio Vargas Refinery) (2001/2002)

Project Title: REPAR - Global Re-evaluation of the Sulfur Recovery Unit.

Unit Capacity: 60 metric tons/day of sulfur.

Description: Computer simulations of the SRU considering the new acid feed conditions that will result from the Refinery expansion to verify which changes should be made in the unit to permit with the new conditions. Material and heat balances were made in order to define the best operational conditions for situations of H_2S concentration and ranges of feed rates.

18) PETROBRAS - REPAR (President Getúlio Vargas Refinery) (2002)

Project Title: REPAR – Ammonia Reach Acid Gas Treating Unit.

Unit Capacity: 17 metric tons/day of ammonia in the acid gas.

Description: Development of a preliminary process design of the unit, capital cost estimation and economical analysis to verify the feasibility of the recovery of the ammonia as gas or liquid ammonia or as aqua ammonia solutions.

19) PETROBRAS - SIX (Oil-Shale Industrialization Superintendence) (2006/2007)

Project: Title: 100 MW Power Generation Plant.

Description: Preliminary Technical and Economical Feasibility Study for a 100 MW Power Cogeneration Plant burning fines of oil shale in a circulating fluidized bed combustor. The flue gas leaving the Electrostatic Precipitator has about 500 mtpd of sulphur dioxide, which will be removed from the gas and transformed in ammonium sulphate or sulphuric acid and/or liquefied SO_2.

b. Contracts with Indústrias Químicas Taubaté S.A. – IQT

1) IQT (1986/1987)

Project: Title: Solid Sodium Methoxide Pilot Plant.

Description: Process Research and Development for the production of solid sodium methoxide and Process Design of a Pilot Plant so as to test the production process.

2) IQT (1987)

Project: Title: Solid Sodium Methoxide Industrial Plant.

Description: Preliminary Process Design of an Industrial Plant for Investment Cost Estimation purpose.

3) **IQT (1987)**

Project: Title: Microcrystaline Cellulose Plant.

Plant Capacity: 100 metric tons/year of microcrystaline cellulose.

Description: Accompaniment of process tests and writing of a results evaluation and recommendations report, along with a process review of the microcrystalline cellulose plant for the improvement of the production process.

4) **IQT (1987/1988)**

Project: Title: Stannous Chloride Plant.

Unit Capacity: 100 metric tons/year of Stannous Chloride.

Description: Process Design and Engineering of Stannous Chloride Plant

5) **IQT (1987/1988)**

Project: Title: Benzyl Chloride Plant.

Plant Capacity: 4,000 metric tons/year of Benzyl Chloride

Description: Process Design of a Benzyl Chloride Plant to be installed at Camaçari - BA, by QUIMIFINA S.A. - Indústrias Químicas.

6) **IQT (1989/1990)**

Project: Title: Radiological Contrasts Plant.

Description: Complete Process Design.

c. **Contracts with QUIMIFINA S.A. - Indústrias Químicas**

1) **QUIMIFINA (1988/1989)**

Project: Title: Benzyl Chloride Unit.

Unit Capacity: 4,000 metric tons/year of Benzyl Chloride.

Description: Process modeling to evaluate the feasibility of product side stream recovery at the first distillation column of the benzyl chloride plant.

2) **QUIMIFINA (1988/1990)**

Project: Title: Benzyl Chloride Plant.

Description: Detailed Design and Engineering of the Benzyl Chloride Plant to be installed at Camaçari - BA.

3) **QUIMIFINA (1988/1990)**

Project: Title: Auxiliary Facilities - Benzyl Chloride Plant.

Description: Basic Design and Detailed Engineering of Utilities (Steam, process water, cooling water, air, inert gas and fuel-gas systems) for the Benzyl Chloride Plant at Camaçari - BA.

d. **Contracts with Refinaria de Petróleos de Manguinhos S.A. – RPDM**

1) **RPDM (1990)**

Project: Title: RPDM Cooling Water System - Performance Evaluation.

Description: Performance evaluation of the Refinery cooling system. Gathering of operational data and field testing of the cooling tower and cooling circuit, providing a technical report of the cooling system performance and applicable recommendations.

