Enhancing sustainable and green leather technology in Indonesia

NEWSLETTER

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Project 101128907 — ELEGTEC — ERASMUS - EDU - 2023 - CBHE

Improving Student Capacity Building

STUDENT TRAINING AT EGE UNIVERSITY, TURKEY

Venue: *Faculty of Engineering, Ege University, Izmir, Turkey* ***Date:*** June 16-27, 2025

As part of the Erasmus+ CBHE program, ELEGTEC (Enhancing Sustainable and Green Leather Technology in Indonesia) successfully organized the Summer Training on Leather Technology from June 16–27, 2025. The training took place at the Faculty of Engineering, Department of Leather Engineering, Ege University, Izmir, Turkiye, and was attended by student representatives from Universitas Gadjah Mada (UGM), Universitas Hasanuddin (UNHAS), and Universitas Mataram (UNRAM). The program was officially opened by Prof. Mete Mehmet Mutlu, ELEGTEC Project Coordinator from Ege University. In his remarks, Prof. Mete expressed his appreciation for the active participation of Indonesian students and highlighted the importance of cross-border knowledge exchange in strengthening the global leather industry.

The training offered a comprehensive curriculum on sustainable leather technology and quality control, designed to enhance participants' understanding of best practices in the European leather industry.

Topics covered included general concepts in quality control, international standards and organizations, conditioning and sampling methods, chemical and physical analysis of leather, as well as critical issues related to restricted substances in leather products.

Participants also received hands-on training in complete leather processing, from pre-tanning and tanning to post-tanning and finishing. In line with the program's theme of sustainable and green leather technology, the sessions also introduced innovative biobased alternatives for eco-friendlier tanning methods. To complement classroom and laboratory sessions, participants visited a local tannery and a modern slaughterhouse in Izmir, observing firsthand the efficiency, time management, and hygiene standards applied in Turkey's leather industry. This field experience provided valuable insights into the integration of advanced technology and modern practices in leather production.

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ACTIVITIES OF THE PROJECT SO FAR

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ACTIVITIES OF THE PROJECT SO FAR

STUDENT TRAINING AT NTUA, GREECE

Venue: *School of Chemical Engineering, National Technical University of Athens (NTUA), Greece.*
Date: June 30 – July 11, 2025

Following the successful training in Izmir, Turkey, the Erasmus+ ELEGTEC Project (Enhancing Sustainable and Green Leather Technology in Indonesia) continued its international training program at the School of Chemical Engineering, National Technical University of Athens (NTUA), Greece, from June 30 to July 11, 2025. The program brought together students from Universitas Gadjah Mada (UGM), Universitas Hasanuddin (UNHAS), and Universitas Mataram (UNRAM) to further strengthen their knowledge in sustainable leather technology. The training was officially opened by Prof. Constantina Kollia, ELEGTEC Coordinator at NTUA, who emphasized the importance of mastering instrumental chemical analysis as a foundation for developing a modern, environmentally responsible leather industry. In her address, Prof. Kollia highlighted that techniques such as AAS, GC-MS, ICP-OES, FTIR and RAMAN Spectroscopy are not only essential for ensuring leather quality but also play a critical role in monitoring waste and environmental impacts.

Over the course of two weeks, students participated in lectures, laboratory sessions, and field visits focused on instrumental chemical analysis techniques, environmental management, and sustainability in the leather sector, the last being offered by CRETHIDEV. In the laboratory, they gained hands-on experience with advanced analytical instruments, conducted measurements such as pH, conductivity, COD, BOD, TOC, and detection of Cr^{6+} levels in wastewater—key indicators in evaluating the environmental impact of tanning processes.

The program also included a visit to the Lavrion Technological & Cultural Park of NTUA, a multidisciplinary research hub integrating engineering, environmental sciences, and cultural studies. This visit allowed students to explore innovative approaches to industrial waste treatment and inspired ideas for ethical and sustainable practices in the leather industry.

