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# NASA TECH BRIEF



## Heat Transfer Coefficients for Liquid Hydrogen Turbopumps

There are numerous complex modes of heat transfer that occur during transient startup operation of liquid hydrogen turbopumps. Empirical equations have been derived to establish the appropriate heat transfer coefficients as functions of the temperature drops and heat transfer rates for a wide range of convective and boiling conditions at different locations in a liquid hydrogen turbopump.

**Note:**

Documentation for the innovation is available from:

Clearinghouse for Federal Scientific
and Technical Information
Springfield, Virginia 22151
Price $3.00
Reference: B68-10517

**Patent status:**

No patent action is contemplated by NASA.

Source: W. R. Wagner and W. R. Bissel
of North American Rockwell Corporation
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