2) RPDM (1990)

Project: Title: Heat Recovery from E-103 System.

Description: Mass and Heat Balances around all equipments of the E-103 System (Stripper) of the Refinery to define the possibilities of heat recovery from the system to generate low and medium pressure steams.

3) RPDM (1992/1994)

Project Title: Steam Generation System.

System Capacity: 54 metric tons/hour of Superheated Steam.

Description: Performance Tests of the Steam Boilers to identify the bottlenecks of each boiler which were limiting the steam superheating degree and design of the modifications required to increase the steam temperature. The steam produced is used mainly in steam turbines.

4) RPDM (1996/1998)

Project Title: Induced Draft Fans of the Steam Boiler

System Capacity: 18 metric tons/hour of Superheated Steam.

Description: Determination of the capacities curves of the induced draft fans of a steam boiler and definition of the modifications required to increase the capacity of the draft system which is limiting the capacity of the boiler. The new equipments were already installed and new tests are programmed to determine the final performance of the system.

e. Contracts with ROB - Refinadora de Óleos Brasil S.A.

1) ROB (1985/1986)

Project Title: Steam Superheater.

Superheater Capacity: 12,000 kcal/hour of superheated steam.

Description: Complete Process Design and Engineering of the firewood furnace and steam superheater set installed at the soybean processing plant located at Araucária - PR.

2) ROB (1989)

Project Title: Fuel-oil Furnace - Steam Superheater.

Furnace Capacity: 1.200.000 Kcal/h.

Description: Process Design and Engineering of a Fuel Oil Furnace to supply hot gases to the steam superheater installed at the Soybean Processing Plant at Araucária - PR.

f. Contracts with DM CONSTRUTORA DE OBRAS LTDA. (2008/2010)

1) DM (2008)

Project Title: Engineering services relating to ENGINEERING/IIEABAST/PETROBRAS REGAP IERG N° 0450350.07.8 (2007/2008), Water Demineralization System (4ª REGAP chain) and Water polishing System for the Offsite Cogeneration, in the implementation of projects to REGAP within the Gabriel Passos Refinery, in Betim - Minas Gerais.

Description: Those services included: 1). Study of the whole process engineering documentation provided by PETROBRAS; 2). Issuance of Material requisitions for requests for quotation of equipment and materials; 3). Issuance of the diagram of loads of equipment for civilian run foundations and slab projects unit support package; 4). Issuing Material requisitions for requests for quotation of instrumentation and control items; 5). Quantitative emission of piping Material.

2) DM (2008)

Project Title. Chemical engineering services relating to INVITATION N° 0481114088-OP N° 7000182009 (2008)-supply and installation of equipment and pre-assisted operation of effluent treatment system of Land Production field corner of Amaro on active Production Mossoró (ATP-MO) of PETROBRAS-UN-RNCE in Mossoró, Rio Grande do Norte State.

Description: Those services included: 1. study and validation of the entire process engineering documentation provided by PETROBRAS; 2. issuance of Data Sheets of agitators; 3. issuance of Data sheets of Pumps; 4. issuance of Data sheets of Tanks; 5. issuance of instrumentation data sheets; 6. Quantitative emission of piping material.

3) DM (2008)

Project Title. Engineering services relating to Industrial Waste treatment unit-UTDI II (U-63500 Getulio Vargas refinery (UN-REPAR) the INVITATION N° 0313414078 (IERP-114) (2008)

Description: Those services included the following items for the Industrial Waste treatment unit-UTDI 11 (U-6350): 1). Study of the whole process engineering documentation provided by PETROBRAS; 2). issuance of Material requisitions for requests for Quotation of Bombs; 3). Material requisitions Issued to quotation Requests from API Tanks; 4). Issuing Material requisitions for requests for Quotation of Polypropylene tanks with Agitators; 5). Issuing Material requisitions for requests for quotation for pressure vessels; 6). Material requisitions Issued to quotation requests of instrumentation and control items; 7). issuance of documentation relating to Concrete tanks; 8. issuance of documentation relating to pipe material and structures.

