

MANUEL JOAQUIN MONTEAGUDO GARCIA

EDUCATION

Doctor of Philosophy in Engineering, 1981

Odessa Technological Institute of Refrigeration Industry, Ukraine
3.5-year academic program

Summary of Program:

Successfully completed required pre-thesis examinations, conducted advanced research on Cold Storage Warehouse Cooling System for Produce, and publicly presented a dissertation before an accredited Scientific Committee.
Higher Certifying Commission under the USSR Council of Ministers issued the Doctor of Philosophy in Engineering Diploma December 2, 1981.

Main scientific and practical results:

- Obtained the heat interchange and the aerodynamic drag dimensionless relations for an air cooler prototype with bimetallic heat transfer surface (steel-aluminum)
- Obtained the air temperature and speed fields in the experimental industrial cold store during the cooling and cold storage of fresh produce
- Corrected a simplified mathematical model of a cold store for fruits that is applicable for the cooling system evaluation in tropical conditions
- Completed recommendations for thermal calculation of cold stores equipped with the active ventilation system and independent extraction of the external heat flows at cold storage facilities for fruits and vegetables located in zones with tropical climate
- Confirmed experimentally the possibility of operation cost reduction by 6 to 11 % in the case of the active ventilation system with a compact air ductwork and the independent extraction of the external heat flows improving the aerodynamic and thermal characteristics of the used cooling equipment
- Reduced costs of produce natural losses as well as metal for equipment and electrical energy consumption as a result of application of high effectiveness and low aerodynamic drag bimetallic heat transfer surfaces (steel-aluminum) with a constant static pressure air distribution system

B.Sc. in Mechanical Engineering, 1970

Major in Compressor and Cooling Machines and Systems
Odessa Technological Institute of Food and Refrigeration Industry, Ukraine
Five-year academic program

Language Skills

Proficient in English, Spanish and Russian

Additional Courses and Training

Water Treatment in Oil Industry, 2008

16-hour course organized by Progress Seminars Inc., Calgary, Alberta, Canada

Engineering and Technology Upgrading Program, 2006

Calgary Catholic Immigration Society, Alberta, Canada
Seven months, include three-month training as volunteer

- MS Office Suite 2003
- Business Communication
- AutoCAD 2006-SAIT
- Overview of the oil and gas industry-ENFORM
- Project management-ENFORM

– Processes in Engineering

Good Practices in Refrigeration and Air Conditioning, Advanced Alternative Technologies and New Refrigerants, 2003

Jose Antonio Echeverria High Polytechnic Institute, Havana, Cuba

24-hour course under the auspices of United Nations, Cuba Ozone Technical Office, Cuba Science, Technology and Environment Ministry and Canada Environment Ministry

Energy Saving in Cold Storage Warehouses and Air Conditioned Buildings, 1987

Refrigeration Institute of Madrid Polytechnic University, Spain

Two-month postgraduate training conducted by Ph.D. Manuel Alonso

Refrigerant Mixtures, 1985

Jose Antonio Echeverria High Polytechnic Institute, Havana, Cuba

Twelve-hour course taught by Professor, Ph.D. H. Krauss, Dresden Polytechnic University

Experimental Thermal Measurements, 1982

Jose Antonio Echeverria High Polytechnic Institute, Havana, Cuba

40-hour course taught by Ph.D. Sergei Manchtha, Moscow Energy Institute

Thermal Radiation, 1982

Jose Antonio Echeverria High Polytechnic Institute Havana, Cuba

32-hour course taught by Ph.D. Sergei Manchtha, Moscow Energy Institute

Programming Languages, 1976

Institute of Computer Science, Marta Abreu Central University of Las Villas, Santa Clara, Cuba

48-hour courses on LEAL and FORTRAN

Basics of Computer Programming, 1975

Institute of Computer Science, Marta Abreu Central University of Las Villas, Santa Clara, Cuba

48-hour course

Refrigeration Facilities, 1971

School of Mechanical Engineering, Marta Abreu Central University of Las Villas, Santa Clara, Cuba

80-hour course taught by Professor, Ph.D. Eduard Partshaladze, Odessa Technological Institute of Food and Refrigeration Industry

EMPLOYMENT HISTORY

Piping Engineer, August 2015 to January 2016

TR Canada Inc., Calgary, Alberta, Canada

- Piping-Mechanical Engineer responsible for APEGA review and authentication of final technical documents as P.Eng. for DE Phase Projects: NWR Surgeon Refinery Light Ends Recovery Units and Sulphur Plant Ph. 1 (78,000 bpd of synbit/ dilbit bitumen blend); FortHills Energy LP Cogeneration Project, CNRL - Horizon site Upgrader update, and new Diluent Recovery Unit, Vacuum Distillation Unit and H2S Stripping Unit

Mechanical Engineer, November 2008 to December 2013

WoodGroup Mustang Canada and IMV Projects, Calgary, Alberta, Canada

- Lead Mechanical Engineer responsible for (Cenovus) Christina Lake Off-sites 2014 Diluent Tie-in Project during Detail Design phase. Main Mechanical deliverables: Material Requisitions for Quotation and Purchase; Mechanical and Insulation CWPs (September to December 2013)
- Mechanical Lead responsible for (NWR) Sturgeon Raw Water Treatment Project during Detail Design. Main Mechanical deliverables for Raw Water Treatment System of Phases 1 and 2 (78,000 bpd of synbit/dilbit bitumen blend each) of the NWR Refinery: Mechanical Equipment and Specialty Items Lists; Material Selection Diagrams; Mechanical Equipment Data Sheets, Technical Bid Evaluations and Material

Requisitions; Piping Engineering; HVAC Design Criteria and Block Diagrams; Mechanical Equipment EWP (March to December 2013)

