# INTERNAL SURFACE PIPE ROUGHNESS CLASSIFICATION: AN ACOUSTIC EMISSIONS APPROACH

ARIF JOHARI B MAT ALI@SALIM

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## SUPERVISOR'S DECLARATION

I hereby declare that I have checked this project and in my opinion, this project is adequate in terms of scope and quality for the award of the degree of Bachelor of Mechanical Engineering.

Signature
Name of Supervisor: Mr. Mohd Hafizi b Zohari
Position: Supervisor
Date: November 2009

## STUDENT'S DECLARATION

I hereby declare that the work in this project is my own except for quotations and summaries which have been duly acknowledged. The project has not been accepted for any degree and is not concurrently submitted for award of other degree.

Signature
Name: Arif Johari B Mat Ali@Salim
ID Number: MA06075
Date: November 2009

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## LIST OF SYMBOLS

| | |
|---|---|
| $\mu$ | Viscosity |
| $\check{C}$ | Roughness |
| $D$ | Diameter |
| $d$ | Inner diameter |
| $e$ | Inner roughness |
| $f$ | Friction fator |
| $g$ | Gravity acceleration |
| $L$ | Length |
| $Q$ | Volume flow rate |
| $V$ | Velocity |
| $\rho$ | Density |
| $A$ | Cross Sectional Area |
| $mm$ | Millimetre |
| $h_f$ | frictional resistance |
| $s$ | Second |

| | |
|---|---|
| $t$ | Thickness |
| $kurt(X)$ | Kurtosis |
| $R_e$ | Reynolds number |

## LIST OF ABBREVIATIONS

| | |
|---|---|
| AB | Bangi number |
| AE | Acoustic Emission |
| ADC | Analogue to Digital Converter |
| AED | Acoustic Emission Detector |
| AET | Acoustic Emission Testing |
| FE | Finite Element |
| FEA | Finite Element Analysis |
| NASA | National Aeronautic and Space Administration |
| NDT | Non-destructive Test |
| PC | Personal Computer |
| REACT | Research Engineering Applications Certificate Training |
| RMS | Root Mean Square |
| SCC | Stress Corrosion Cracking |
| X-ray | Radiographic |