Challenge Based Learning Approach for a Craft Mezcal Kiln Energetic Redesign

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Abstract : Mexican Mezcal industry has reached attention during the last decade due to it has been a popular beverage demanded by North American and European markets, reaching popularity due to its crafty character. Despite its wide demand, productive processes are still made with rudimentary equipment, and there is a lack of evidence to improve kiln energy efficiency. Tec21 is a challenge-based learning curricular model implemented by Tecnológico de Monterrey since 2019, where each formation unit requires an industrial partner. “Problem processes solution” is a formation unity designed for mechatronics engineers, where students apply the acquired knowledge in thermofluids and apply electronic. During five weeks, students are immersed in an industrial problem to obtain a proper level of competencies according to formation unit designers. This work evaluates the competencies acquired by the student through qualitative research methodology. Several evaluation instruments (report, essay, and poster) were selected to evaluate etic argumentation, principles of sustainability, implemented actions, process modelling, and redesign feasibility.

Keywords : applied electronic, challenge based learning, competencies, mezcal industry, thermofluids
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