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## *An Experimental Investigation on the Effect of Vertical Distance and Inclination Angle of S-Shaped Channel on Two-Phase Flow Patterns*

M.R. Ansari, M. Azadi and R. Gheisari

### **ABSTRACT**

An experimental investigation is conducted to study the effect of vertical distance and inclination angle of a S-shaped channel on two-phase flow patterns. Five flow patterns of vortex plug, vortex slug, vortex wavy-annular, churn and mist packet annular were observed. Flow pattern maps were obtained for each case and then compared based on the different vertical distance and inclination angle to perform a parametric study. Increasing mid-section length and inclination angle cause the transition to vortex plug flow pattern to occur at higher liquid velocities as well as a greater area of churn flow pattern at the expense of smaller vortex slug flow pattern area. However, increasing mid-section length and decreasing inclination angle, ends in smaller area of mist packet annular area. It is revealed that for higher mid-section lengths, effect of increasing inclination on shifting transition lines between flow patterns is more determining.

**KEYWORDS :** Two-phse flow, Flow pattern, Flow pattern map, S-shaped channel, Transition line

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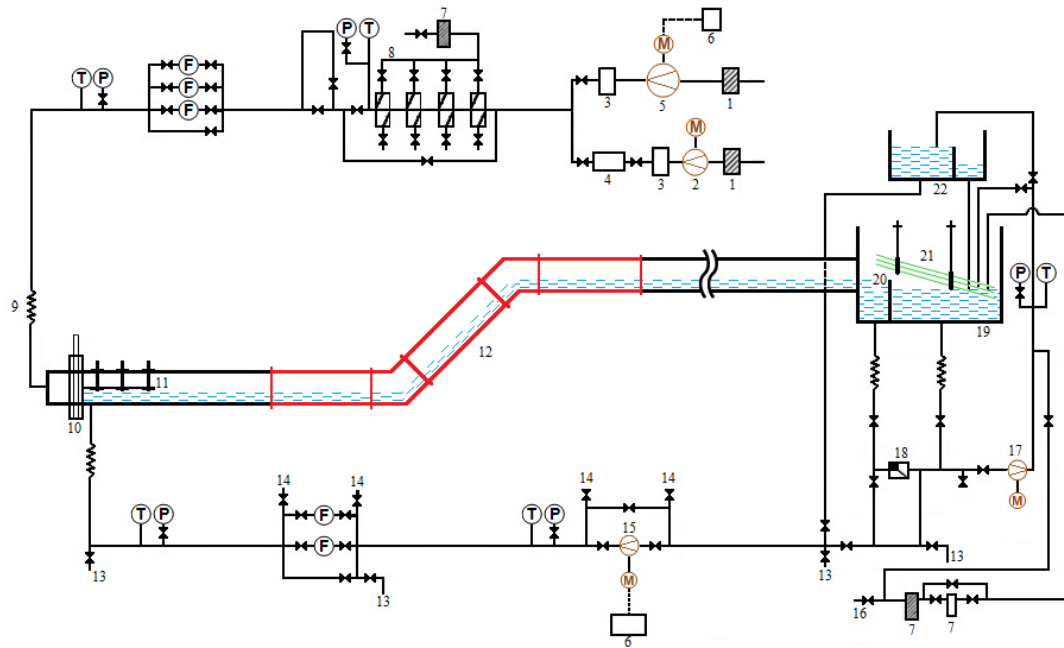
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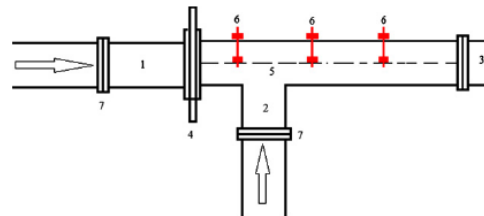
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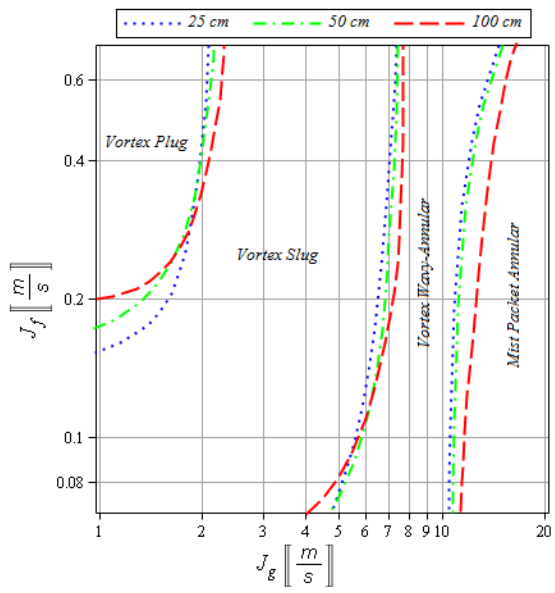
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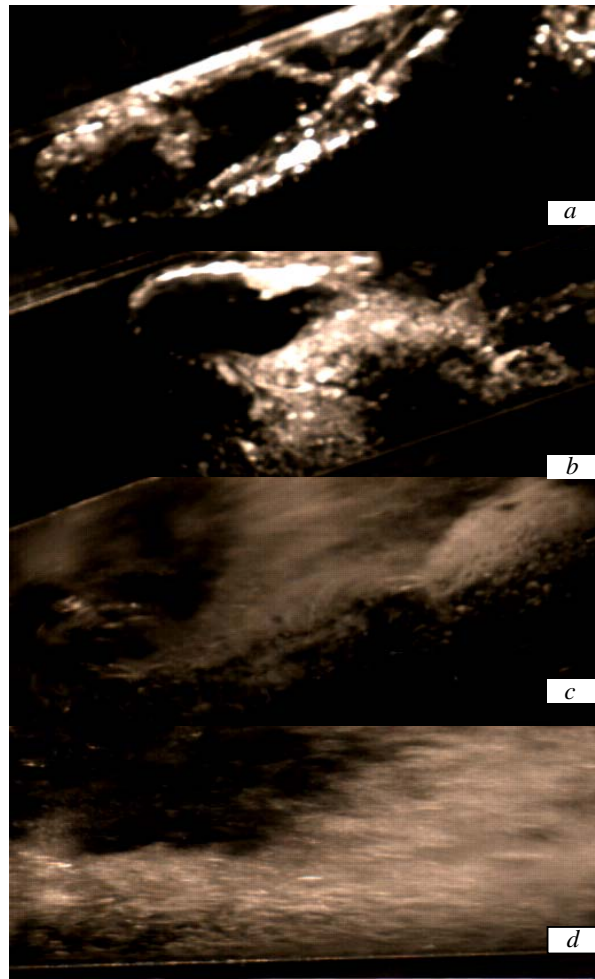


