

## Turnkey Manufacturing Solutions

### Background

A new filtration company approached Frank Roth Co. for support in developing and manufacturing an electro-static filtration system used to filter sub-micron particles from industrial fluid streams. The system incorporated high voltage electrodes to charge sub-micron particles in the fluid stream. The fluid was agitated after charging and mixed so as to agglomerate the particles into a size that could be trapped by a conventional filter. The existing design consisted of expensive canisters and mixing apparatus. The electronic control system was not robust.

### Objective:

The company needed to quickly lower cost and obtain a CE mark for its units since its primary market was in Europe. It also needed a reliable source of supply with a certified quality system to provide assurance that the product was manufactured and tested to ISO9000 standards.

### Reducing the cost

Frank Roth Co., developed a sheet metal tower design to incorporate the fluid flow, and electronic controls. The electronics were redesigned to incorporate a micro-processor based system on a single circuit board to lower cost.

**Electrode design** – One of the largest cost elements was the electrode design and canister to house the electrode. Frank Roth Co developed a novel new flexible electrode made from conventional springs with various coil spacings. The springs were nested to provide a tortuous path for the fluid. The resultant electrode was flexible allowing it to be assembled into much less expensive vessels. The electrode mixing effect improved the agglomeration activity of the product, resulted in a 15% better mixing rate and was 60% less costly to manufacture compared to the original electrode.

### CE Achievement

Frank Roth Co. designed and developed the electronics and packaging for the product and worked with a testing agency achieving CE approval in 6 months.

### Manufacturing

Frank Roth Co. fabricated and sourced components, and developed an assembly line to build the units for US, European and Japanese customers. The product was built, documented and tested to agreed upon specifications. The manufacturing line was developed over a 3 month timeframe.

The units were shipped direct to customers with no intervention by the original company.

