



# CTT & WPU

## Cable Test Terminations & Water Processing Unit



*CTT & WPU with 110 kV XLPE cable*

### THE PERFECT CONNECTION

#### CTT

- Short tubes for easy handling and less cable waste
- Rugged design
- Hydraulic jacking system (manual or automatic)

#### WPU

- New service friendly design
- Unique deionization system minimizes operating cost
- Pneumatic valves ensure partial discharge free operation
- Modern user friendly touch screen interface
- Easy switch between AC and Impulse tests

### APPLICATION

Cable test termination systems are used for high voltage testing of power cables. Before high voltage (AC or Impulse) can be applied the power cable need to be pre-pared and terminated in a special way in order to control the electrical field distribution along the ends.

The Haefely water filled Cable Test Terminations CTT and Water Processing Unit WPU offer the perfect connection for these tasks. The new generation of CTT's are optimized for AC routine testing and completed by a modern, easy to use Water Processing Unit WPU.

All HV tests required by the relevant standards can be performed, such as:

- AC voltage tests
- Partial discharge measurements
- Impulse voltage tests (LI and SI)
- Loss factor ( $\tan \delta$ ) measurements
- Breakdown tests (step tests)
- Long duration tests (continuous duty)

### FEATURES

- Rated AC voltages from 100 kV up to 800 kV
- Diameters of max. 115, 130 or 165 mm across outer semiconducting layer

When a cable is being tested, partial discharge measurement can be followed by an impulse voltage test and by another partial discharge measurement without having to reconfigure the test arrangement. A loss factor measurement can be made with minor modifications to the arrangement. The cable is prepared in the same way as for slip-on terminations i.e. by stripping the cable to the outer semiconducting layer and removing the outer semiconducting layer.

## TECHNICAL DATA CTT LINE

Model	Rated voltages		Partial discharge level		Cable dia.	Dimensions								Weight	Jacking	WPU
	AC	LI / SI *	at Un	at 0.8 Un		A	B	C	D	E	F	G	H			
	kV	kV	pC	pC	mm	mm	mm	mm	mm	Mm	mm	mm	mm	kg	man / mot	qty
CTT 100-115	100	275 / -	≤ 2	≤ 1	115	1250	1000	1950	1375	1415	975	1285	1200	205	manual	1
CTT 200-115	200	400 / -	≤ 2	≤ 1	115	1615	1250	2200	1800	1800	975	1300	1200	205	manual	1
CTT 250-115	250	650 / -	≤ 2	≤ 1	115	2000	1500	2500	2200	2200	975	1425	1200	230	manual	1
CTT 350-115	350	800 / -	≤ 2	≤ 1	115	2350	1800	2900	2200	2530	1100	1500	1600	240	manual	1
CTT 200-130	200	400 / -	≤ 2	≤ 1	130	1630	1300	2400	1800	1800	1130	1450	1200	300	manual	1
CTT 250-130	250	650 / -	≤ 2	≤ 1	130	2010	1500	2650	2150	2200	1130	1450	1200	325	manual	1
CTT 350-130	350	800 / -	≤ 2	≤ 1	130	2350	1800	3050	2600	2530	1240	1640	2100	350	man / aut	1
CTT 450-130	450	1100 / 900 *	≤ 2	≤ 2	130	3000	2200	3600	2600	3150	1240	1720	2100	400	man / aut	1
CTT 600-130	600	1300 / 1000 *	≤ 2	≤ 2	130	3800	2600	4300	3300	3700	1400	1940	2100	425	man / aut	1
CTT 700-130	700	1600 / 1200 *	≤ 5	≤ 2	130	4550	3400	5000	3300	4600	1600	2200	2100	450	automatic	1
CTT 350-165	350	800 / -	≤ 2	≤ 1	165	2350	1900	3200	2300	2400	1400	1800	2150	725	automatic	1
CTT 450-165	450	1100 / 900 *	≤ 2	≤ 2	165	2950	2300	3900	2800	3000	1550	2200	2150	775	automatic	1
CTT 600-165	600	1300 / 1000 *	≤ 2	≤ 2	165	3600	2700	4400	3300	3700	1550	2200	2150	820	automatic	1
CTT 700-165	700	1600 / 1200 *	≤ 5	≤ 2	165	4650	3500	5450	3800	4700	1805	2600	2150	870	automatic	2
CTT 800-165	800	1900 / 1300 *	≤ 5	≤ 2	165	5150	3900	5800	4300	5200	1805	2600	2150	905	automatic	2

### Rated voltages

AC = 50/60 Hz  
 LI = 1-5/50μs, pos/neg  
 SI = 250/2500μs, pos/neg  
 \* for SI please contact us