- Mechanical Lead responsible for (Devon NEC Corporation) Pike-1 - FEED Wellpads & Flowlines Project. Main Mechanical deliverables for this SAGD wellpad facilities and flowlines having a design stream day rate of 117,283 bpd: Mechanical Equipment List; Material Selection Diagrams; Mechanical Equipment Data Sheets (January to July 2013)
- Mechanical Lead responsible for (MEG Energy Corporation) Bruderheim Laterals FEED and DE Project during FEED phase. Main Mechanical deliverables for the pipeline tie-ins at the Stonefell Terminal: Mechanical Equipment and Specialty Items Lists, Mechanical Equipment Data Sheets and Material Requisitions (October 2012 to March 2013)
- Mechanical Lead responsible for (MEG Energy Corporation) Stonefell Terminal Project during Detail Design phase 1 and pre-investment for phase 2 and 3. Main Mechanical deliverables for this storage, blend and pipeline transport facility that handles blended bitumen (200,000 bpd) and diluent (100,000 bpd): Mechanical Equipment, Valve and Specialty Items Lists; Material Selection Diagrams; Mechanical Equipment Data Sheets, Technical Bid Evaluations and Material Requisitions; Piping Engineering; HVAC Design Criteria and Block Diagrams; EWPs and CWPs: Mechanical Equipment, Piping and Insulation Installation (November 2011 to March 2013)
- Mechanical Lead responsible for (Devon NEC Corporation) Jackfish 1 PW HX Additional Banks and Cleaning in Place Skid Projects during Detail Design phase. Main Mechanical deliverables for CPF on this 35,000 bpd project: Mechanical Equipment Data Sheets, Technical Bid Evaluations and Material Requisitions; ABSA Registrations; EWP and CWP (June 2010 to November 2012)
- Mechanical Lead responsible for (ConocoPhillips Canada - Bantrel) Surmont 2 Project during Detail Design phase. Main Mechanical deliverables for field facilities associated to pipelines on this 30 to 120,000 bpd project: Mechanical Equipment Data Sheets, Technical Bid Evaluations and Material Requisitions; HVAC Design Criteria, Block Diagrams, Equipment Data Sheets and MTO (October 2010 to March 2012)
- Mechanical Lead responsible for Paramount Hoole Oil Sands Project during Pre-FEED phase. Main Mechanical deliverables for CPF and field facilities on this 10 to 30,000 bpd project: Equipment List; Material Selection Diagrams; Mechanical Equipment Data Sheets, Material Requisitions and Fabrication support of Steam Separator for testing purposes; Capital Cost Estimate for MTO Class IV (November 2010 to May 2012)
- Lead Mechanical Engineer responsible for Cenovus (EnCana) Pads and Modules Off-sites Projects (Foster Creek 2009 and 2010, and Christina Lake 2010 to 2012) Developments, main Mechanical deliverables: Mechanical Equipment, Valve and Specialty Items Lists, Material Requisitions for Quotation and Purchase, Module Fabrication Support, Pads ABSA Registration. Also included the Piping Engineering, Module Fabrication Support, Pads Mechanical / Structural and Insulation CWPs (October 2008 to February 2011)

Mechanical Specialist, November 2006 to October 2008

IMV Projects, Calgary, Alberta, Canada

- Mechanical Specialist for Korea National Oil Corporation (KNOC) BlackGold Oil Sands Project Ph. 1 responsible for Heat Exchangers, Evaporator Recovery System, Fuel Gas In-Line Heater, on this 10 to 30,000 barrels/day project. Responsible for Mechanical Equipment List, Specifications, Data Sheets and Material Requisitions for Quotation (March to October 2008)
- Revised and updated IMV Seller Drawing and Data Requirements templates for six specific mechanical equipment items (February 2008)
- Provided assistance to complete Cost, Time and Resources for each Mechanical derivable on KNOC Feed Proposal required by IMV Business Development (February 2008)
- Revised and updated mechanical equipment data sheets to Vendor's as-built documents for Data Books on (Shell Canada Energy) BlackRock Orion Ph.1 project (January to February 2008)
- Accomplished the responsibilities as a Mechanical Lead for IMV Projects on the Husky Sunrise Oil Sands Project during DBM and BDS phases. Main Mechanical deliverables for field facilities (4 Pump Stations and 9 Pads) on this 60 to 240,000 barrels/day project were: Mechanical, Building, Module, Line, Tie-in, Long Lead Items, Valve and Specialty Items Lists; Pipe Class Selection; Material Selection Diagrams; Mechanical Equipment Specifications, Data Sheets and Material Requisitions for Quotation; Preliminary HVAC Design;

Capital Cost Estimate for MTO (March 2007 to January 2008)

Various duties related to Heat Transfer, Pressure Vessels and HVAC design tasks:

- Reviewed detailed heat transfer loss calculations of Shell and Tube Sales Oil/Boiler Feed Water heat exchangers (2) X (2) AFU 41X240. Unit duty: 3.34 MW (March 2007)
- Completed preliminary Engineering Work Package related to HVAC systems for seven industrial buildings (35 to 140 m² each) of production well pads that support an Oil Sands Plant, including ten digital drawings applying AutoCAD 2005 (February 2007)
- Self-taught learning on COMPRESS software for pressure vessels design (January 2007)
- Reviewed fourteen heat exchanger calculation data sheets and completed equipment price estimations. Units duty: 2.15 to 28.55 MW (January 2007)
- Completed calculations of three Shell and Tube Flash Gas Condenser sizing design options for budgeting quotations. Unit duty: 5 MW (December 2006)
- Reviewed calculations regarding the surface temperature increase of a highway as a result of heat transfer from the underground 30-inch steam line crossing (December 2006)
- Self-taught learning on HTRI software for heat exchangers design (November 2006 to January 2007)

