

TACOSOL LOAD TERA L

STORAGE TANK LOADING STATION WITH HIGH-EFFICIENCY PUMPS



Connection-ready storage loading station for efficient thermal transfer of solar energy with and without dual-zone loading of the storage tank

DESCRIPTION

The TacoSol Load Tera L storage loading station performs the zone-based loading of one or two storage tanks via a thermal solar installation according to the available flow temperature.

INSTALLATION POSITION

The station is fully preassembled, connection-ready and can be fitted directly to the storage tank or to the wall. Only the storage and collector sensors still need to be fitted.

OPERATION

The TacoSol Load Tera L is a compact, zone-based loading station equipped with EPP design insulation for loading one or two storage tanks by means of a solar system. The solar energy recovered is transferred via a high-efficiency stainless steel plate heat exchanger to the storage tank(s). The innovative preset controller undertakes the task of ensuring optimal return supply to the storage tank(s) by regulating the speed of the primary pump.

ADVANTAGES

Compact

Equipped with all the necessary valves and components, ideally complements the TacoTherm Fresh Tera C fresh hot water station

Secure

Intrinsic safety of the system thanks to an integrated safety subassembly

Simple

Station is fully preassembled and supplied with ready-to-connect wiring

Efficient

Highly efficient system operation due to permanent air separation, use of high-efficiency pumps as well as maximum solar yield from the roof owing to the possible dual-zone loading of the storage tank.

The controller actuates the three-way switching valve, serving either storage return I or II. This ensures optimal zone loading within the storage tank.

BUILDING CATEGORIES

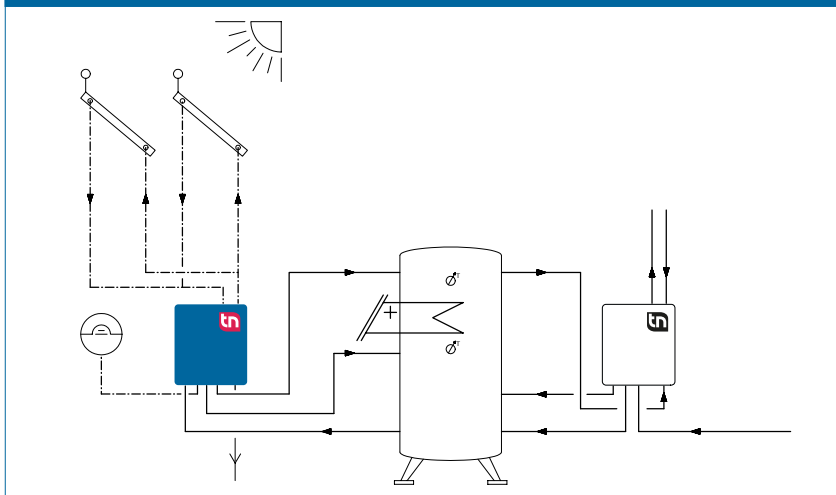
- Single family homes, multiple dwelling units
- Hotels and restaurants
- School buildings and sports facilities
- Commercial and industrial buildings, industrial facilities

EXPANSION OPTION

The TacoTherm Fresh Tera C fresh hot water station ideally complements the innovative TacoSol Load Tera L stratified storage tank loading system.

It is used for hygienic fresh water production and boasts the same compact dimensions, the same design and the same innovative components as the TacoSol Load Tera L.

SYSTEM/BASIC DIAGRAM



TACOSOL LOAD TERA L | STORAGE TANK LOADING STATION

SPECIFICATION TEXT

See www.taconova.com

TECHNICAL DATA

General

- Controller with display
- Weight (empty): approx. 25 kg
- Overall dimensions (incl. hood):
W 656 mm × H 930 mm × D 197 mm

Material

- Designer hood made from EPP with plastic surround
- Pumps: Cast iron
- Valve housing: Brass
- Pipes: DN 20, stainless steel 1.4404
- Plate heat exchanger: Stainless steel
- Plates and connector pieces: Stainless steel 1.4401
- Solder: 99.99 % copper
- Seals: AFM 34, flat sealing

Primary side

- Max. operating temperature $T_{0\ max}$
 - flow: 110 °C
 - return: 95 °C
- Max. operating pressure $P_{0\ max}$: 6 bar
- Primary pump: WILO Stratos Para 15/1-7
- Ventilator group with integrated shutoff, filling, flushing and drainage facility
- Safety valve 6 bar

Secondary side

- Max. operating temp. $T_{0\ max}$: 110 °C
- Max. operating pressure $P_{0\ max}$: 3 bar
- Measuring range of temperature gauge and flow meter: 2 – 40 l/min
- WIL0 Yonos Para 15/7.5 PWM
- Zone switching valve DN 25

Performance data

- See design diagram

Electrical connection data

- Mains voltage: 230 VAC ± 10 %
- Mains frequency: 50...60 Hz
- Power consumption: max. 180 W
- Fuse 2 AT
- Protection type: IP 40