### Cable diameter

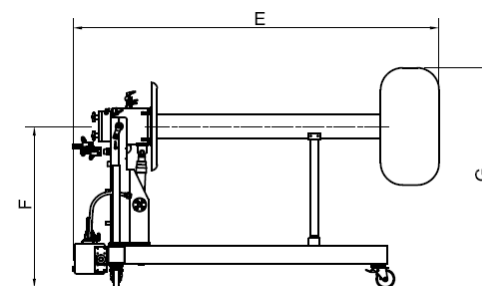
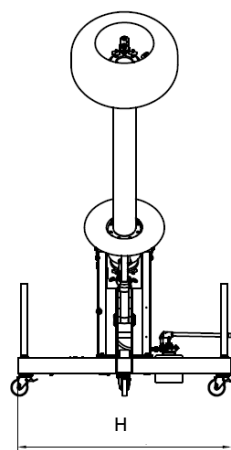
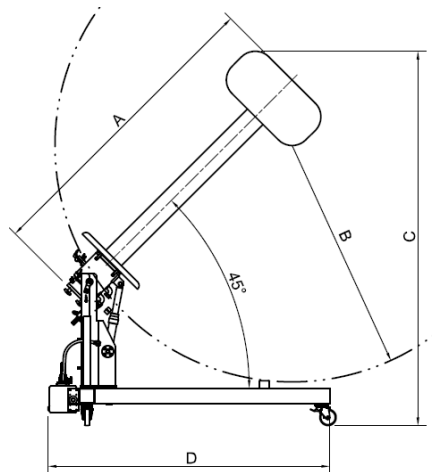
Maximum cable diameter across outer semiconducting layer

### Dimensions

Exact dimensions may slightly differ per CTT

### Weight

Weight of one termination w/o water





## WPU – WATER PROCESSING UNIT



## DESCRIPTION

The water processing unit WPU serves as a cooling system by dissipating the heat generated by the cable test process. WPU can adjust precisely and maintain the conductivity of the water.

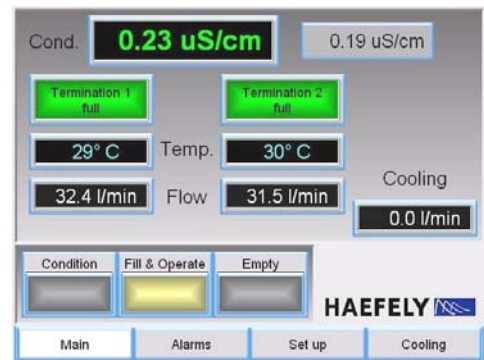
In the AC mode, the CTT and WPU form a closed water circuit. Since the treated and deionized water remains in the system, the consumption of deionization resin is minimized.

## FEATURES

- Modern user friendly touch screen interface for intuitive operation
- Quick connection to hoses by Kamlok™ couplers
- Modes (AC/Impulse) are simply selected by the touch screen, no reconfiguration needed
- Pneumatic valves ensure partial discharge free operation
- Cooling capacity up to 120 kW in a compact unit
- 500 liter tank for deionized water ensures large thermal time constant
- Fully automatic conductivity control
- Optional remote control (e.g. from HV control room)
- Easy accessible container for exchange of deionization resin
- All components used are corrosion-resistant
- Self-priming pumps eliminate start-up problems
- Low audible noise

## TECHNICAL DATA

Water capacity (deionised water)	500 l
Max. temperature (deionised water)	60°C
Conductivity control range	0.1 – 20 µS/cm
Max. cooling capacity	120 kW
Max. ambient temperature	35°C
Min. ambient temperature	3°C
Max. cooling water temperature	20°C
Min. flow rate in external cooling circuit @ 20 °C	85 l/min
Couplers for external cooling circuit and terminations	1"
Weight (without water)	370 kg
Length	1.35 m
Width	1.45 m
Height	1.6 m
Power supply 50/60 Hz	230 V / 16 A
Compressed air supply (not required with option WPU AIR)	5 – 10 bar



*Touchscreen panel*



## TECHNICAL SUPPORT SERVICES

A cable test termination is always part of a complete system which typically consists of a high-voltage source, test object, measuring instruments, high-voltage connections, earth connection and cooling water supply.

The support provided by our specialists during installation, system integration and initial operation activities as well as the training on the operating personnel ensures that the test terminations are optimally used.

## SCOPE OF SUPPLY

### CTT xxx-yyy

- 2 terminations on separate trolleys
- 1 mould for cable seals, including silicone compound for 4 seals

### WPU

- 1 water processing unit
- 4 hoses 1", each 12 m long
- 2 x 25 l of deionization resin
- 1 spare filter cartridge for main filter
- 1 spare parts case

### CTTS xxx-yyy

- 1 CTT xxx-yyy according above
- 1 WPU according above (2 WPU for CTT 700/800-165)

## SOLUTIONS FROM ONE SOURCE

Haefely offers equipment for complete HV testing laboratories for cable manufacturers.

- Routine AC withstand voltage test sets
- Shielded rooms for partial discharge testing
- Partial discharge detectors,  $\tan \delta$  measuring systems, resistance bridges
- Engineering package for setting-up HV test fields
- Impulse generators for type tests
- Load cycle test sets

A long list of satisfied customers vouches for our expertise, arguably the longest in the industry.

Contact us with your requirements for a complete testing solution.

## OPTIONS

### CTT

- CTT RS 1 repair kit for CTT tubes
- CTT A xxx-yyy 1 replacement outer tube for CTT xxx-yyy
- CTT I xxx-yyy 1 replacement inner tube for CTT xxx-yyy
- CTT SD 5 kg silicone sealing compound

### WPU

- WPU MB 2 x 25 l of deionization resin
- WPU FB 1 replacement filter bag for resin
- WPU FC 2 replacement filter cartridge for main filter
- WPU AIR Built-in mini compressor for air valves
- WPU REM For remote control of WPU contact us

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