Spanish Language Teacher, September 2006 to Present

Students' locations, Calgary, Alberta, Canada

- Teaching and mentoring Beginner to Intermediate Level (66h) 1 adult
- Taught Beginner Level (20h) to 1 child, (30h) to 1 adult, and (12h) to a group of 3 (2 adults, 1 child)
- Taught Pre-intermediate Level (25h) and (20h) to groups of 2 adults each time
- Taught Intermediate Level (30h) to 1 adult

Laboratory Technician, October to November 2006

AGAT Laboratories Ltd., Calgary, Alberta, Canada

- Performed routine geological service on core samples as preliminary core analysis, sample preparation and basic core analysis

Volunteer in Training, Mechanical Engineering, June to September 2006

NRTC, NOVA Chemicals, Calgary, Alberta, Canada

- Assessed HVAC system of over 50 packaged rooftop units (700 Tons cooling and 28,000 MBH heating capacity). Provided recommendations to improve maintenance service, repair, and replacement strategies
- Provided assistance to complete Management of Change audits (44 reviewed files, 34 completed final audits)

Production Worker, May 2004 to March 2005

CAS-LIN REFRIGERATION Ltd., Calgary, Alberta, Canada

- Manufactured and installed structural insulated panels for use in cold storage, food processing, commercial and industrial constructions
- Maintained, repaired, and overhauled commercial refrigeration units
- Assembled and installed components of refrigeration systems for walk-in coolers and freezers including related valves and controls. Started up systems, tested lines to detect leaks and recorded the readings for operational certification

Refrigeration and Air Conditioning Mechanic, January 1992 to November 2003

Self-employed, Havana, Cuba

- Installed, commissioned, maintained, repaired, and overhauled domestic and commercial refrigeration and air conditioning systems
- At installation sites, worked from blueprints or verbal information to mount or place system components. Assembled and installed refrigeration and air conditioning components such as compressors, evaporators, condensers and metering devices. Installed and calibrated related controls including wiring. Started up

systems, tested lines to detect leaks and recorded the readings taken to ensure that the system is functioning satisfactorily

- At maintenance or servicing, checked all parts of a system, oiled moving parts, cleaned and protected metals from corrosion, kept units filled with refrigerant and oil, adjusted valves and controls

Mechanical Engineer, Specialist on Refrigeration, Air Conditioning and Ventilation, November 1991 to October 2003

Jose Antonio Echeverria High Polytechnic Institute, Havana, Cuba

Main duties related mostly to Commercial Refrigeration and Air Conditioning Systems:

- Performed 475 tasks on planning, organising, procuring and economical evaluation of maintenance service developed by 20 mechanics and electricians. Improvement of these activities for more than 900 refrigeration and air conditioning units (capacities up to 100 Tons of refrigeration) reduced and stabilized the costs and established profitable and competitive prices for this service
- Conducted studies for energy saving in 32 refrigeration and air conditioning facilities, whose suggested and applied corrections resulted in a 10-15% reduction of power consumption
- Performed integral analysis on the use of halogenated refrigerants in 800 refrigeration and air conditioning units, which defined the policy, rules and executive measures to protect the environment and to guarantee the efficient operation, maintenance and repair of this equipment by 10 or more years. A cost reduction of 40% was predicted
- Executed 211 computerized estimations of thermal load in refrigeration and air conditioning facilities for the acquisition of equipment and systems
- Taught 40 hours of advanced training courses for workers on Refrigeration and Air Conditioning. Created course design and materials, writing and publishing a 96-page training document
- Responsible for the technical quality of 3215 maintenance tasks, including installation, commissioning, diagnosis and repair of refrigeration and air conditioning equipment and facilities
- Performed 331 technical consulting actions on refrigeration and air conditioning for industrial and service sectors

Volunteer, Electrician, September 1990 to August 1991

Jose Antonio Echeverria High Polytechnic Institute, Havana, Cuba

Construction and Maintenance Service

- Drilled holes, set anchors, and set up conduit. Measured, fabricated, and installed conduit. Connected installed conduit, identified electrical wires and tested wiring, outlets, and switches. Started up, checked and overhauled electric equipment. Maintained required safety practices

University Professor, September 1970 to November 1991

Jose Antonio Echeverria High Polytechnic Institute, Havana, Cuba (September 1981 to November 1991)

Marta Abreu Central University of Las Villas, Santa Clara, Cuba (September 1970 to September 1981)

- Taught nine undergraduate university courses (September 1970 to July 1990):
 - Thermodynamics
 - Refrigeration
 - Ventilation and Air Conditioning
 - Compressors and Ventilators
 - Basics of Computer Programming
 - Refrigeration Facilities
 - Cold Storage Facilities Project
 - Basics of Major in Refrigeration and Air Conditioning
 - Engineering Management

Totals: 71 classes of students, 4528 teaching hours

- Taught two graduate courses (April 1983 to July 1990):
 - Refrigeration Facilities
 - Energy Saving Practices in Refrigeration and Air Conditioning

