Extract of the paper "Interpretation of cavitation using CFD simulation as a low-cost learning activity compatible with e-learning"

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Abstract

In this conference paper, an activity based on computational fluid dynamics that allows STEM students to know the phenomenon of cavitation is proposed. Cavitation is a dangerous phenomenon that occurs in pressurized fluid when they rapidly change of pressure in a liquid and a small vapor-filled cavity is generated in regions where the pressure is low. These cavities (or bubbles) are highly damaging to machines and fluid systems. Due to its dangerousness, it is necessary for the engineer to know the consequences of the cavitation and the factors involved in the phenomenon, in order to design solutions that avoid or minimize the damage caused. The design process of the activity starts with a critical analysis to cover the requirements that allow the activity to be carried out in the simplest way possible, using a model and a simplified computational pipeline that allows maximum adaptation to the real phenomenon without the need for laboratory equipment so that it can be integrated into subjects in the field of fluid-mechanics and maintenance engineering.

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Educational innovation; Computational Fluid Dynamics (CFD); E-Learning; Engineering; Simulation; Industry 4.0; Fluid-mechanical; Mechanical Engineering

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