# Heat Exchanger Area Calculator

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This tool estimates the required surface area for a heat exchanger using the Log Mean Temperature Difference (LMTD) method. The user inputs inlet and outlet temperatures for hot and cold streams, the overall heat transfer coefficient (U), and the heat duty (Q). Excel automatically computes the LMTD and required area (A).

## Key Equations

**1. Temperature Differences**

$\Delta T_1$ = Th_in – Tc_out

$\Delta T_2$ = Th_out – Tc_in

**2. Log Mean Temperature Difference (LMTD)**

LMTD = $(\Delta T_1 - \Delta T_2) / \ln(\Delta T_1 / \Delta T_2)$

**3. Required Heat Exchanger Area**

A = Q / (U × LMTD)

## Files Included

- `heat_exchanger_area_calculator.xlsx`
- `calculator_screenshot.png`
- This PDF report

## Skills Demonstrated

- Engineering calculations
- Excel modeling
- Understanding of heat exchanger fundamentals
- Technical documentation