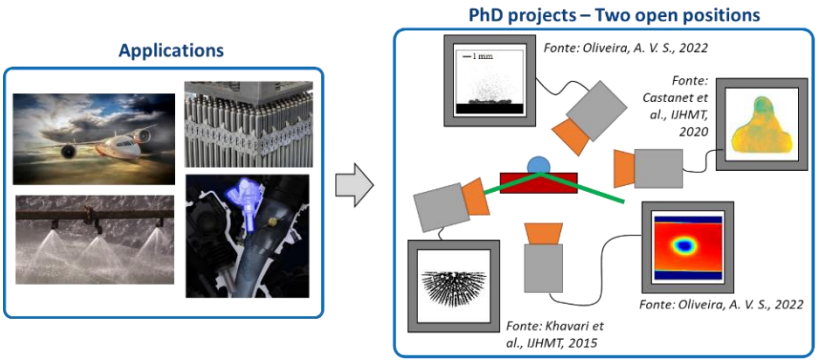
CALL FOR DIRECT DOCTORAL DEGREE WITH FAPESP FUNDING

THERMAL-HYDRAULICS CHARACTERIZATION OF MULTIPLE DROPLET IMPACT AND SPRAYS ON A HEATED WALL USING COMBINED AND SIMULTANEOUS HIGH-SPEED OPTICAL TECHNIQUES



INFORMATION

Supervisor: Arthur V. S. Oliveira (avs.oliveira@usp.br)

Beginning: January/February 2023

Domain: Thermal and fluids engineering

Requirement: Good scholar history

Time dedication: Full time

FAPESP project: Experimental study of droplets impact onto heated walls using combined optical techniques: single droplets, multiple droplets and sprays (Process 2021/01897-0)

OBJECTIVES

Although many researchers have studied droplet impact on heated walls and spray cooling, most of them used limited instrumentation to characterize the fluid dynamics and heat transfer processes before, during and after the droplet impact. These limited measurements impede to characterize completely the heat transfer phenomena involved in this process. Moreover, more understanding is necessary on multiple droplet impact and the effect of the interaction on the wall cooling. We are building a new experimental bench at EESC/USP to characterize multiple droplet impact onto heated walls and spray cooling using four different high-speed imaging techniques combined (up to 20,000 fps): infrared thermography to measure the wall temperature; 2cPLIF to measure the liquid temperature; shadowgraphy to measure the droplet size, shape and velocity; and TIR to measure the solid-liquid contact area. Both PhD projects involve working with these four techniques.

A FAPESP scholarship is ensured, including financial support to move to São Carlos. The main FAPESP project is in collaboration with the Université de Lorraine, in France, where part of the project will take place in a co-supervision agreement where a double diploma is expected from USP and UL.

Application: e-mail your CV and scholar history to avs.oliveira@usp.br until 30/10/2022.