Flow media

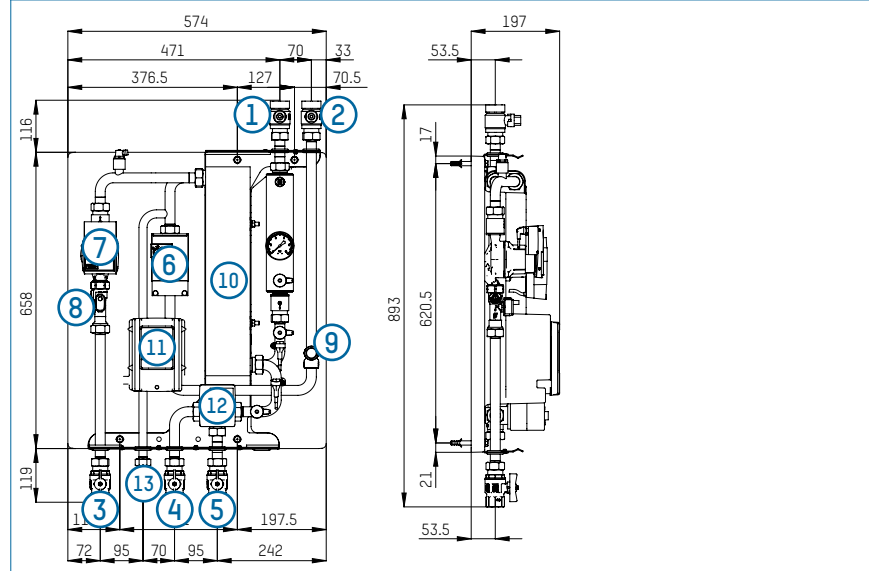
- Heating water (VDI 2035; SWKI BT 102-01; ÖNORM H 5195-1)
- Typical glycol mixtures up to 40%

TYPE OVERVIEW

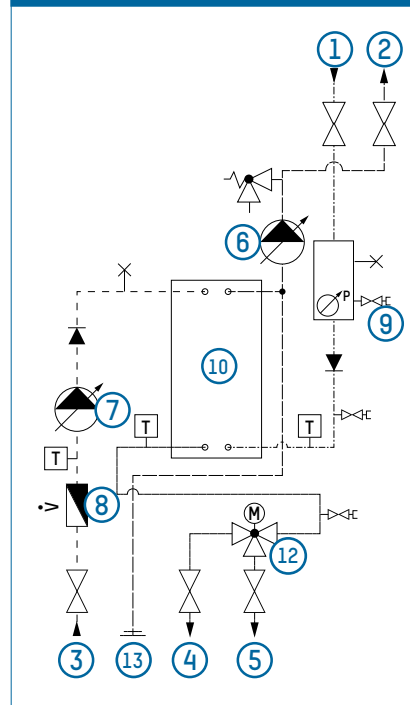
TacoSol Load Tera L | Storage tank loading Station

Order no.	Rp	Version	Equipment
271.5522.000	1" IT	L	With dual-zone loading

DIMENSIONAL DRAWING



HYDRAULIC DIAGRAM



- 1 Primary solar flow
- 2 Primary solar return
- 3 Secondary storage return
- 4 Secondary storage flow 1
- 5 Secondary storage flow 2
- 6 Primary solar pump
- 7 Secondary storage tank loading pump
- 8 Flow rate sensor
- 9 Solar safety valve
- 10 Heat exchanger
- 11 Controller
- 12 Zone switching valve
- 13 Expansion vessel connection

CHARACTERISTIC OF PLATE HEAT EXCHANGER

BASICS

Calculation values 500 [W/m²]

LEGEND / EXPLANATION

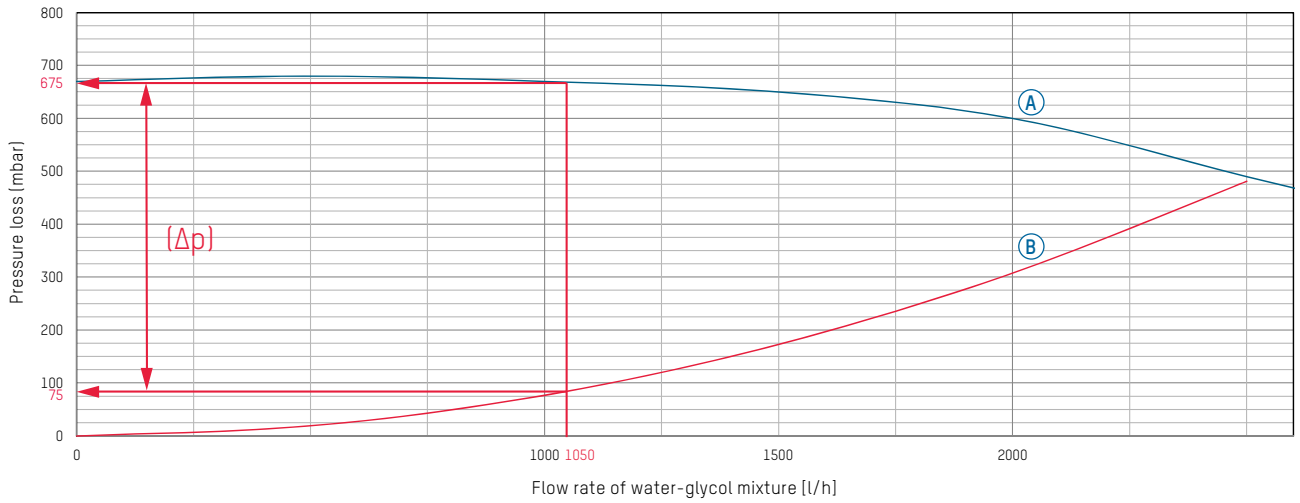
- ΔT <5K Efficient operation
- ΔT <7K Reduced yield
- ΔT >7K Considerably reduced yield

