



**CENTRO
STUDI
GALILEO**



EEC

TRAINING CATALOGUE

**Each course programme can be
tailored to participants' requirements**

**36 YEARS OF WORKING TOGETHER WITH LEADING UNIVERSITIES
AND THE MONTHLY MAGAZINE INDUSTRIA & FORMAZIONE**

Via Alessandria 26 - 15033 Casale M.to (AL) ITALY

Tel. +39 0142 452403 - Fax +39 0142 909841 email: corsi@centrogalileo.it - training@euenergycentre.org

**Websites of the Centro Studi Galileo group - the activities of education and information:
www.centrogalileo.it • www.associazioneatf.org • www.EUenergycentre.org**

- TRACAT - VII17 -

UNITED NATIONS - UNEP CSG ATF
TRAINING ACTIVITY AND INFORMATION



ADVANCED COURSE FOR REFRIGERATION TECHNICIANS

Analysis of the parameters necessary for planning.

Natural and forced convection, conduction, radiation, global heat transmission. Basic knowledge of the dynamics of fluids for the calculations of charge losses. Theoretical and practical thermodynamic cycles. Alternative compressors, theoretical and practical harmful volume calculations. Screw compressors. Exchangers with phase change, theory. Wet air, calculation of vapours, equation of water vapour, saturation pressure, absolute and relative humidity, enthalpy and density, Mollier diagram. Control valve for refrigeration circuits. Balance condition calculation for the preservation of perishable food. Thermodynamic calculation of a refrigeration plant. Calculation and choice of the evaporator and condenser of a refrigeration circuit in connection with the chosen ventilators and charge losses. Size and choice of compressors and refrigeration plant generally speaking.

Participants will be able to choose the subjects to be discussed.

Certificate presentation.

COURSE ON HFC, HCFC, NH₃ (AMMONIA) REFRIGERATION PLANTS AND STATIONS

Classification and utilization. For food industry in general. Dry stores for the preservation of fruit, meat, fish and vegetables. For chemical and pharmaceutical industries. Air conditioning, freezing tunnels. Compressors: screw compressors, centrifugal compressors, one-double phase compressors. Condensers: evaporative, tube condenser, plate condenser, air condenser. Evaporators: static evaporator, ventilated evaporator, tube evaporators, flooded evaporators. Feeding systems: thermostatic systems, pump systems. Water and /or low temperature liquid (chillers). Separation and recovery of oil from wet evaporators. A few examples of different kinds of projects, application calculations and operations. List of the main problems. Detection methods and solutions. A wide selection of plant schemes, their components and comparison with their enthalpy diagram.

Certificate presentation.



BASIC COURSE ON AIR CONDITIONING

First Day: basic knowledge: units of measurement, heat transmission, relative and absolute humidity, wet air changes. Normal operations: conditions of healthy operations, interaction between humans and surrounding environment, meaning of "air conditioning", simple heat balance: heat input and output, air change, calculation methods for different values, calculation examples, heat transfer. Second day: Different types of plants: split systems, multisplit systems, ventilation with and without primary air, canalized all air, simple sizing systems; analysis of different problems connected with installation and maintenance. Discussion and examples.

Certificate presentation.

PRACTICAL AND THEORETICAL COURSE ON INSTALLATION AND MAINTENANCE OF SPLIT PLANTS

First day: basic knowledge of refrigeration: physical quantities, measurement units. Analysis of the refrigerating circuit and its components: compressor, evaporator, condenser, valves, filters. Refrigerating plant functioning and its phases. Thermodynamic cycle. Gauge reading. Refrigerating fluids, R22 substitutes. Pressure-temperature connection in a split. Split and basic knowledge of its functioning. Choice and sizing of capillary tube. Split plant with heat pump. New and old refrigerating fluids together with retrofit explanation. Complete techniques of installation and list of different faults. Electrical and refrigerating connections. Different types of compressors (hermetic, reciprocating, rotary and scroll). Functioning techniques.

Second day: demonstration of the function of vacuum and charge stations and recovery systems: practice on vacuum, charge and recovery systems. leak detection, and tools, practice. Practice on refrigerating and heat pump split. Practice on working pressure and temperatures on split. Examples and analysis of faults and their repair. Metering cylinder recharge. General practice on repair and setting-up. Maintenance of split systems. Brazing.

Certificate presentation.



ADVANCED COURSE ON HEAT PUMPS

First Day: refrigeration circuits. Heat pump functioning. Vacuum/charge functioning and control. Defrosting problems. Installation characteristics.

Second day: Thermodynamic cycle, heat pump characteristics. Theoretical and practical functioning limits.

Third Day: VRV systems. Example using air-water. Discussion.

Certificate presentation.

COURSE ON CAR AIR CONDITIONING

Please ask for the detailed programme.

BASIC COURSE ON HEATING

This course, which refers to the law both at a theoretical and at a practical level, will consist of a thorough and critical review of the current law.

Unit of measure: heat transmission; examples of heat transmission calculations. Insulation. Fuels and their combustion. Polluting emissions. Private and industrial building heating: Thermic charge valuation. Examples of heat consumption. Heat plant calculations. Traditional plants, pipe and module plants. Project of a thermic station - Laws.

Certificate presentation.



CERTIFICATION ON REFRIGERANT HANDLING FOR EU CERTIFICATION SCHEME EC/303/2008

Personnel carrying out tasks on certain types of equipment must be certified or qualified.

Equipment:

Stationary refrigeration, air conditioning, heat pump and fire protection equipment.

Refrigerated trucks (above 3.5 t) and trailers.

Air conditioning equipment in road vehicles.

Tasks:

a) Installation, servicing, maintenance.

b) Repair.

c) Decommissioning.

d) Leakage checking.

e) Recovery.

Theoretical assessment 1.5 hours

Practical assessment 2.5 hours

INTERNATIONALLY RECOGNIZED CERTIFICATE FOR HANDLING REFRIGERANTS