Totals: six classes of students, 128 teaching hours

- Completed the methodological and complementary tasks related to teaching of above mentioned undergraduate and graduate university courses (September 1970 to July 1990)
- Concluded six research projects, five as the primary author (1975 to 1989)
- Published works, mostly on Refrigeration
 - 22 scientific papers, included 15 as the primary author (1971 to 1991)
 - One textbook (two tomes, 638 pages) and one workbook (70 pages) as the primary author (1986 to 1987)
 - Two textbooks as a co-author (1985 to 1987)
 - Twelve manuals (1191 pages), included six as the primary author (1971 to 1996)
 - 18 technical reports, included five on international conventions (1974 to 1993)
- Headed the Energy Teaching Department for eight years:
 - As Associate Director (September 1987 to October 1991)
 - As Director (May 1972 to September 1976)
- Chairman and member of doctoral thesis examining board on Technical Sciences for two sessions (1990 to 1991)
- Performed 43 technical consulting actions on refrigeration and air conditioning for industrial and service sectors (1971 to 1991)
- Tutored two Technical Sciences Doctoral Candidates, was the consultant to another and participated on the review panel for one thesis (1982 to 1990)
- Promoted and edited the technical section of standard division on Refrigeration Facilities Energy Consumption (1985)
- Instructed 29 theses for first university degree and participated on the review panel for an additional 13 theses (1973 to 1990)
- Advised on 68 papers presented at Scientific University Student Conferences (1972 to 1990)
- Chairman on thirteen Scientific Student Conferences (1972 to 1990)
- Developed and edited six undergraduate and two graduate Mechanical Engineering Academic Curricula and 22 undergraduate and three graduate Course Programmes (1971 to 1990)
- Directly involved in six State Energy Inspections in food and textile industries (1985 to 1987)
- Chairman and member of Quality Certification State Commission on refrigeration equipment (2 times, 1985 to 1986)
- Tutored eight engineers and 23 university undergraduates on technical and pedagogical skills (1971 to 1986)
- Guided 175 university undergraduates on technical and labour training (1971 to 1986)
- Co-executor of pedagogical experience on learning continuous evaluation (1976 to 1977)

Freelance and Voluntary Translator and Interpreter (Russian, English, Spanish), July 1966 to Present

Calgary, Alberta, Canada (June 2005 to Present): E to S, E to R, R to S, R to E, S to E, S to R

Jose Antonio Echeverria High Polytechnic Institute, Havana, Cuba (September 1981 to October 2003): R to S, S to R

Marta Abreu Central University of Las Villas, Santa Clara, Cuba (September 1970 to December 1977): R to S, S to R

Odessa, Ukraine (July 1966 to July 1970, December 1977 to July 1981): R to S, S to R

- Performed mostly oral and written general, technical and scientific translations

Volunteer Spanish Language Teacher, May to December 1961

Cabaiguan, Las Villas, Cuba

- Taught as volunteer 15 adults to literacy

SCIENTIFIC RESEARCH

Concluded projects:

- **Reduction of energy consumption in cold storage warehouses of Havana's Fishing Port (June 1989)**
 - Completed several rounds of experimental measurements of main operation parameters in two warehouses (5,000 and 15,000 metric tons) for frozen foods in Havana's Fishing Port

- Collected and systematized three-year operation records of refrigeration systems
 - Determined theoretical and actual consumption of electric power in the systems and its components applying the structure and requirements of a scientifically accepted technological standard
 - Established the ranges of energy over consumption, its causes and ways for its reduction
 - Diminished the specific consumption of electric power in 0.02 kWh/1000 st. kJ of refrigeration that represented a reduction of 370 MWh/year in the facilities' energy bill
- **Techno-economic Indexes of Refrigeration Facilities (July 1987)**
 - Completed assessment in several dozen refrigeration and air conditioning facilities along the territory of Cuba, mostly cold storage warehouses for produce and seafood, hospitals, hotels and textile industry facilities
 - Collected and systematized operation records of refrigeration systems and equipment
 - Determined theoretical and actual values of indexes as refrigeration cost and its structure and specific consumption of electric power per refrigeration unit in the systems and its components
 - Confirmed the validity of applied methods of calculation
 - Established the ranges of the studied indexes in different applications, its improving margins and methods for its achievement
- **Refrigeration Facilities Production Cost (December 1984)**
 - Obtained the detailed values of actual refrigeration cost sources in several dozen refrigeration facilities along the territory of Cuba, fundamentally in cold storage warehouses
 - Corrected the normative values of expense indices for the theoretical estimation of refrigeration cost
 - Established the applicable methodology for refrigeration cost calculation to the Cuban refrigeration facilities
 - Determined the refrigeration cost structure, the expenses to be reduced, and the fundamental ways for such purpose
- **Upgrading of Mechanical Engineering Academic Curricula, Major in Refrigeration and Air Conditioning (July 1984)**
 - Directly involved as co-author in the team co-ordination and follow up activities at Jose Antonio Echeverria High Polytechnic Institute and Higher Education Ministry, Havana, Cuba
 - Prepared and edited three course programs on Refrigeration Facilities and Food Storage Technology
 - Collaborated on the edition of two course programs on Compressors
- **Research on the Cooling System of the Cold Storage Warehouses for Fruits and Vegetables in Tropical Ambient (June 1981)**
 - Recognized an economic effect of 35.68 rubles (1981 currency) per metric ton of cold stored potato at the experimental facility of the Produce Complex 'Odessplodoovoschprom', Odessa, Ukraine
 - For more information see “*Main scientific and practical results*” of this research in Doctoral Thesis description of Education section
 - This work was distinguished by Cuban Science Academy in 1982 as one of the most relevant in Physico-technical and Mathematical Sciences
- **Assessment of Refrigeration Hermetic Compressor DKK-0,57 (March 1975)**
 - Completed experimental assessment of the 1/8 hp refrigeration hermetic compressor applying an electric calorimeter on the testing facility designed and built by the author.
 - Installed equipment and obtained technical results became the starting point for developing a refrigeration scientific laboratory at Appliances Manufacturing Cuban Company 'EINPUD' in Santa Clara, Cuba

