GALILEO TP
PROCESS EQUIPMENT

PROBHe

Automatic system for leak detection

GALILEO TP PROCESS EQUIPMENT S.r.l.
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Introduction

The machine **PROBHe** has been designed and built to be used in any kind of assembly lines of cooling units (refrigerators, deep freezers, air conditioners etc...) performing the evacuation, pressurization with nitrogen for mechanical stress test and gross leak test and pressurization by tracer gas (helium/hydrogen mix) for fine leaks. Furthermore **PROBHe** is able to measure the volume and the flow, the humidity and running the flushing test with nitrogen.

Technical features

Embedded control system

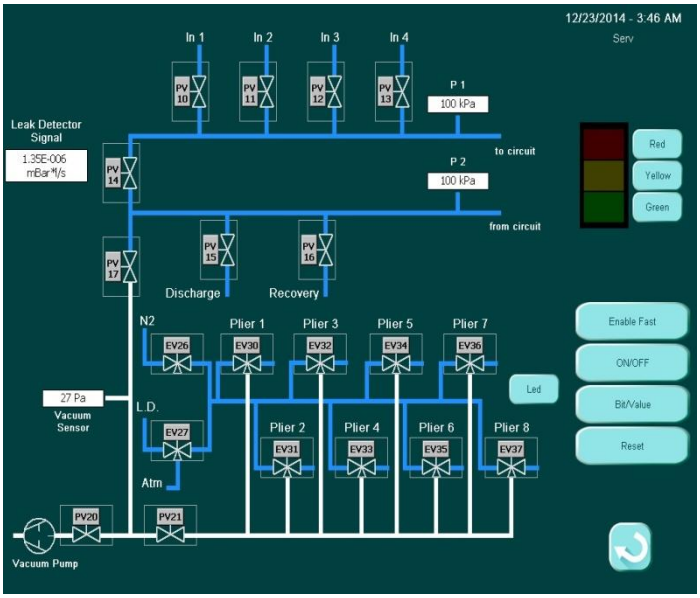
PC board GALILEO TP SGP32 V2 with microprocessor RISC 32 bit Freescale ColdFire® 5372L

User interface

Infrared color touch screen LCD 15" (1024X768) high brightness and designed for industrial environment with extreme temperatures and high humidity. *Durable, dirt-resistant and very responsi*ve. The infrared touch screen **can be operated with wet fingers or dirty gloves**. No physical nor electrical contacts are required for sensing method. Thus, the sensor is stress free. Thus, it is **highly durable**.

The infrared technology is also much stronger against electrostatic and magnetic noise

e.g. screenshot:



Vacuum line

The **PROBHE** is equipped by a double stage rotary vacuum pump D28 m3/h capable to reach a final vacuum of 1 x 10-2 Pa (1 x 10-4 mbar), with a pneumatic valve to keep out the vacuum pump and a Pirani sensor Galileo TP OG914 to measure the vacuum level reached during evacuation (dynamic measurement).

Valves group

The valves group is composed by :

- ✓ Up to four pneumatic valves for fluid inlet line
- ✓ two pneumatic valves for fluids discharge/recovery line
- ✓ one bypass valve
- ✓ one isolation valve for vacuum line
- ✓ two pressure sensors for measuring the pressure inside the piece under test both inlet and outlet side

Available models and accessories

Models	Max working pressure	Fluid inlet line	Number of filler
PROBHe	**45bar**	**2+2***	**2**
PROBHe HP	**140bar**	**4**	**2**

*optional

Main programmable process phases

PROBHe is able to perform up to 20 steps independent each other. For each step you can program the following phases, some ones can be programmed only if the corresponding option is enabled into the model of the machine:

Phase 1 – Evacuation

Phase 2 – pressure rise test

Phase 3 – pressurization

Phase 4 – Pressurization + clog test

Phase 5 – Drop test

Phase 6 – Drop test with sniffer

Phase 7 – Flow rate test

Phase 8 – Discharge

Phase 9 – Discharge with humidity measuring (only with option “humidity sensor”)

Phase A – Recovery

Phase B – Washing test

Phase C – Washing test with humidity measuring (only with option “humidity sensor”)

Phase D – Sniffer test

Phase E – Flow rate test (only with option “flow test”)