4) DM (2010)

Project Title. Chemical engineering services related to the invitation N° 0000039.10-8 (2010) of PETROBRAS-Abreu e Lima refinery S.A, concerning neutralization Unit of Soda Waste (U-48), the Northeast refinery-Abreu de Lima-RNEST, of PATROBRAS, in Ipojuca-PE, as specific contractual instrument signed in 3/25/2010.

Description: Those services included the elaboration of Draft Basic and detailed Process of U-48: Soda Neutralization unit, with issuance of the respective Basic Process Engineering book containing: 1). Process Flowchart; 2). thermal material balance; 3). Description of the process; 4). data sheets, drawings and specifications of equipment such as: Agitators; Bombs; Reactors; Pressure vessels; Tanks; Other special items may be necessary.

g. PETROLEUM USAGE OPTIMIZATION PROGRAM (1979/1981)

By the beginning of 1979, PROJEPRO received a credential from the National Petroleum Council, which enabled it to work on its "Petroleum Usage Optimization Program". As a result of this credential, many clients asked PROJEPRO to develop energetic diagnosis of their industrial process plants. These energetic diagnoses consisted in the determination of thermal efficiencies of industrial plants, showing the abnormalities and the possible solutions that should be adopted in order to low down the fuel oil consumption. Energetic diagnosis were realized for 23 industries, for which the total fuel oil consumption was 100,000 metric tons/month. PROJEPRO reports has indicated solutions that would bring an economy of about 20,000 metric tons/month of fuel oil. Of this energetic diagnosis, the most important work was realized in behalf of COPENE (today BRASKEN) - a 400,000 metric tons/year petrochemical complex located at Camaçari -Bahia State.

Energetic diagnosis were realized for the following process industries:

1) **COPENE - Petroquímica do Nordeste S.A.** (Petrochemical Complex, Camaçari - BA).
2) **EDN - Estireno do Nordeste S.A.** (Petrochemical Industry, Camaçari - BA).
3) **CARGILL AGRÍCOLA S.A.** (Soybean Oil Manufacturing Plant, Ponta Grossa - PR).
4) **IMCOPA S.A.** (Soybean Oil Manufacturing Plant, Ponta Grossa - PR).
5) **IMCOPA S.A.** (Soybean Oil Manufacturing Plant, Araucária - PR).

6) **REFINADORA DE ÓLEOS BRASIL S.A.** (Soybean Oil Manufacturing Plant, Araucária - PR).
7) **CEVAL AGRO-INDUSTRIAL** (Soybean Oil Manufacturing Plant, Gaspar - SC).
8) **CEVAL AGRO-INDUSTRIAL** (Soybean Oil Manufacturing Plant, Chapecó - SC).
9) **CEVAL AGRO-INDUSTRIAL** (Soybean Oil Manufacturing Plant, São Miguel do Oeste - SC).
10) **CEVAL EXPORT S.A.** (Soybean Oil Manufacturing Plant, São Francisco do Sul - SC).
11) **TEKA - Tecelagem Kuehnrich S.A.** (Textile Industry, Blumenau - SC).
12) **INCEPA - Indústria Cerâmica do Paraná S.A.** (Ceramic Industry, Campo Largo - PR).
13) **CIA DE CIMENTO ITAMBÉ** (Cement Manufacturing, Balsa Nova - PR).
14) **CERÂMICA IGUAÇU LTDA.** (Refractories Industry, Campo Largo - PR).
15) **CONTI-ÓLEOS - Continental de Óleos Vegetais Ltda.** (Soybean Oil Manufacturing Plant, Maringá - PR).
16) **PRODUTOS ALIMENTÍCIOS CARAMURU S.A.** (Corn Products Manufacturing Plant, Apucarana - PR).
17) **IRPASA - Indústrias Reunidas Paranaense S.A.** (Soybean Oil Manufacturing Plant, Ibiporã - PR).
18) **KANEBO SILK DO BRASIL S.A.** (Silk Industry, Cornélio Procópio - PR).
19) **LONDRIPEL - Indústria Londrinense de Papéis** (Paper Plates Industry, Londrina - PR).
20) **TEKA - Tecelagem Kuehnrich S.A.** (Textile Industry, Artur Nogueira - SP).
21) **COOPERATIVA AGRÍCOLA MISTA DO VALE DO PIQUIRI** (Grain Drying Plants located at Palotina, Terra Roxa and Assis Chateaubriand - PR).
22) **CRISTALEIRA RAIAR DA AURORA LTDA.** (Glass Products Industry, Curitiba - PR).
23) **CLAC - Cooperativa de Lacticínios de Curitiba Ltda.** (Dairy Processing Plant, São José dos Pinhais - PR).

