The apt Group of Companies

Presents a 5 day Training Event by Bill Kruger of ALL-TEST™

Sydney 16-20 April 2012

Public & In-house Programs – do it right the first time

Biography
Bill Kruger combines 40 years of practical field experience with proven instructional techniques, visual aids, demonstrations

"PRECISION MAINTENANCE COURSE"

Integrating practical Bearing Assembly, Lubrication & Dynamic Analysis to extend your machines lives

Who should Attend? Designed for maintenance planners and supervisors, reliability engineers, predictive maintenance, trades and operations personnel, in fact, anyone who is interested in improving plant operation. Participants return to the plant able to immediately apply their learnings. Those who understand the power of the solutions provided are best able to utilise equipment and notably reduce unnecessary machinery problems.

What is it about? Lowering maintenance costs and maximising machine reliability using field proven "*Precision Maintenance"* methods and procedures. Learn how to extend machinery life and prevent most machine failures from occurring

Actual Case histories are used to teach Root Cause Analysis Techniques, also, frequent misinterpretation and misapplication of industry standards are explored as major causes of machinery problems.

This course provides the fundamentals necessary to implement precision maintenance from both a mechanical & electrical prospective in your facility and to ensure maximum payback is obtained from your equipment investments.

Syllabus – 5 Days

1. **How to extend Bearing and Seal Life**
   - **Film thickness vs. friction and load wear vs. machinery life**
   - **Establishing an on site oil analysis program**
2. **Creating the Mental Model**
   - **Rotor behaviour, bearing clearances, orbits, energy waste, seal wear and bearing life**
   - **Vibration terminology, why & how machinery behaviour creates the vibration pattern and how to relate them**
3. **How to find most common failures**
   - **Resonance: Mass/Stiffness relationships, effects of resonance *(Fatigue, Energy Loss)***
   - **Unbalance: Cause/Effect, shop field balance considerations and limitations**
   - **Misalignment: Cause/Effect, foundations & bases, determining thermal growth, precision alignment tolerances**
4. **Separating Sources occurring at 1X running speed**
   - **Identifying & preventing unbalance, misalignment, bent shaft, eccentricity and resonance**
5. **How to fix problems forever**
   - **Proper-bearing installation and maintenance techniques.**
   - **On-site analysis to maximize bearing and seal life**
6. **Electrical Theory for Motor Diagnostics**
   - **Motor and Transformer Theory**
7. **Motor Faults — Multiple Technology *(Electrical & Mechanical)***
8. **Introduction to Motor Circuit Analysis *(Off-line Testing)***
   - **Three Phase AC Motors**
   - **DC Motors**
   - **Transformers**
9. **Introduction to Electrical Signature Analysis *(On-line Testing)***
   - **Understanding the FFT and Interpretation of Electrical Signatures**
10. **Developing a Motor Diagnostics Program**
    - **Estimating Time to Failure**
11. **Real World Program Considerations**
    - **How to establish goals and objectives**
    - **Financial considerations**
    - **How to recognise and correct troublesome equipment**
    - **How to determine if you are getting the most from your condition monitoring equipment or program**

REGISTRATION DETAILS - *5% Discount for 3 or more attendees!* Select ✓ options below:✓

☐ **Precision Maintenance Course 5 DAYS** AUD$2,790.00 (Ex. GST)

☐ **Accommodation booking required?** Venue(s): Holiday Inn Darling Harbour

A certificate will be issued for Professional Development Record Purposes

FEES INCLUDE: Lunch, refreshments & course material. **Registration 8:15am Finish 4:30pm.**

NAME: _____ **POSITION:** _____

COMPANY: _____ **DEPARTMENT:** _____

ADDRESS: _____

STATE: ____ **POSTCODE:** _____ **TEL:** _____ **EMAIL:** _____

Notes - To ensure seat allocation, an official company purchase order should be lodged upon enrolment; payment can be made by Credit Card or Telegraphic Transfer *(please telephone the Sydney office for banking details)*. Cancellation policy: a 50% refund will be made for cancellations 10 or more working days before commencement of the course. If less than 10 working days, no refund can be given. For fees already paid, you may send a replacement participant. *Ask about other courses – Alignment, Balancing, Reliability, Motor Diag's.*

Please select method of payment:

☐ **VISA** ☐ **MASTERCARD** ☐ **BANKCARD** **PURCHASE ORDER #:** _____

NUMBER: ☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐ **EXPIRY DATE:** _____

NAME ON CARD: _____ **SIGNATURE:** _____

Please either fax, email or post the registration form to secure a place now (duplicate form as required)

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