Phase F – Leak detection with tracer gas

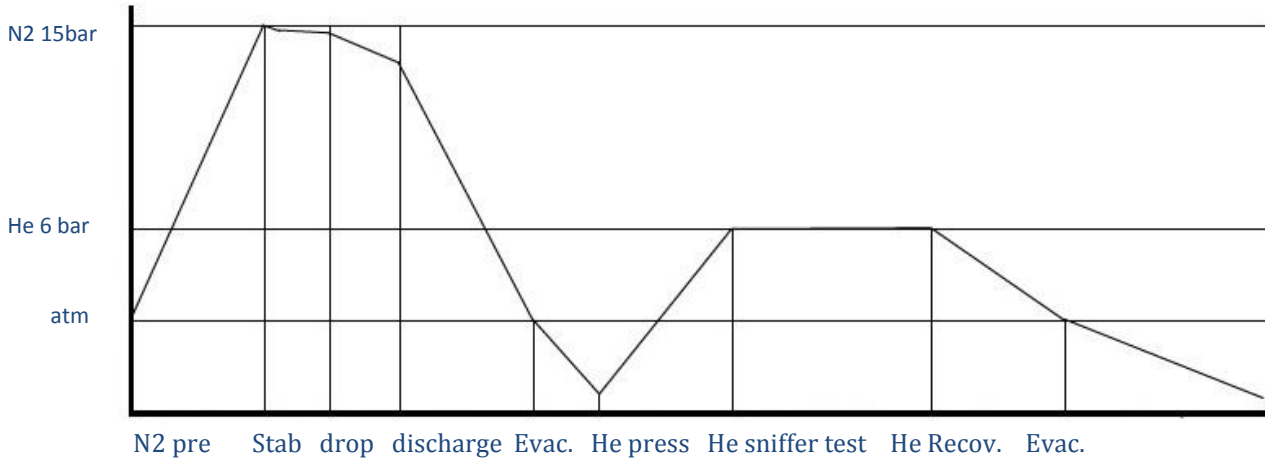
Phase G – Search equivalent refrigerant leaks

Phase H – Pneumatic connection (only with option “pneumatic connections”)

Phase I – Volume measurement (only with kit “volume measurement”)

