Abdelhafid Boussouf University Center – Mila
Institute of Science & Technology
Process Engineering – E2
Heat Transfer

Academic year: **2024-2025** Instructor: **Dr. Mohamed BOUTI**

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Homework n°02

Exercise

Consider a steam pipe of length **L = 20 m**, inner radius **r_1 = 6 cm**, outer radius **r_2 = 8 cm**, and thermal conductivity **k = 20 W/m·°C**, as shown in **Figure 1**. The inner and outer surfaces of the pipe are maintained at average temperatures of **T_1 = 150 °C** and **T_2 = 60 °C**, respectively.

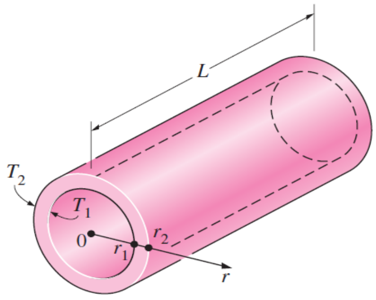

Figure 1

Obtain a general relation for the temperature distribution inside the pipe under steady conditions, and determine the rate of heat loss from the steam through the pipe.

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