Pulsed Electric Field (PEF) Processing and Applications Training Course

Professional Development Training Course Outline

Category	Food processing and Technology	**Duration**	5 Days
Base Fee	$1,500 USD	**Delivery Mode**	Online / On-site Hybrid

Course Introduction

Pulsed Electric Field (PEF) processing is a cutting-edge non-thermal food preservation technology that enhances food safety, quality, and sustainability while minimizing nutrient loss. This advanced technique is transforming the food industry by providing energy-efficient alternatives to traditional thermal processing methods. With growing global demand for healthier, fresher, and longer-lasting food products, PEF technology is increasingly recognized as a sustainable and scalable solution for industrial food processing and biotechnology applications.

Pulsed Electric Field (PEF) Processing and Applications Training Course is designed to provide participants with in-depth technical expertise, practical applications, and industry-specific case studies on PEF processing. It will explore innovative uses in juice processing, dairy treatment, microbial inactivation, plant-based product preservation, and pharmaceutical applications. By integrating trending food technology strategies with sustainability practices, participants will gain skills that align with industry 4.0 standards, green processing, and consumer-driven innovation.

Programme Curriculum

Pulsed Electric Field (PEF) Processing and Applications Training Course

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Course Objectives

1. Understand the fundamentals of Pulsed Electric Field technology and its principles.
2. Explore the latest applications of PEF in food, beverages, and pharmaceuticals.
3. Learn non-thermal microbial inactivation for improved food safety.
4. Evaluate energy efficiency and sustainability benefits of PEF.
5. Examine industrial-scale equipment and system design for PEF applications.
6. Compare PEF with traditional food preservation methods.
7. Analyze nutritional retention and sensory quality improvements using PEF.
8. Assess regulatory frameworks and international safety standards.
9. Understand integration of PEF with digital monitoring and automation.
10. Gain practical insights through industrial case studies and best practices.
11. Explore business opportunities and market adoption trends for PEF.
12. Develop strategies for quality control and process optimization.
13. Apply PEF research for future innovation in biotechnology and health industries.

Organizational Benefits

- Improved food safety and extended shelf-life solutions.
- Adoption of energy-efficient, sustainable processing technologies.
- Increased product competitiveness through higher nutritional value.
- Enhanced compliance with global food safety standards.
- Strengthened innovation capacity for R&D teams.
- Cost savings from reduced energy consumption.
- Greater consumer trust through cleaner-label products.
- Competitive advantage in plant-based and functional food markets.
- Future-proofing organizations with Industry 4.0 integration.
- Enhanced organizational reputation as sustainability leaders.

Target Audiences

1. Food technologists and scientists
2. Process engineers and production managers
3. Quality assurance and regulatory professionals
4. Research and development specialists
5. Academic researchers in food technology and biotechnology
6. Entrepreneurs and food start-up founders
7. Pharmaceutical and nutraceutical professionals
8. Sustainability and innovation managers

Course Duration: 5 days

Course Modules

Module 1: Introduction to Pulsed Electric Field Technology

- Principles of PEF processing
- Electrical and biological interactions in foods
- PEF versus conventional thermal processing
- Global trends and adoption in industries
- Safety and operational considerations
- Case study: Fresh juice microbial inactivation

Module 2: Equipment and System Design

- PEF chamber configurations
- Pulse generator technologies
- Energy consumption optimization
- Scale-up challenges and solutions
- System monitoring and automation
- Case study: Industrial-scale dairy processing

Module 3: Microbial Inactivation and Food Safety

- Mechanisms of microbial cell disruption
- Pathogen inactivation in liquids and solids
- Foodborne illness risk reduction
- Comparative microbial studies
- Application in minimally processed foods
- Case study: Pathogen control in ready-to-drink products

Module 4: Nutritional and Sensory Quality

- Retention of vitamins and antioxidants
- Flavor and texture preservation
- Nutritional profile improvements
- Consumer perception of PEF products
- Comparative sensory analysis
- Case study: Enhancing functional beverages

Module 5: PEF in Plant-Based and Dairy Alternatives

- Processing plant-based milk and protein products
- Shelf-life extension of vegan alternatives
- Improving digestibility and nutritional quality
- Supporting the clean-label movement
- Application in fermented plant foods
- Case study: Soy milk and oat beverage preservation

Module 6: PEF in Pharmaceutical and Biotechnology Applications

- PEF for cell permeabilization
- Application in drug delivery systems
- Extraction of bioactive compounds

- Use in bioreactors and microbial fermentation
- Enhancing yield in nutraceutical production
- Case study: Bioactive extraction from medicinal plants

Module 7: Sustainability and Energy Efficiency

- Environmental impact assessments
- Energy savings in comparison to heat processing
- Integration with renewable energy sources
- Reduction of carbon footprint
- Alignment with global sustainability goals
- Case study: PEF application in eco-friendly food companies

Module 8: Regulatory Standards and Future Directions

- Global food safety standards for PEF
- Compliance with FDA and EFSA guidelines
- Market challenges and acceptance
- Future innovations in pulsed processing
- Emerging trends in industrial biotechnology
- Case study: Market adoption strategies in Europe

Training Methodology

- Instructor-led lectures with interactive discussions
- Case study analysis from real-world industry projects
- Practical demonstrations and simulations
- Group exercises for problem-solving and application
- Hands-on project assignments with feedback
- Peer-to-peer learning and knowledge sharing

Register as a group from 3 participants for a Discount

Send us an email: info@fineskilltrainingcenter.org or call *+254769199797*

Certification

Upon successful completion of this training, participants will be issued with a globally- recognized certificate.

Tailor-Made Course

We also offer tailor-made courses based on your needs.

Key Notes

a. The participant must be conversant with English.

b. Upon completion of training the participant will be issued with an Authorized Training Certificate

c. Course duration is flexible and the contents can be modified to fit any number of days.

d. The course fee includes facilitation training materials, 2 coffee breaks, buffet lunch and A Certificate upon successful completion of Training.

e. One-year post-training support Consultation and Coaching provided after the course.

f. Payment should be done at least a week before commence of the training, to Fineskill Training Center account, as indicated in the invoice so as to enable us prepare better for you.

Upcoming Scheduled Sessions

Start Date	End Date	Location	Price
23 Nov 2026	27 Nov 2026	Online	$1,000
23 Nov 2026	27 Nov 2026	Physical	$1,500
23 Nov 2026	27 Nov 2026	Physical	$3,000
23 Nov 2026	27 Nov 2026	Physical	$3,000
23 Nov 2026	27 Nov 2026	Physical	$6,000
23 Nov 2026	27 Nov 2026	Physical	$4,500
23 Nov 2026	27 Nov 2026	Physical	$6,000
23 Nov 2026	27 Nov 2026	Physical	$6,000

Ready to enroll or request a customized program? Book online or contact us:

Register Online Now

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