E. ACADEMIC ACTIVITIES

Catholic University of Parana State – PUCPR – Curitiba – PR (March 1992 to December 2000): Professor of the Fundamentals of Process Engineering, Unit Operations and Industrial Projects disciplines in the Departments of Chemical Engineering and Food Engineering of the.

F. MEMBER OF

1. Brazilian Association of Chemical Engineers.

G. PARTICIPATION IN SYMPOSIA AND CONGRESSES

1. **Symposium on Science and technology of Shale,** held at the Faculty of Chemical Engineering from the Federal University of Paraná, in December 1971, under auspices of the Brazilian Academy of Sciences.
2. **Seminar on Transport of Chemical and Petrochemical Products,** in June 1974, under sponsorship of the IBP – Petroleum Brazilian Institute.
3. **Absorption and Creation of Technology / Engineering Firms Participation,** Participation as Discussant of Panel 3 of the I° Meeting on Engineering for the Petroleum and Petrochemical Industries, promoted by IBP – Petroleum Brazilian Institute, in October 1975

4. **Iº Brazilian Congress of Petrochemistry,** promoted by IBP – Petroleum Brazilian Institute, in November 1976.
5. **Round Tables of the Saloon "INTERCHEMIE 77",** at the invitation of the French Government, held in December 1977 in the city of Paris-France.
6. **Iº Brazilian meeting on Sulfuric Acid,** in the Technical Table on Raw Materials, presenting the work: "Treatment of Acid Gases and Sulfur recovery - The National Technological Situation".
7. **Io Seminar National Company and Fine Chemicals,** held in Rio de Janeiro in March 1986.
8. **3rd Congress of Fine Chemicals in Brazil,** promoted by the Brazilian Association of Fine Chemical Industries, held in Porto Alegre-RS, in August 1989.
9. **Workshop on Guidelines for Fine Chemicals,** established by the Chamber of Fine Chemicals at the Federal University of Rio de Janeiro (UFRJ), with sponsorship of the "Financiadora de Estudos e Projetos – FINEP" and the National Council of Scientific and Technological Development-CNPq, held in November 1990.
10. **American Meeting 2003,** participation at the invitation of the Canadian Government held in March 2003 in Montreal – Canada.
11. **American Meeting 2005,** participation at the invitation of the Canadian Government held in March 2005 in Montreal – Canada.
12. **IPEA – BNDES – MI / World Crisis Seminar and Regional Development: Challenges and Opportunities for Brazil,** in Table 7 – Regional Development: New Policies and Institutional Models, presentation of the work "North – Northeast Region: Densification of the Productive Structure", in September 2009.

H. DIPLOMAS OF MERIT

1. **Regional Council of Engineering, Architecture and Agronomy of State of Paraná – Brazil (11/12/1997):**

   Diploma of Merit for services rendered, considering that during the life No penalties ethical by CREA and practiced with boldness and dedication, making use of their scientific and technological knowledge for the community.

2. **Regional Council of Engineering, Architecture and Agronomy of State of Paraná – Brazil (07/01/2002):**

   Diploma of Merit for Services Rendered Relevant to Engineering, Architecture and Agronomy of Paraná State, in accordance with the provisions of Act no. º 39/94, and by decision of the Plenary of CREA, adopted in the Ordinary Session n. # 790 held on July 10, 2001.

3. **Regional Council of Engineering, Architecture and Agronomy of State of Paraná – Brazil (02/04/2012):**

   Professional Emeritus in the following terms: "Chemical Engineer Ricardo Henrique Kozak, Carrier Registration No. PR-1527 / D, whereas for more than 50 years of full professional activity, to date, suffered no penalty ethics on the part of the Regional Council, exercising the profession with boldness and dedication, making use of their scientific and technological knowledge for the community. "