AVERAGE LOG TEMP DIFFERENCE [LOG DELTA T]

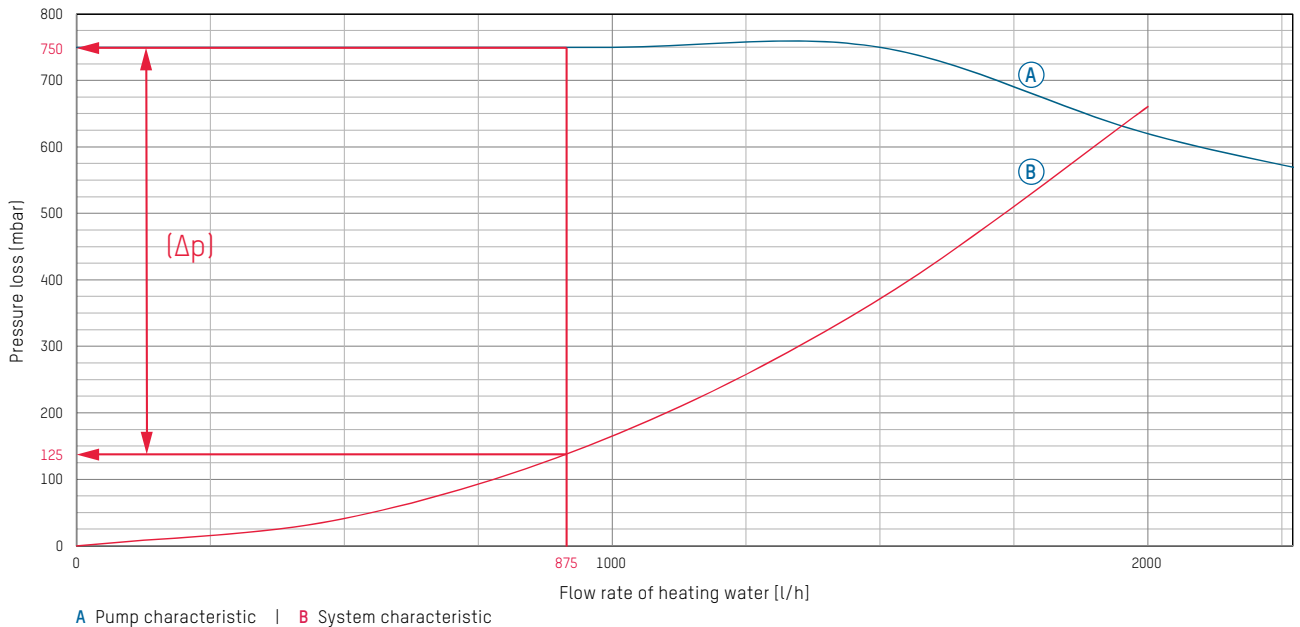
Spec. flow rate [l/(h*m ²)]	Collector surface (m ²)				
	20	30	40	50	60
10	8.5	9.8	10.8	11.4	-
25	4.9	5.9	6.3	6.5	6.8
35	4.0	4.8	5.0	5.3	-
50	3.3	3.8	-	-	-

FLOW AND PRESSURE LOSS DIAGRAMS

A) Pump characteristic - System characteristic primary side



B) Pump characteristic - System characteristic secondary side



EXAMPLE OF INTERPRETING THE FLOW RATE AND PRESSURE LOSS DIAGRAMS

Given

- Collector surface: 30 m²
- Average log temp difference: ≤ 4.8 K
- Spec. flow rate 35 l/h × m²

Sought

- Residual pump head primary circuit
- Residual pump head secondary circuit

Approach

- The primary flow rate of 1,050 l/h

is calculated based on: Collector surface × Specific flow rate

- In Diagram A) the primary pressure loss at the intersection point of the system characteristic is 75 mbar.
- The residual pump head is 675 mbar. Discounting the pressure loss this gives rise to a residual pump head of 600 mbar (Δp).
- In Diagram B) the primary flow rate is 875 l/h. The difference between the flow rates is based on the

different thermal capacities of the heating water on the secondary side and the ethylene-glycol mixture on the primary side.

- The secondary pressure loss at the intersection of the system characteristic is 125 mbar.
- The residual pump head is 750 mbar. Discounting the pressure loss this gives rise to a residual pump head of 625 mbar (Δp).