PUBLICATIONS

- **Scientific papers:**

- Monteagudo García, M., Escalera Conejo, R. Racionalización del régimen de trabajo de las instalaciones de refrigeración (Spanish, Rationalization of Working Conditions of Refrigeration Facilities). *Ingeniería Energética*, 1991, Núm. 3, ISPJAE, Ministerio de Educación Superior, La Habana, Cuba
- Monteagudo García, M. Reducción del consumo de energía en un frigorífico de productos congelados (Spanish, Reduction of Energy Consumption in a Cold Store of Frozen Foods). RECLIEN'90, Primera Conferencia Internacional de Refrigeración, Climatización y Energía No Convencional, Jun. 1990, La Habana, Cuba
- Mendoza Miranda, R., Monteagudo García, M. Consumo de energía en un frigorífico de productos congelados (Spanish, Energy Consumption in a Cold Storage Warehouse for Frozen Foods). *Ingeniería Energética*, 1988, Vol. IX, Núm. 2, ISPJAE, Ministerio de Educación Superior, La Habana, Cuba
- Mendoza Miranda, R., Monteagudo García, M. Determinación del régimen de trabajo más racional en una instalación frigorífica (Spanish, Determination of the most rational working conditions for a refrigeration facility). *Ingeniería Energética*, 1988, Vol. IX, Núm. 2, ISPJAE, Ministerio de Educación Superior, La Habana, Cuba
- Mendoza Miranda, R., Schery Jiménez, J., Monteagudo García, M. Consumo de energía de los compresores de un frigorífico con diferentes condiciones de operación (Spanish, Compressors' Energy Consumption for Different Working Conditions at a Cold Storage Warehouse). *Ingeniería Energética*, 1987, Vol. VIII, Núm. 3, ISPJAE, Ministerio de Educación Superior, La Habana, Cuba
- Mendoza Miranda, R., Monteagudo García, M., Schery Jiménez, J., Raxach Alcalá, J. A. Análisis experimental de la operación de la instalación de refrigeración de un frigorífico (Spanish, Experimental Analysis of Refrigeration System Operation at a Cold Storage Warehouse). *Ingeniería Energética*, 1987, Vol. VIII, Núm. 2, ISPJAE, Ministerio de Educación Superior, La Habana, Cuba
- Díaz Gonzalez, L. O., Ferras Valcarcel, A., Monteagudo García, M. Regulirovanie holodoproizvoditelnosti turbocompressornih mashin v stantsiah ohlozhjdionnoy vodi (Russian, Cold Capacity Regulation of Refrigeration Centrifugal Compressors in Water Cooling Stations). Vth National Scientific and Technical Conference with International Participation "Refrigeration '86", Nov. 1986, Plovdiv, Bulgaria
- Monteagudo García, M., et al. Tehniko-ekonomicheskie pokazатели holodilnikov Respubliki Kuba (Russian, Techno-economic Indexes of Cuban Refrigeration Facilities). Vth National Scientific and Technical Conference with International Participation "Refrigeration '86", Nov. 1986, Plovdiv, Bulgaria
- Monteagudo García, M. Indices técnico-económicos en instalaciones frigoríficas (Spanish, Techno-economic Indexes of Refrigeration Facilities). *Memorias del Primer Forum Científico Técnico de la Industria Sidero Mecánica Nacional*, Dic. 1984, Ministerio de la Industria Sidero Mecánica, La Habana, Cuba
- Monteagudo García, M. Indices técnico-económicos en instalaciones frigoríficas (Spanish, Techno-economic Indexes of Refrigeration Facilities). VI Conferencia Científica de Ingeniería y Arquitectura, Comisión Energía. Dic. 1984, ISPJAE, La Habana, Cuba
- Monteagudo García, M. Consumo de energía en frigoríficos (Spanish, Energy Consumption in Cold Storage Warehouses). *Memorias del Primer Forum Nacional de Energía*, 1984, Comisión Nacional de Energía, La Habana, Cuba
- Monteagudo García, M. El costo de producción del frío (Spanish, Cost of Refrigeration). *Memorias del Primer Forum Nacional de Energía*, 1984, Comisión Nacional de Energía, La Habana, Cuba

