SYNOPSIS

A large proportion of engineering components are metal-based and they will occasionally fail. Identification of the root causes of failure is essential to prevent further occurrences. Accurate identification very often requires the application of metallurgical methods of examination – forensic metallurgy. A summary of four case studies are presented, as follows:

- **Case A:** Gas Turbine blade fatigue failure.
- **Case B:** Stress corrosion cracking of stainless steel.
- **Case C:** CO$_2$ corrosion of linepipe from oil well.
- **Case D:** Arc erosion of babbitt bearings.

BIODATA OF SPEAKER

Ir. Qua retired from the Engineering Faculty UM in 1999 as an Associate Professor; his term was extended as a senior Research fellow to 2002, after which he joined TNB Research Sdn. Bhd. as a Consultant. He is now Technical Director of Profmetal Sdn. Bhd.

Ir. Qua’s specializes in Failure Analysis and metallurgical problems and currently has undertaken more than 400 cases over a wide range of industries. He has recently co-authored a book that includes his past cases, titled “Applied Engineering Failure Analysis”, published by CRC Press. At present Ir. Qua’s activities has been enlarged to include RBI (risk based inspection) of high temperature boiler steels in power plants, in particular creep degradation and remaining life estimation.

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