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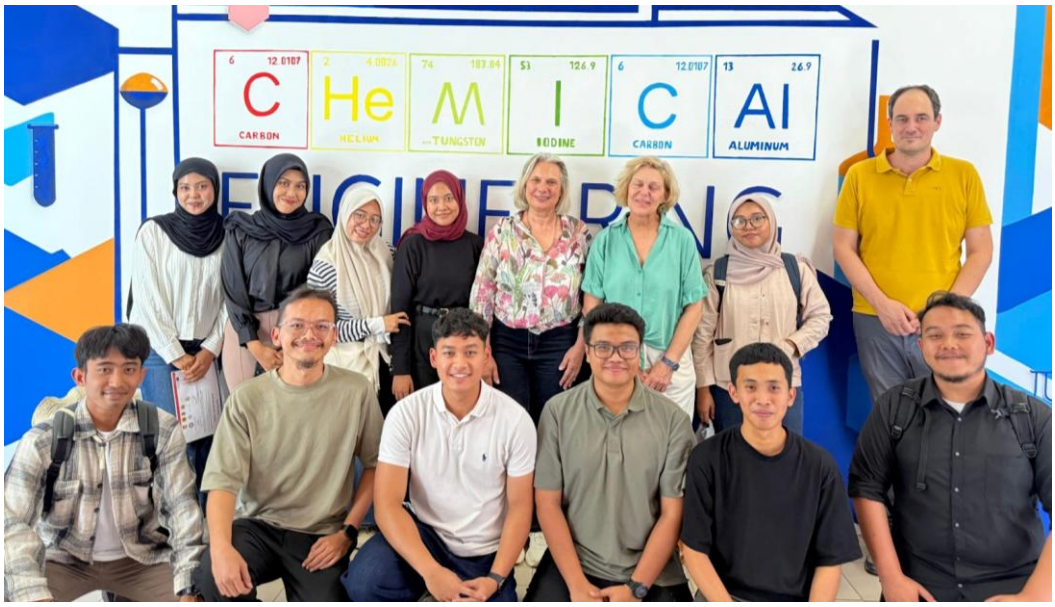

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STUDENT TRAINING AT UNIVERSITY OF PISA, ITALY

Venue: *Department of Civil and Industrial Engineering and the Department of Chemistry l and Industrial Chemistry, University of Pisa.*
Date: June 14-25, 2025

The Erasmus+ program ELEGTEC (Enhancing Sustainable and Green Leather Technology in Indonesia) held another international training in Italy from July 14 to 25, 2025. The training took place at the University of Pisa—specifically in the Department of Civil and Industrial Engineering and the Department of Chemistry and Industrial Chemistry—as well as at the PO.TE.CO Leather Research and Training Center. The program was attended by students who explored in depth the application of circular economy principles in the leather industry and sustainable waste management technologies.

The training was officially opened by Prof. Maurizia Seggiani from the University of Pisa. In her remarks, she emphasized the importance of this program for Indonesian participants who are currently preparing to develop an environmentally conscious leather industry.

Over the two-week program, participants studied various waste management methods and innovations for utilizing by-products from leather tanning. They received both theoretical and hands-on training in processes, such as chromium recovery from wastewater, protein recovery from fleshing and shaving wastes, and hydrolysis of solid tannery wastes to produce collagen hydrolysates.

The training also introduced participants to green chemistry approaches in tanning processes, including the replacement of sodium sulfide (Na_2S) with hydrogen peroxide (H_2O_2) during liming. Laboratory sessions included practical work on pyrolysis as well as innovative methods for extracting tanning agents from biomass. Notably, secang wood from Indonesia was tested for its potential as a source of vegetable tannins in the leather industry. The program also featured industrial visits to two modern tanneries, Volfoni and Settebello, along with advanced wastewater treatment facilities, such as Aquarno and Cuoiodepur, which operate integrated waste management systems. Here, participants observed first-hand how tannery and municipal wastes are efficiently processed and transformed into reusable resources. The training also facilitated networking opportunities through discussions with the chemical company Alpachem and the Italian Tanners' Association, creating a platform for knowledge exchange and potential collaboration between academia and industry.

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ACTIVITIES OF THE PROJECT SO FAR

STAFF TRAINING AT ITALY

Venue: *Department of Civil and Industrial Engineering and the Department of Chemistry and Industrial Chemistry, University of Pisa.*
Date**:** July 21 - 25, 2025

As part of the Erasmus+ ELEGTEC Project (Enhancing Sustainable and Green Leather Technology in Indonesia), a staff training program was held at the University of Pisa from July 14 to 30, 2025. This training brought together lecturers from Universitas Gadjah Mada (UGM), Universitas Hasanuddin (UNHAS), and Universitas Mataram (UNRAM), along with representatives from Indonesia's leather industry. The program was designed to strengthen academic capacity, encourage knowledge transfer, and build stronger collaboration between universities and the leather sector. Participants engaged in intensive workshops and discussions covering sustainable tanning technologies, circular economy practices, green chemistry applications, and innovative approaches to waste and by-product management.