- Monteagudo García, M. Research on the Cooling System of the Cold Stores for Fruits and Vegetables in Tropical Ambient. 1983, XVIth International Congress of Refrigeration, Commission D1, Cold Storage, International Institute of Refrigeration, Paris, France
- Monteagudo García, M. El costo de producción del frío en frigoríficos (Spanish, Cost of Refrigeration in Cold Storage Warehouses). Ingeniería Energética, 1983, Núm. 3, ISPJAE, Ministerio de Educación Superior, La Habana, Cuba
- Monteagudo García, M. Modelo matemático de cámaras frigoríficas (Spanish, Mathematical Model of Cold Stores). Ingeniería Energética, 1983, Núm. 1, ISPJAE, Ministerio de Educación Superior, La Habana, Cuba
- Monteagudo García, M., Chepurnenko, V. P., Quintero Cabrera, D. Issliedovanie ohlzhjdaiuschiey sistemi kamer fruktoovoschehranilischey dlia tropicheskikh usloviy (Russian, Research on Cooling System of Cold Stores for Produce in Tropical Ambient). Holodilnaya Tehnika i Tehnologuia, 1982, vip. 34, Ministerstvo Visshevo i Sriednovo Spetsialnovo Obrazovania UcrSSR, Tehnika, Kiev, Ukraina
- Monteagudo García, M. Autoreferat na soiskanie uchonoy stiepeni kandidata tehniceskikh nauk (Russian, Dissertation Summary for a degree of Doctor of Philosophy in Engineering). Odesskiy Institut Holodilnoy Promishliennosti, June 1981, Ministerstvo Visshevo i Sriednovo Spetsialnovo Obrazovania UcrSSR, Odessa, Ukraina
- Monteagudo García, M., Chepurnenko, V. P. Estudio del sistema de enfriamiento de las cámaras para productos agrícolas frescos (Spanish, Study of a Cold Stores' Cooling System for Fresh Produce). Ingeniería Energética, Agosto 1980, Núm. 1, ISPJAE, Ministerio de Educación Superior, La Habana, Cuba
- Chepurnenko, V. P., Monteagudo García, M. Issliedovanie ohlzhjdaiuschiey sistemi kamer holodilnikov dlia tropicheskikh usloviy (Russian, Research on Cooling System of Cold Stores for Tropical Ambient). Holodilnaya Tehnika i Tehnologuia, 1980, vip. 30, Ministerstvo Visshevo i Sriednovo Spetsialnovo Obrazovania UcrSSR, Tehnika, Kiev, Ukraina
- Monteagudo García, M. Pruebas de motocompresores herméticos por el método del calorímetro eléctrico (Spanish, Testing of Hermetic Compressors using Electric Calorimeter). Revista Centro - Sepparatta Refrigeración, 1975, Universidad Central de Las Villas, Santa Clara, Cuba
- Monteagudo García, M. Costo de producción del frío (Spanish, Cost of Refrigeration). Segundo Encuentro Nacional de Refrigeración y Climatización, Comisión de Proyectos e Investigaciones de Instalaciones, Transporte y Maquinaria Frigorífica, 1974, La Habana, Cuba
- Partsjaladze, E., Monteagudo, M. Método de cálculo térmico del acumulador de frío de hielo y agua (Spanish, Thermal Calculation Method for Ice Water Type Cold Accumulators). Revista Tecnología, Serie - Ingeniería Mecánica, Dic. 1971, Núm. 3, Universidad Central de Las Villas, Santa Clara, Cuba

- **Books:**

As primary author:

- Monteagudo Garcia, M. J. (1987). Problemas de Instalaciones Frigoríficas (Spanish, Exercises on Refrigeration Facilities). ISPJAE, La Habana, Cuba
- Monteagudo Garcia, M. J., et al. (1986). Instalaciones Frigoríficas (Spanish, Refrigeration Facilities). ENPES, Ministerio de Educación Superior, La Habana, Cuba

As co-author:

- Díaz Gonzalez, L. O., et al. (1987). Controles de Instalaciones Frigoríficas: en Regulación automática de los equipos de la zona de baja presión y en Regulación automática de las instalaciones frigoríficas (Spanish, Controls of Refrigeration Facilities). ISPJAE, La Habana, Cuba

- Quintero Cabrera, D., et al. (1985). Equipos Auxiliares de las Instalaciones Frigoríficas: en Tuberías y accesorios (Spanish, Supplementary Equipment of Refrigeration Facilities). ISPJAE, La Habana, Cuba

- **Manuals:**

As primary author:

- Monteagudo Garcia, M. J. (1996). Curso de Refrigeración y Climatización (Spanish, Course on Refrigeration and Air Conditioning). Dirección de Mantenimiento e Inversiones, ISPJAE, La Habana, Cuba
- Monteagudo Garcia, M. J. (1988). Ahorro de energía en Refrigeración y Climatización (Spanish, Energy Saving in Refrigeration and Air Conditioning). Comisión Nacional de Energía, La Habana, Cuba
- Monteagudo Garcia, M. J. (1983). Prácticas de Instalaciones Frigoríficas (Spanish, Laboratory Guide-book on Refrigeration Facilities). Facultad de Energética, ISPJAE, La Habana, Cuba
- Monteagudo Garcia, M. J. (1982). Guía metodológica del Proyecto de Curso de Instalaciones Frigoríficas (Spanish, Guide-book on Refrigeration Facilities Project). Facultad de Energética, ISPJAE, La Habana, Cuba
- Monteagudo Garcia, M. J. (1977). Guía metodológica de Maquinaria Neumática (Spanish, Guide-book on Compressors and Ventilators). Facultad de Ingeniería Mecánica, Universidad Central de Las Villas, Santa Clara, Cuba
- Monteagudo Garcia, M. J. (1973). Refrigeración Industrial (Spanish, Refrigeration Plants). Escuela de Ingeniería Mecánica, Facultad de Tecnología, Universidad Central de Las Villas, Santa Clara, Cuba

As co-author:

- Roque Díaz, P., Monteagudo García, M. (1977). Guía metodológica de Termotecnia (Spanish, Guide-book on Thermodynamics). Facultad de Ingeniería Mecánica, Universidad Central de Las Villas, Santa Clara, Cuba
- Partsjaladze, E. G., et al. (1972). Diseño de Frigoríficos: (Spanish, Cold Storage Warehouses Design). Escuela de Ingeniería Mecánica, Facultad de Tecnología, Universidad Central de Las Villas, Santa Clara, Cuba
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- Martínez Sánchez, P., Monteagudo Garcia, M. J. (1972). Refrigeración Básica (Spanish, Basics of Refrigeration). Escuela de Ingeniería Mecánica, Facultad de Tecnología, Universidad Central de Las Villas, Santa Clara, Cuba
- Martínez Sánchez, P., Monteagudo Garcia, M. J. (1971). Maquinaria Neumática (Spanish, Compressors and Ventilators). Escuela de Ingeniería Mecánica, Facultad de Tecnología, Universidad Central de Las Villas, Santa Clara, Cuba

- **Reports:**

- Sustitución del freón 502 por freón 22 en máquinas frigoríficas (Spanish, Replacing R-502 by R-22 in Refrigeration Systems). Forum de Energía, 1993, ISPJAE, La Habana, Cuba

