Welcome to Elea, we supply Pulsed Electric Field (PEF) Systems to the food, beverage and scientific sectors.

Elea was established in 2012 with the objective to manufacture and market PEF technologies created and developed at DIL.

At Elea we supply equipment suitable for a wide range of applications and outputs.

We work closely with our customers to create new PEF process applications tailored to suit specific needs.

Since the successful commercial introduction of PEF, Elea continues to develop novel PEF applications in conjunction with DIL.

Elea’s Food-Physics™ approach to furthering food science allows the best matching of available resources to suit your need.

We are one of the worlds leading innovation and technology providers to the food and beverage industry.
At Elea, we have developed a new ground-breaking approach to processing we call **Food-Physics™**.

It's aim is simple, to create value by maximizing the effectiveness of natural raw materials.

Getting more by doing less.

Our first success has been to take Pulsed Electric Field (PEF) Technology from the laboratory to the factory.

With PEF we can generate and accurately measure significant increases in yield, freshness and flavour preservation across a wide range of food types.

**PEF** brings positive and dramatic changes to manufacturing. Improving output, reducing labour costs, streamlining supply chain logistics and curtailing retail waste.

Business is greater with **Food-Physics™**.
Pulsed Electric Field (PEF) is quick, flexible, energy-efficient and because heat is minimized, products have a longer shelf life whilst maintaining better nutritional value than with traditional food processing techniques.

PEF works by puncturing the cell membrane, whatever the size of cell. The process is targeted, gentle and clean.

As a result, we measure dramatic increases in yield, the preservation of pigments, antioxidants and vitamins.

PEF makes healthy products last longer.

As PEF is applicable to all products where quality counts it will become the technology of choice within industry.
PEF science

With treatment times measured in seconds and with continuous operation and energy efficiency, PEF delivers more by doing less.

The cell membranes of microorganisms, plant or animal tissue can be made permeable by using Elea PEF technology. This process of electroporation is suitable for use in a broad range of food and bio-process using low levels of energy.

PEF improves the extraction rates of juices, sugars, colours and other active substances and significantly extends shelf life.

Diffusion processes, like water removal from plant or animal tissue or the absorption of marinades, spices and auxiliary substances are accelerated thereby saving valuable time in the production process.

How PEF Works

Cell cytoplasm is surrounded by a thin semi-permeable layer, the cell membrane.

By exposing the cell to a pulsed electrical field the cell membrane becomes punctured. This effect is called electroporation which is the loss of the cell’s barrier function allowing access to the cell’s valuable contents.

1. Flow direction of liquid transport
2. Treatment area
3. Electric field direction
4. Electrode

Killing Bacteria, creating value

Loss of cell membrane barrier function causes microbial kill. Despite its targeted effect on cell membranes PEF does not affect vitamins, flavors or proteins. This allows microbial decontamination of heat sensitive liquids whilst retaining their sensorial and functional value.
Working with Elea

Elea and our partner DIL are driven by world leading food technologists.

We can take your concept from an initial idea, through research to final production.

Our scientists are able to research and develop highly efficient process solutions using Food-Physics™ and our designers and engineers can put it into practice.

With cutting edge Food-Physics, chemistry and microbiology laboratories alongside unrivalled pilot hall facilities, Elea offers a new opportunity to create new process, products and to measure value.

Our ability to evaluate process, ingredient performance, and end product stability enables the successful implementation of new technology. As demonstrated by the commercial adoption of PEF.
Elea PEF engineering

Elea designs and manufactures machines of outstanding quality for your production line.

Our focus is on physical processes to enhance food quality and safety.

Each Elea system is built with the highest quality German engineering to withstand continuous operation and deliver maximum performance and energy efficiency.

Since 2009, PEF systems designed by DIL have been installed successfully into production lines worldwide.

PLC integration and extensive monitoring options guarantee ease of operation. Each one of our machines is designed to be easily implemented into your existing production line.

Robust build and solid state typology make our technology extremely reliable and we have 100% reliance rate.

All food and industry standards are incorporated into our machines designs. We also have the capacity to adapt and customise our machines to your specific requirements.
Elea is able to supply and support PEF systems globally.

We offer a world wide service, with highly skilled and trained engineers, ready to help with installation and maintenance.

The design of Elea PEF machines are suitable for any regional installation and control system requirements. And adhere to all regional certification requirements.

Elea supports the option for remote monitoring services and maintenance.