In addition to academic sessions, the staff training also featured industrial visits to leading Italian tanneries and wastewater treatment facilities. These visits provided valuable insights into how Italy, a global leader in leather production, has integrated sustainability and innovation into its industry. The participants were also able to exchange ideas directly with Italian experts, companies, and associations, paving the way for future cooperation. This activity marked an important step in enhancing the role of Indonesian universities as Centers of Excellence for Sustainable Leather Technology. By combining academic expertise with industry experience, the training is expected to accelerate the green transformation of Indonesia's leather sector and foster long-term partnerships with European institutions.

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STAFF MEETING AT ITALY

Venue: *Department of Civil and Industrial Engineering and the Department of Chemistry and Industrial Chemistry, University of Pisa.*
Date: July 28 - 29, 2025

In parallel with the training, a series of staff meetings were also conducted to carefully review the progress of the Erasmus+ ELEGTEC Project and to set clear directions for the upcoming phases. These meetings served as an essential forum for constructive dialogue among academic representatives from Universitas Gadjah Mada (UGM), Universitas Hasanuddin (UNHAS), Universitas Mataram (UNRAM), and their European partners, including the University of Pisa and other collaborating institutions. By bringing together diverse perspectives, the meetings ensured that the project's achievements were evaluated comprehensively and that strategic adjustments could be made to maximize its long-term impact.

The staff meetings provided a structured platform for discussing a wide range of topics, including project milestones achieved to date, curriculum development for sustainable and green leather technology, and opportunities for expanding joint research initiatives. Particular attention was given to the integration of sustainability principles into teaching materials, the development of new course modules, and the potential for student and staff exchanges to further strengthen academic collaboration between Indonesia and Europe. In addition to academic discussions, the meetings also highlighted the importance of engaging with industry stakeholders. Dialogue with representatives of Indonesia's leather industry underscored the need to align project activities not only with academic goals but also with the practical requirements of the sector.

Topics such as technology transfer, industry-driven research, and collaborative innovation were emphasized as key pathways for ensuring that the outcomes of the ELEGTEC Project remain relevant and beneficial for local communities and industries. By combining institutional strategies with industry input, the staff meetings reinforced the project's broader vision of bridging education, research, and real-world application. They also fostered mutual understanding and trust among partners, paving the way for sustained collaboration beyond the project's immediate timeline. Ultimately, these meetings underscored the project's commitment to positioning Indonesian universities as active contributors to global sustainability efforts while simultaneously strengthening their roles as Centers of Excellence for Sustainable Leather Technology.

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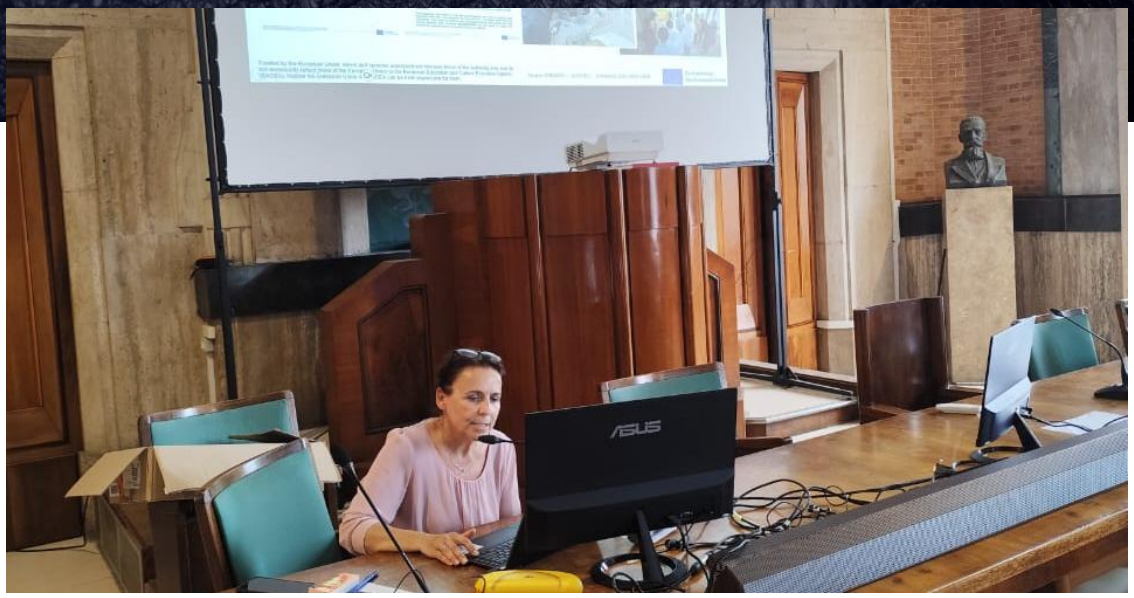