- Sustitución de compresores herméticos por semi-herméticos en climatizadores semi-integrales (Spanish, Replacing hermetic compressors by semi-hermetic in packaged air-handling cooling units). Forum de Energía, 1993, ISPJAE, La Habana, Cuba
- Reducción del consumo de energía en un frigorífico de productos congelados (Spanish, Reduction of Energy Consumption in a Cold Store of Frozen Foods). RECLIEN'90, Primera Conferencia Internacional de Refrigeración, Climatización y Energía No Convencional, Jun. 1990, La Habana, Cuba
- Regulirovanie holodoproizvoditelnosti turbocompressornih mashin v stantsiah ohlozhjdionnoy vodi (Russian, Cold Capacity Regulation of Refrigeration Centrifugal Compressors in Water Cooling Stations). Vth National Scientific and Technical Conference with International Participation "Refrigeration' 86", Nov. 1986, Plovdiv, Bulgaria
- Tehniko-ekonomicheskie pokazatieli holodilnikov Respubliki Kuba (Russian, Techno-economic Indexes of Cuban Refrigeration Facilities). Vth National Scientific and Technical Conference with International Participation "Refrigeration' 86", Nov. 1986, Plovdiv, Bulgaria
- Indices técnico-económicos en instalaciones frigoríficas (Spanish, Techno-economic Indexes of Refrigeration Facilities). Primer Forum Nacional de Energía, 1984, CNE, La Habana, Cuba
- Indices técnico-económicos en instalaciones frigoríficas (Spanish, Techno-economic Indexes of Refrigeration Facilities). Primer Forum Científico Técnico de la Industria Sidero Mecánica Nacional, Dic. 1984, SIME, La Habana, Cuba
- Consumo de energía en frigoríficos (Spanish, Energy Consumption in Cold Storage Warehouses). Primer Forum Científico Técnico de la Industria Sidero Mecánica Nacional, Dic. 1984, SIME, La Habana, Cuba
- Indices técnico-económicos en instalaciones frigoríficas (Spanish, Techno-economic Indexes of Refrigeration Facilities). IV Conferencia Científica de Ingeniería y Arquitectura, Comisión Energía, Dic. 1984, ISPJAE, La Habana, Cuba
- Consumo de energía en frigoríficos (Spanish, Energy Consumption in Cold Storage Warehouses). IV Conferencia Científica de Ingeniería y Arquitectura, Comisión Energía, Dic. 1984, ISPJAE, La Habana, Cuba
- Experiencias sobre los proyectos de curso en le especialidad de Refrigeración y Climatización (Spanish, Experiences on the Course Projects of Major in Refrigeration and Air conditioning). I Conferencia de Enseñanza de la Ingeniería y la Arquitectura, Feb. 1984, ISPJAE, La Habana, Cuba
- Research on the Cooling System of the Cold Stores for Fruits and Vegetables in Tropical Ambient. XVIth International Congress of Refrigeration, Commission D1, Cold Storage, International Institute of Refrigeration, 1983, Paris, France
- Investigación del sistema de enfriamiento de los frigoríficos de frutas y vegetales para condiciones tropicales (Spanish, Research on the Cooling System of the Cold Stores for Fruits and Vegetables in Tropical Ambient). VI Foro Científico, Mayo 1983, Academia de Ciencias de Cuba, La Habana, Cuba
- Centro de Elaboración de Productos Agrícolas (Spanish, Produce Processing Centre). III Ciclo de Conferencias Científicas de Ingeniería y Arquitectura, Comisión Energética, Dic. 1982, ISPJAE, La Habana, Cuba
- El costo de producción del frío en frigoríficos (Spanish, Cost of Refrigeration in Cold Storage Warehouses). III Ciclo de Conferencias Científicas de Ingeniería y Arquitectura, Comisión Energética, Dic. 1982, ISPJAE, La Habana, Cuba
- Issliedovanie ohlazhdaiuschiey sistemi kamer holodilnikov dlia tropicheskikh usloviy (Russian, Research on Cooling System of Cold Stores for Tropical Ambient). 49-aya Nauchnaya Conferentsia. Odesskiy Tehnologuicheskiy Institut Holodilnoy Promishliennosti, Fev. 1981, Odessa, Ukraina
- Issliedovanie ohlazhdaiuschiey sistemi kamer holodilnikov dlia tropicheskikh usloviy (Russian, Research on Cooling System of Cold Stores for Tropical Ambient). 48-aya Nauchnaya Conferentsia. Odesskiy Tehnologuicheskiy Institut Holodilnoy Promishliennosti, Apr. 1980, Odessa, Ukraina
- Costo de producción del frío (Spanish, Cost of Refrigeration). Segundo Encuentro Nacional de Refrigeración y Climatización, Comisión de Proyectos e Investigaciones de Instalaciones, Transporte y Maquinaria Frigorífica, Dic. 1974, La Habana, Cuba

SOME OUTSTANDING CONSULTING ACTIVITIES

- Directly involved in technical consulting for the start-up of the refrigeration facilities at the Industrial Citrus Complex of Contramaestre, Santiago de Cuba, 1999, on request of the industry
- Performed a study for energy saving in the air conditioning facilities of hotels Sol Río de Luna y Sol Río de Mares at Guardalavaca Resort (222 rooms), Holguín, 1998. Established the operational and maintenance procedures that represented a reduction by 3 to 12 % of the annual energy consumption without additional investments
- Conducted the replacement of refrigerant R-502 by R-22 in an ice cream machine at Jose Antonio Echeverria High Politechnic Institute, 1993. The payback period was 20 hours of work. The economic effect mainly corresponded to the saving of 1,727 kWh/year of electric energy
- Directly involved in the replacement of hermetic compressors by similar capacity semi-hermetic machines in diverse packaged air-handling cooling units at Jose Antonio Echeverria High Polytechnic Institute, 1993. Improved operational conditions of the compressors and refrigeration systems resulting in lower consumption of energy per refrigeration unit. Demonstrated the economic rationality of the applied solution. Showed the acceptability bases for replacement offers
- Determined practical solutions to guarantee the efficient operation of the cold holds in Spanish fishing ships TACSA of the Cuban Fleet of Fishing, 1982. Applied and positively evaluated by the Technical Council of Naval Projects Centre at the Fishing Industry Ministry

