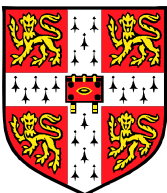


ESDU-SPG-M10-1



Apr.09: Simulating refinery preheat trains subject to fouling - operational control strategies

Unamended
Issued October 2010



Simulating refinery preheat trains subject to fouling - operational control strategies

Edward Ishiyama, D. Ian Wilson, Bill Paterson
Department of Chemical Engineering & Biotechnology
University of Cambridge

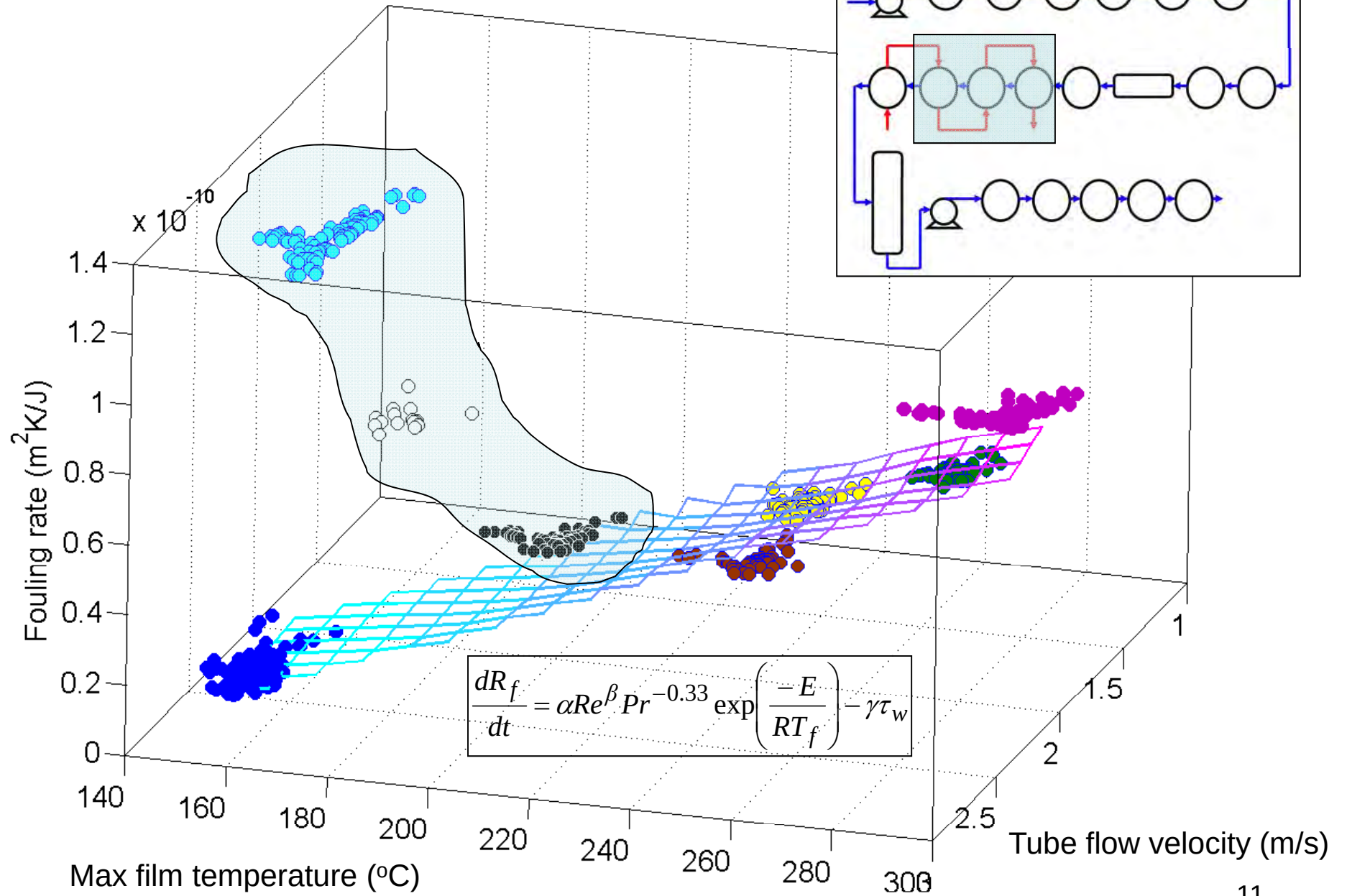
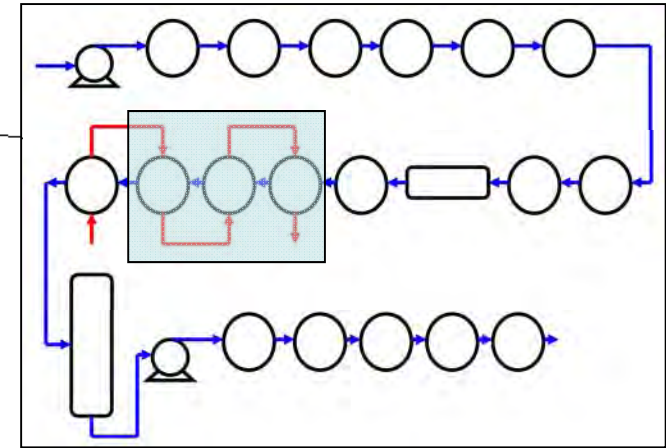


