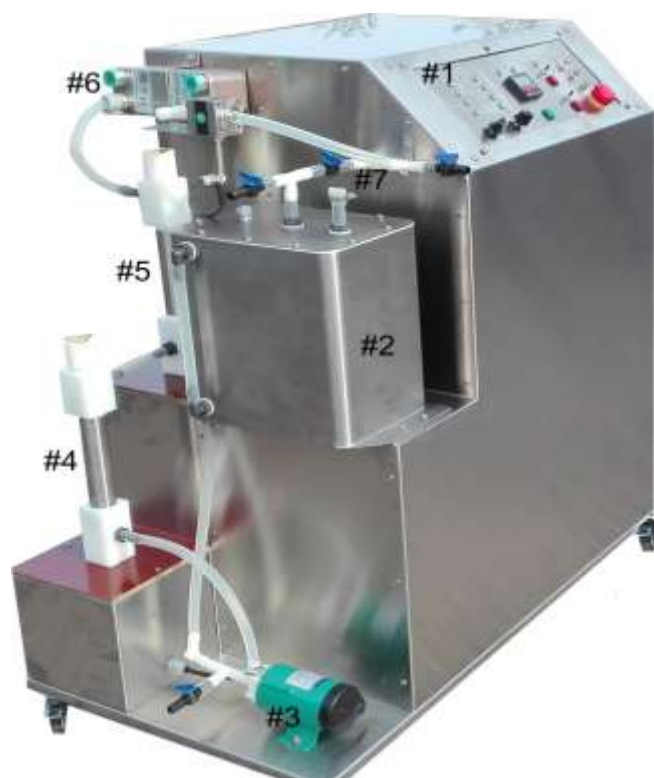


# Two-Stage PEF Pilot Sterilization System WT-PEF-PV1&2

for juices, liquid and solid foods, standard V1 & optional V2:



## Broadly variable pulse parameters, V1:

- Pulse rates in Hz: fixed 25, 125, 250, 500 plus variable 12 to 250Hz;
- Pulse durations in  $\mu$ s: 2,5, 5, 10, 25 plus variable 2,5-25; 50 $\mu$ s - optional.
- Selectable time for pulsing: 1s-24h.
- HV from the power supply varies 1-15kV, max 2kW providing electrical fields between PEF electrodes in both chambers: 5-35 kV/cm.

## Fixed pulse parameters:

- Shape: positive rectangular, fronts of ca.1  $\mu$ s;
- Flatness: ca. 2% at 5 $\mu$ s, ca.10% at 25 $\mu$ s;

## Pulse Controls by a digital 4 channel scope:

- Pulse Current A(t) and kV(t) from its sensors plus controls for pulse frequency and pulse durations from the internal pulse generator, all together to 4 BNC outputs on the control panel. Both A(t) & V(t) depend on selected parameters and el. conductivity of a treated media. Product of A(t) x V(t)x pulse duration x Hz is the full power to the PEF chamber and is to be limited to ca. 20% below the power supply limit of 2kW.
- **T°C controls:** in-&-out flows at PEF chamber.
- **Flow meter** 0.5-15l/min (30-900l/h).

## Major parts:

- #1: The control panels with analogue controls: On-Off switch, 2 rotary switchers to select 4 pulse rates and 4 pulse durations with LED control lights plus for both gradual changes, HV selector with an analogue meter, the switch for a pump, HV on-off switch, timer for pulsing, emergency OFF-red push-button, 4xBNC connectors for a scope.
- #2: batch vessel for a treated juice,
- #3: magnetic pump, 6-12l/min for filtered juices,
- #4 and #5 treatment PEF chambers, #5 can be replaced with a flat PEF chamber for V1&V2,
- #6: juice cooler (tap or refrigerated water);
- #7: valve systems to select between a flow-through and a batch circulation treatment;

*Bacteria sterilization in log reduction depends on initial condition of juices & results of a process development: 250l/h ~ 4-6 logs, 500 l/h ~ 2-3 logs are possible.*

## The system dimensions:

Width: 790 mm, Height: 1000 mm plus wheels with stoppers 70mm; Depth: B=590 mm; Weight =ca. 80kg.

**Electrical:** 1 phase 230VAC, 12A, 2kW, EU plug.

## 3 types of PEF chambers.

### For liquids - coaxial PEF chambers:

for **V1**: active length 200 mm & 4.8mm gap; Chambers are from a food grade polished stainless steel, insulators - a food grade white Polyamide. **-co-liner** chamber is the option for both V1&V2.

**For solids:** is the flat (static) PEF chamber as on the right, with a sample diameter of 100mm and its thickness (which is the HV gap) of 3-24mm.



## Maintenance:

Easy to flash the whole system, major parts are sold on the open market. Silicon hoses are replaced after changing juices etc.

## Optional Paid Customization Items (V2):

25kV power supply 2kW or 3 kW, electrical fields 5-50kV/cm, other pulsed parameters, 4 channel digital scope, a co-liner PEF chamber, other customized to your objectives PEF chambers, e.g. for high viscosity fluids (honey, creams, etc.).

Practical cost-effective pilot **PEF** system for liquids & solids.