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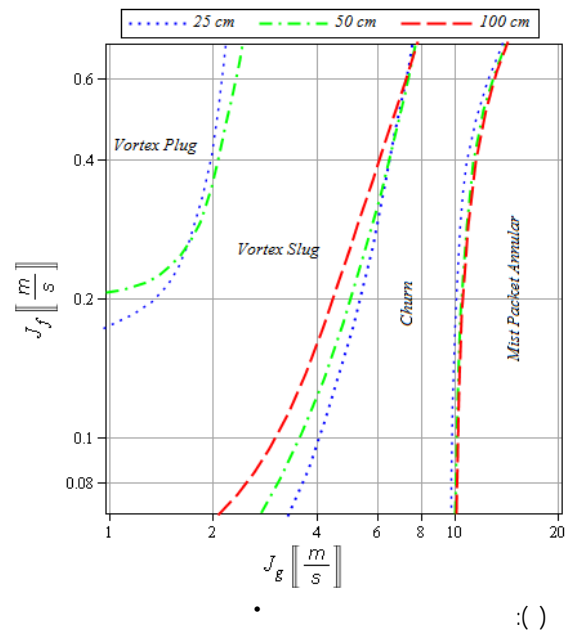
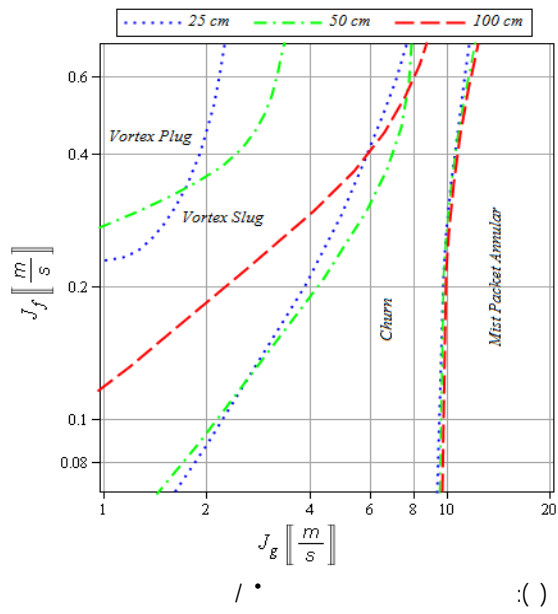
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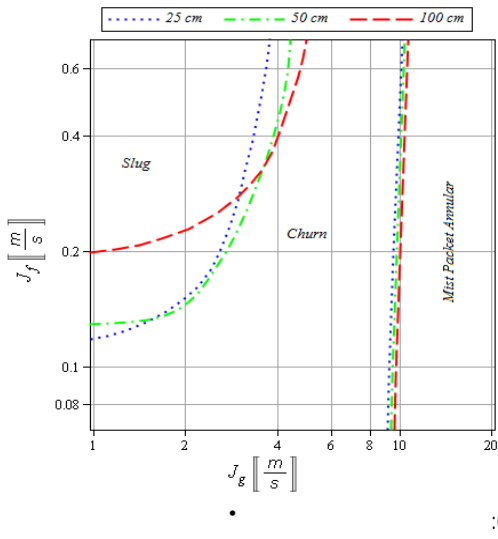
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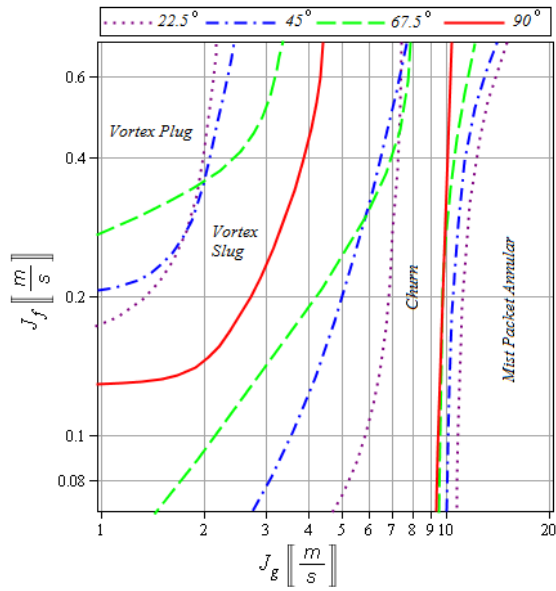
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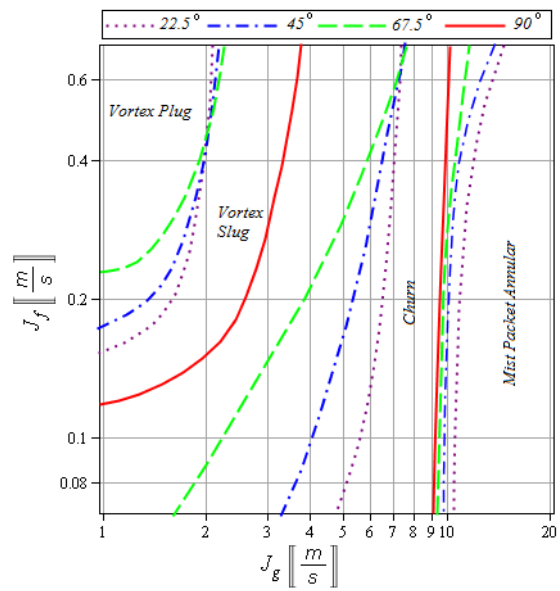
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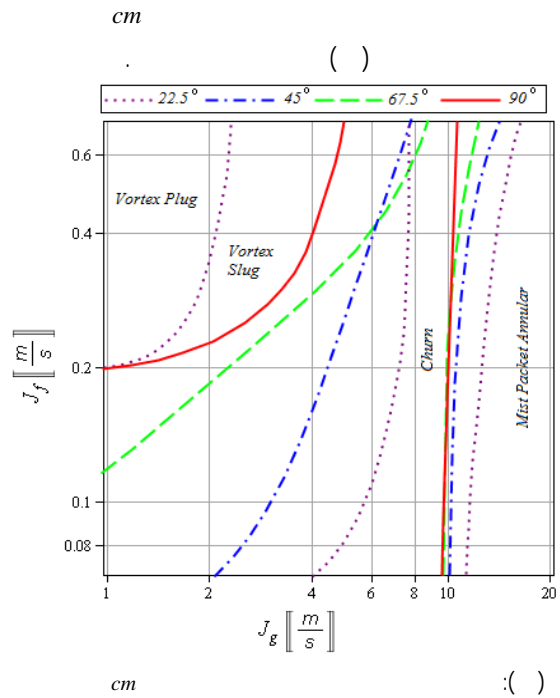


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$A$   $m^2$

$J$   $m/s$

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