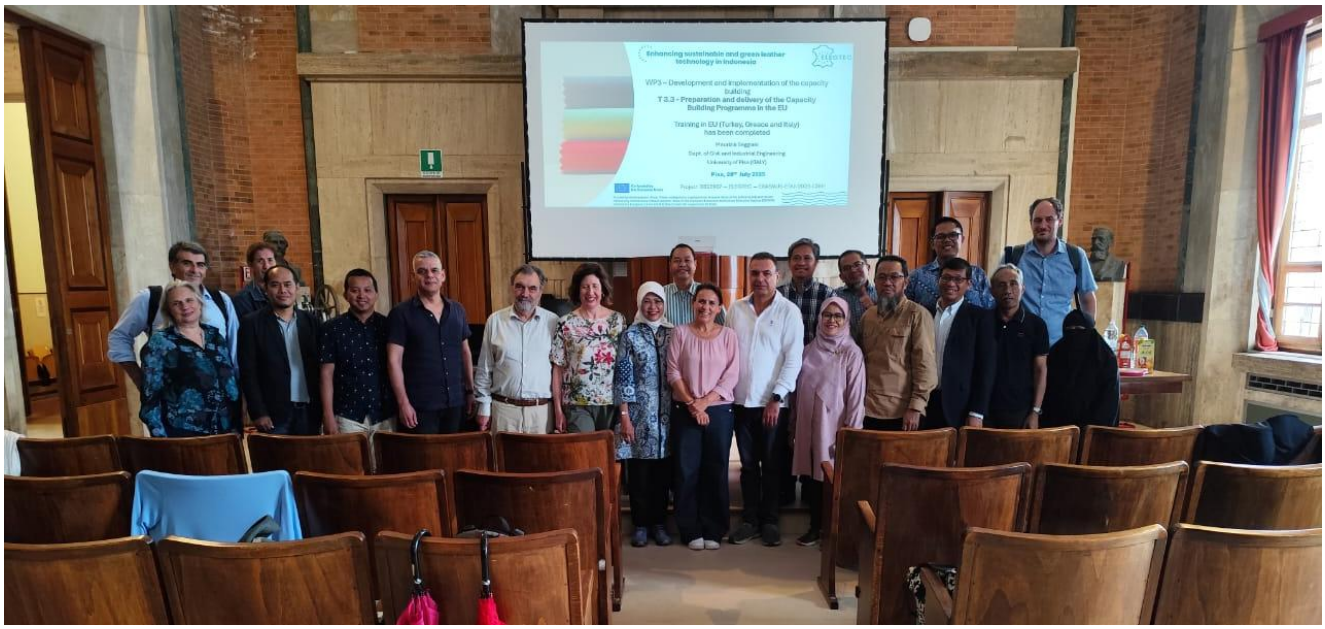

PARTNERS

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P1. EGE University (EGE)
Turkey

P2. National Technical University of Athens (NTUA)
Greece

P3. Creative Thinking Development (CRETHIDEV)
Greece

P4. University of Pisa (UNIPI)
Italy

P5. CGS. di Coluccia Michele & C. (CGS)
Italy

P6. University of Gadjah Mada (UGM)
Indonesia

P7. University of Hasanuddin (UNHAS) Indonesia

P8. University of Mataram (UNRAM)
Indonesia

P9. Center of Leather, Rubber, and Plastics (CLRP)
Indonesia

P10. Indonesian Tanners Associations (ITA)
Indonesia

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PROJECT CONTACTS

http://elegtec.eu

elegtec@gmail.com

Elegtec Project

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