- Completed calculations for Air Conditioning Systems of several laboratories at the National Institute of Standards and Quality Control, Las Villas, 1976. Used in the design and acquisition of the facilities
- Completed calculations for Air Conditioning Systems of several laboratories at Faculty of Chemical Engineering, Marta Abreu Central University of Las Villas, 1976. Used in the design and acquisition of the facilities
- Reviewed the tests and thermal calculations of the air-cooled refrigeration condensers for R-12 and R-22 produced by the Factory “ Dionisio Rodríguez ”, Industrial and Commercial Refrigeration Company 'ERID', Havana, 1976. Used for 20 years up to the modernization of the industry in the 90s
- Reviewed the project of production line of direct expansion air handling cooling units at the Factory “Dionisio Rodríguez ”, Industrial and Commercial Refrigeration Company 'ERID', Havana, 1975. Used for 20 years up to the modernization of the industry in the 90s
- Reviewed the project of production line of filter-dryers at the Factory “Dionisio Rodríguez ”, Industrial and Commercial Refrigeration Company 'ERID', Havana, 1975. Used for 20 years up to the modernization of the industry in the 90s
- Completed calculations of the refrigeration capacity for the low-pressure liquid ammonia delivery at Nitrogenous Fertilizers Company of Cienfuegos, Las Villas, 1975. This work included the estimation of the cooling and the thermal insulation for the liquid ammonia spherical storage vessel
- Directly involved in the Air Conditioning system project for the University Theatre (40 Tons) at Marta Abreu Central University of Las Villas, Dec. 1970. The designed facility was mounted and started up satisfactorily

SUMMARY OF ACADEMIC APPOINTMENTS

- Instructor Graduado (Graduate Instructor, University Professor entry-level position in Cuba). Marta Abreu Central University of Las Villas, September 1970 to January 1977, Santa Clara, Cuba
- Asistente (Assistant Professor, University Professor mid-level position in Cuba). Marta Abreu Central University of Las Villas, January 1977 to September 1981, Santa Clara, Cuba
- Asistente (Assistant Professor, University Professor mid-level position in Cuba). Jose Antonio Echeverria High Polytechnic Institute, September 1981 to June 1983, Havana, Cuba
- Profesor Auxiliar (Associate Professor, University Professor senior position in Cuba). Jose Antonio Echeverria High Polytechnic Institute, June 1981 to November 1991, Havana, Cuba

PROFESSIONAL MEMBERSHIPS

- Member of Association of Professional Engineers and Geoscientists of Alberta (APEGA)
 - Professional Engineer since September 28th, 2008, Calgary, Alberta, Canada
 - Non practicing since August 2016, reinstatement is available till July 2023
- Scientific Council Member
 - Instituto de Refrigeración y Climatización (Refrigeration and Air Conditioning Institute), SIME, 1988 to 1991, Havana, Cuba
 - Facultad Energética (Energy Faculty), Jose Antonio Echeverria High Polytechnic Institute, 1985 to 1987, Havana, Cuba
- Member of Commission B-2
 - International Institute of Refrigeration, 1976 to 1977, Paris, France

AWARDS

- Letter of the Dean of Mechanical Engineering Faculty of Jose Antonio Echeverria High Polytechnic Institute in recognition of the participation as volunteer in the construction works of University City, October, 1991, Havana, Cuba
- Letter from University Council and Rector of Jose Antonio Echeverria High Polytechnic Institute in recognition of the work developed as a member of the Examination Board of the Educational Category at Mechanical Engineering Faculty during 1989-1990 academic year, April 16, 1991, Havana, Cuba
- Medal Distinction for Cuban Education granted by the Government of Republic of Cuba in recognition of 20 + years of teaching, 1991, Havana, Cuba
- Distinguished Honors List of Mechanical Engineering Faculty in recognition for the work developed in the first semester of 1987-1988 academic year, Jose Antonio Echeverria High Polytechnic Institute, Havana, Cuba
- Medal for Literacy granted by the Government of Republic of Cuba in occasion of the 25th anniversary of the 1961-year Literacy Campaign in recognition of volunteering to teach, 1986, Havana, Cuba
- Letter of the Rector of Jose Antonio Echeverria High Polytechnic Institute in recognition of the work developed as a member of the Examination Board of the Educational Category of Assistant at Energy Faculty during Course 1985-1986 academic year, January 17, 1986, Havana, Cuba
- Recognized as the most distinguished teaching worker of Energy Faculty, Jose Antonio Echeverria High Polytechnic Institute in 1983-1984 academic year, Havana, Cuba
- Recognized as the most distinguished teaching worker of Energy Faculty, Jose Antonio Echeverria High Polytechnic Institute in 1982-1983 academic year, Havana, Cuba
- Research on the Cooling System of the Cold Storage Warehouses for Fruits and Vegetables in Tropical Ambient distinguished by Cuban Science Academy in 1982 as one of the most relevant in Physico-technical and Mathematical Science. Granted a diploma signed by Academy President Prof. , Ph.D., Wilfredo Torres Yribar, May 23, 1983, Havana, Cuba