Phase N – Waiting operator

e.g. flow diagram – domestic refrigerator



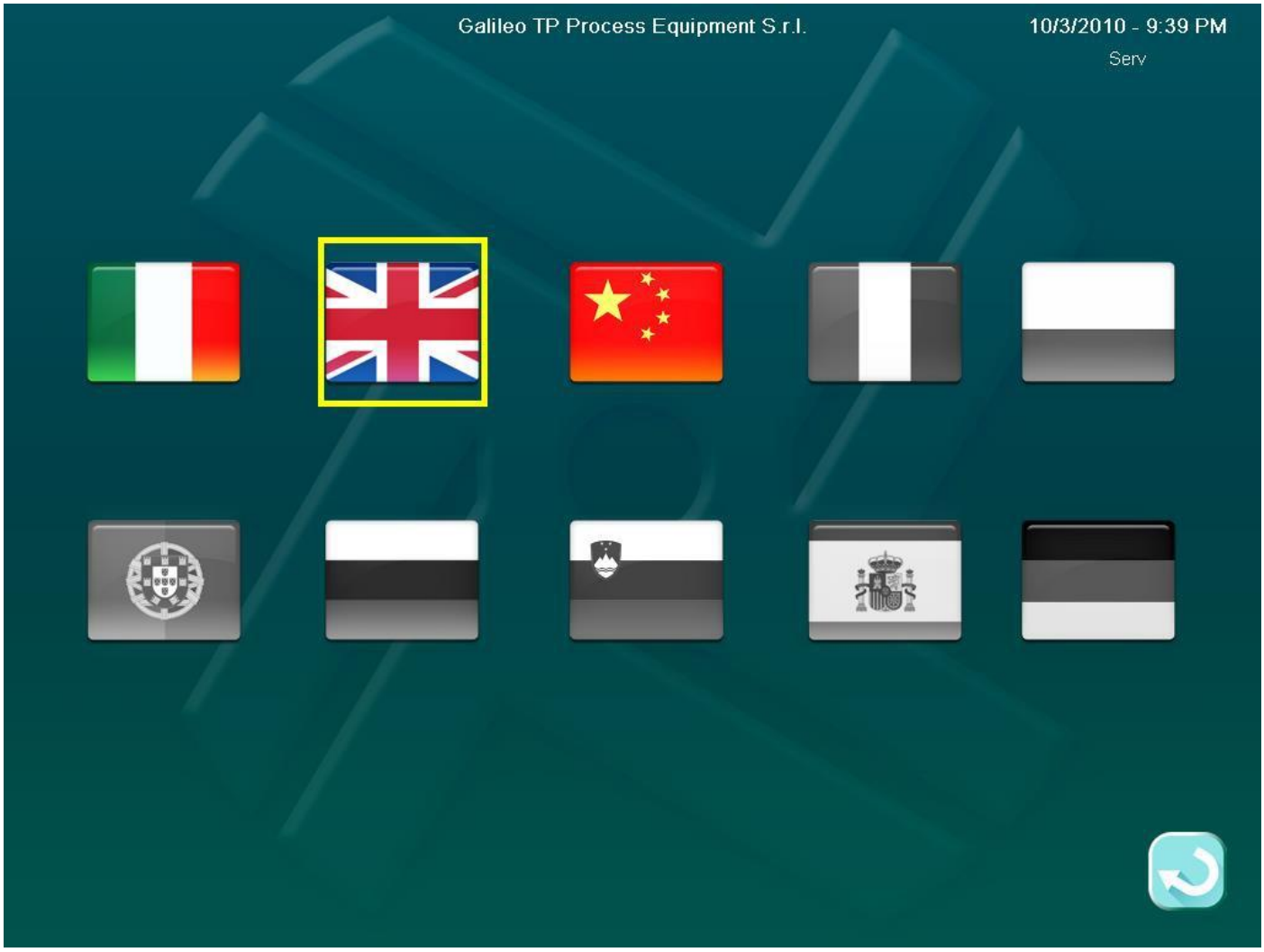
Software features

Two different privileged log-in levels with password:

1) Operator: working cycle access;
2) Maintenance/production/quality managers: diagnostics and programming access

Working cycle programming

Language programming



Serial Communication

You can choose the communication speed of the serial ports COM1 and COM2;

Display calibration values

All calibrations parameters can be displayed

Serial ports and interfaces

- ✓ COM1: serial port RS232 for barcode
- ✓ COM2: serial port RS232 for printer
- ✓ COM3: serial port RS485
- ✓ **Ethernet interface for software GEDA* (Galileo Equipment Data Acquisition) and/or data report to the PC.**
- ✓ USB port for mass storage connection (only for maintenance service)

GEDA management software

*The **PROBHe** comes with a complete integration with the **GEDA** system for data acquisition and statistics, remote programming as well as external supervision of the line:

-Cycle reports sent directly from the machine to your computer (always updated) in real time;

-Possibility to program the machine from the computer and vice versa;

- Working cycle start inhibition;

-Search by bar code reader, date and time or by model of machine;

-Production/maintenance/quality queries (alarm, cycles, failed pieces, passed pieces etc…);

-Possibility to print all information and report displayed;

-Possibility to export the cycle report to other programs like Office Excel;

- SQL interface;

Upgrade accessories list:

- ✓ Barcode reader
- ✓ Barcode reader wireless
- ✓ Kit light tower
- ✓ Kit interface external line
- ✓ Kit humidity sensor (not available hp version)
- ✓ Kit flow rate (not available hp version)
- ✓ Kit volume rate (not available hp version)
- ✓ Kit printer
- ✓ Pneumatic connections

PROBHe complies with the standards foreseen by CE directive (2006/42).

Electric and electronic fixtures complies with standards on electric safety (EN 60204-1) and on electromagnetic compatibility (EMC).

Data sheets

Number of phases in each work cycle	**Up to 20, programmable**
Sequence of phases in each work cycle	**Programmable by the user**
No. Programmable cycles	**100 (more upon request)**
Programming protection	**Account level protection**
No. fillers	**2**
Lenght of each filler	**3 m**
Filler quick couplers	**¼" Hansen, PCU ¼" female**
Units of measurement:	
Weight	**g, oz**
Vacuum	**Pa, µHg, mbar**
Pressure	**kPa, psi, bar**
Temperature	**°C, °F**
Time	**s**
Vacuum pump	**Double stage, 28 m^3/h**
Final vacuum	**<1x10^{-2} Pa (1x10^{-4} mbar)**
Dimensions (HxLxW)	**1410x700x800 mm**
Weight	**185 kg ProbHe -200 kg ProbHe HP**
Working temperature	**0 ÷ +50 °C**
Electric power supply	**Δ 200 ÷ 230 / Y 380 ÷ 415 V 50 Hz 3 Ph** **Δ 200 ÷ 230 / Y 460 V 60 Hz 3 Ph** **(others upon request)**
Power consumption	**900 W**
Noise level	**< 70 dB (A)**
Inlet fluids	**Nitrogen(dry air), Helium, Hydrogen mix**
Number of inlet valves	**Up to 4**
Max pressure inlet valve	**ProbHe 45bar** **ProbHe HP:1 inlet up 140bar , 3 inlet up to 80 bar**
Leak detector interface	**ECOTEC 3000, PROTEC, ASM 142, LDS 3000, Phoenix XL 300**

**data subject to change*