JET IMPINGEMENT HEAT TRANSFER VISUALIZATION

USING A STEADY STATE LIQUID CRYSTAL METHOD

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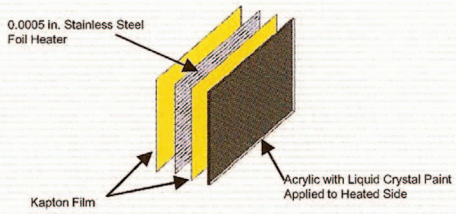
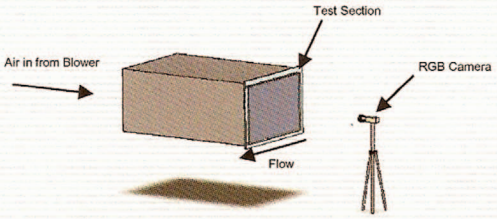
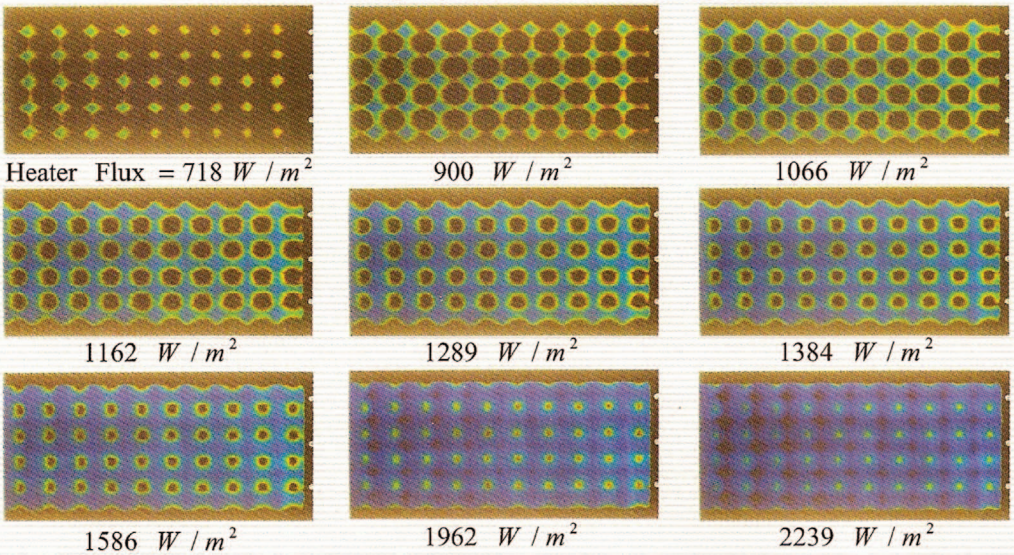
Steady State Approach Using Heater Foil



Experimental Test Rig



Pictures Taken During Experiment with Increasing Heater Flux



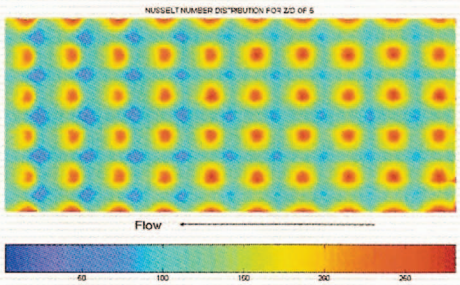
Liquid Crystal Range (SPN/R30C5W)

30°C — 35°C

Experimental Procedure:

- Blower is set appropriately for required jet Reynolds number
- Heater is turned on and allowed to reach steady state
- A picture is taken of the liquid crystal coated test plate and heater amperage and voltage measured
- Heater power is incrementally increased and additional pictures taken to capture temperature and heater flux data at every point in the array
- Pictures are converted to Hue and liquid crystal calibration curve used to determine temperature at corresponding point

Results



TTHTL
Tiger Turbine Heat Transfer Lab