*CROF Project Meeting
Chevron Refinery, Wales
21 April 2009*

Contains confidential information
Copyright – University of Cambridge

Recent work

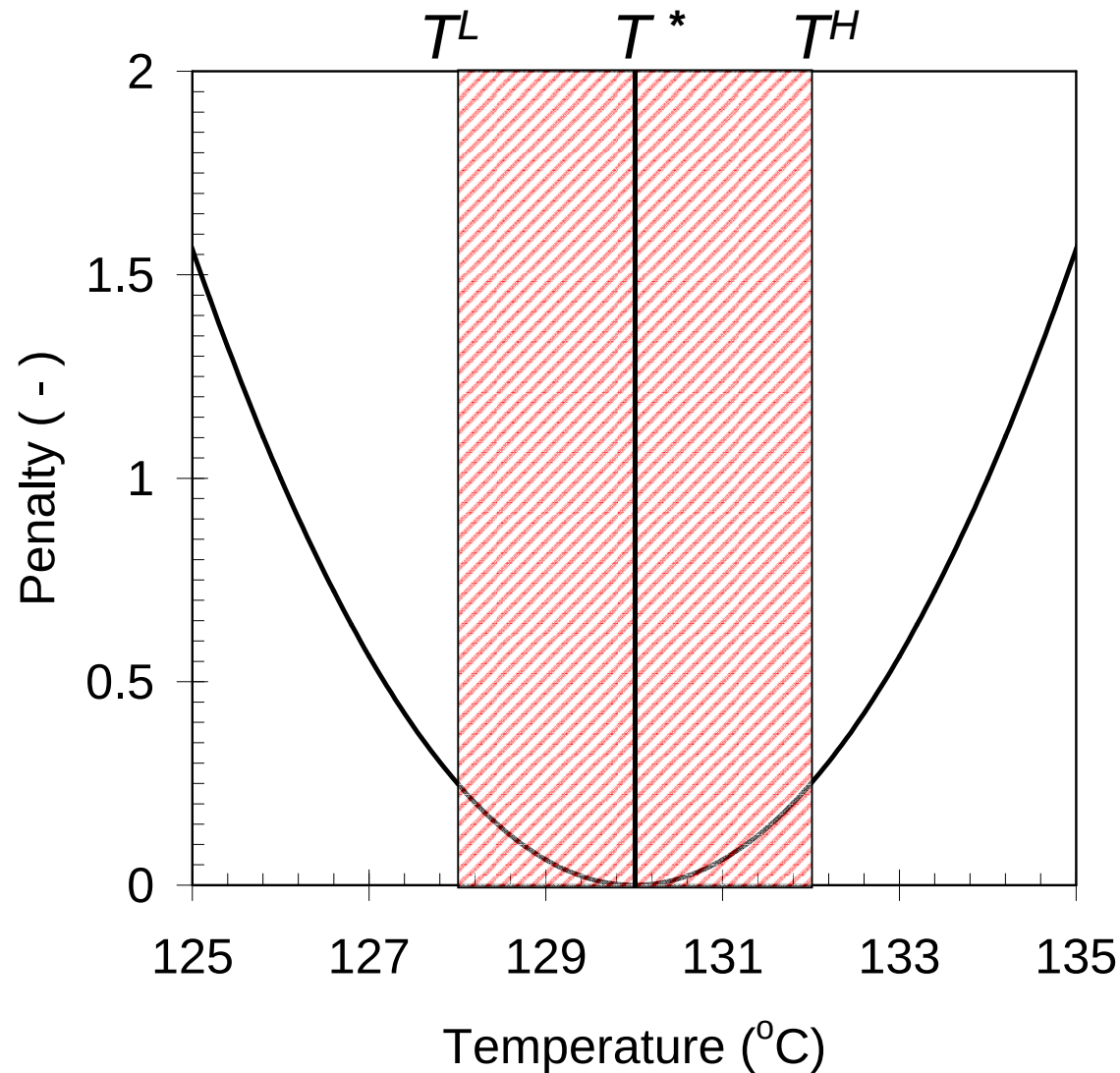
- Understanding/ Interpretation of fouling data
 - Deposit ageing model
 - Complex network
 - Final year research project (Will Richards)
- Operational control strategies
 - e.g. desalter temperature control



Desalter operation

- Upper temperature limit
 - Solubility of water in crude oil
 - Electrical conductivity (crude oil)
- Lower temperature limit
 - Capacity of desalter (viscosity of crude oil)

Desalter penalty function



Penalty =

$$C \left[\frac{(T^* - T)}{(T^H - T^L)} \right]^2$$