Heat transfer enhancement with corrugated tubes
Numerical and Experimental work

Gonçalo Granjal Cruz
Laboratory of Thermofluids, Combustion and Energy Systems
Center for Innovation, Technology and Policy Research IN+

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Supervisor(s): Prof. Ana Moita
Prof. Miguel Mendes

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Motivation and Context

Exhaust Heat Recovery system T. Wang, 2001

Plate fin compact heat exchanger Incropera, 2007
Motivation and Context

Review works show a **heat enhancement** obtained when **swirl** is induced in the flow either by active enhancement techniques, where external power is required, and by **passive methods**, that resort to causing **secondary flows** via **geometry changes** or extended surfaces.

![Evolution in corrugation publications](image)

**Corrugation geometry characteristic dimensions**

M. Sheikholeslami, 2015
Conclusions

- The corrugated geometry leads to higher heat transfer accompanied by increase pressure losses due to the induced swirl in the flow.

- The thermal performance factor, key in the design of heat exchangers, presents the corrugated geometry as more efficient solution, mainly in the low turbulent regime.

- Experimental work clearly defines the transition region and the numerical work allows the identification of thermal hotspots.