

## WL 315C Heat Exchanger Trainer



- \* Multipurpose trainer for examining various types of heat exchanger
- \* Processing of the measured data on a PC
- \* Detailed experiment instructions with complete illustration of theoretical fundamentals

### Technical Description

This trainer compares tubular, shell and tube, finned cross-flow (water-to-air) and plate heat exchangers. A jacketed vessel with stirrer and tube coil is also included. To perform the experiments the individual heat exchangers can be conveniently selected using valves on the front of the trainer.

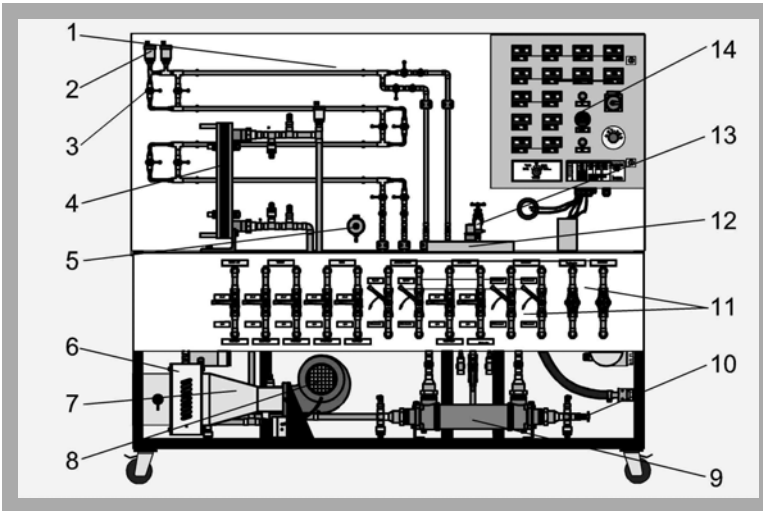
Comprehensive instrumentation provides temperature and flow rate data. The measured values are transmitted directly to a PC via USB. The data acquisition software is included.

A supply of hot and cold water is necessary for operation. This can be provided from the supplies in the laboratory or using the accessories for hot water supply (WL 312.10) and cold water supply (WL 312.11).

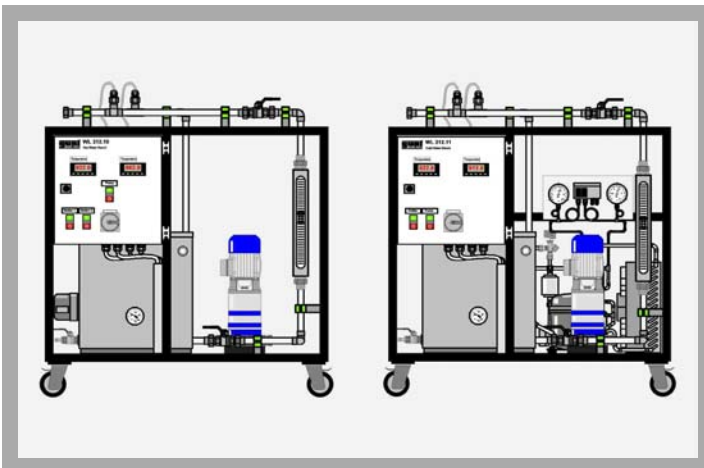
### Learning Objectives / Experiments

- Familiarisation with heat transfer processes
  - \* heat transfer
  - \* heat conduction
- Measuring of relevant temperatures and flow rates
- Determination of the heat transfer coefficient
- Preparation of temperature curves for the various types of heat exchanger
  - \* parallel flow
  - \* counterflow
- Comparison of various types of heat exchanger
  - \* plate heat exchanger
  - \* tubular heat exchanger
  - \* shell and tube heat exchanger
  - \* finned cross-flow heat exchanger
  - \* jacketed vessel with stirrer

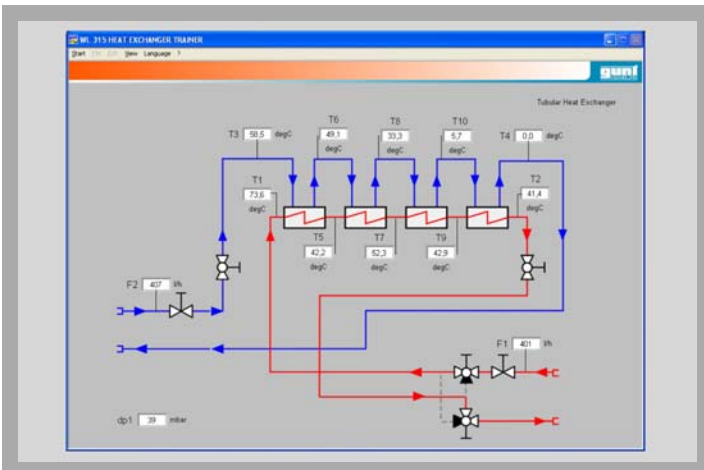
## WL 315C Heat Exchanger Trainer



1 tubular heat exchanger, 2 vent valve, 3 temperature sensor, 4 plate heat exchanger, 5 pressure sensor water, 6 finned cross-flow heat exchanger, 7 inlet duct, 8 fan, 9 shell and tube heat exchanger, 10 water drain valve, 11 adjustment fittings, 12 jacketed vessel with stirrer, 13 drain valve, 14 switch cabinet



Supply of hot water (WL 312.10) and cold water (WL 312.11). This ensures that the WL 315C can be operated as an independent system with a closed water circuit.



Software screenshot: process schematic of a tubular heat exchanger

### Specification

- [1] Trainer for examining various types of heat exchanger
- [2] Electromagnetic flow meter
- [3] Finned cross-flow heat exchanger with fan
- [4] Switch cabinet with digital displays
- [5] Operating mode selected via valves
- [6] Water supply stations available for independent operation with closed water circuit (WL 312.10 and WL 312.11)
- [7] LabVIEW software for data acquisition via USB under Windows XP or Windows Vista

### Technical Data

Plate heat exchanger

- heat transfer surface area: approx. 0.26m<sup>2</sup>
- capacity: 15kW
- 10 plates

Tubular heat exchanger

- heat transfer surface area: 0.1m<sup>2</sup>

Shell and tube heat exchanger

- capacity: 13kW

Finned cross-flow heat exchanger

- heat transfer surface area: approx. 2.8m<sup>2</sup>
- max. flow rate fan: 780m<sup>3</sup>/h
- max. pressure difference fan: 430Pa

Jacketed vessel with stirrer

- heat transfer surface area (vessel): 0.16m<sup>2</sup>
- heat transfer surface area (coil): 0.17m<sup>2</sup>

Measuring ranges

- differential pressure air: 0...10mbar
- differential pressure water: 0...1000mbar
- flow rate: 0...3m<sup>3</sup>/h
- temperature: 0...100°C

### Dimensions and Weight

l x w x h: 2010 x 800 x 1760 mm

Weight: approx. 200 kg

### Connections

230V, 50/60Hz, 1 phase or 120V, 60Hz, 1 phase or 120V, CSA, 1 phase

### Scope of Delivery

- 1 trainer
- 1 LabVIEW software CD + USB cable
- 1 manual

### Order Details

060.315C0 WL 315C Heat Exchanger Trainer

## **WL 315C**    *Heat Exchanger Trainer*

Available Accessories:

**Product no.    Order text**

060.31501    WL 315.01    Water/Steam Heat Exchanger Unit

060.31502    WL 315.02    Electrical Steam Generator 10kW

060.31210    WL 312.10    Hot Water Bench

060.31211    WL 312.11    Cold Water Bench