

Company Profile

Metallurgical Consultancy and Services Sdn. Bhd.



**MS ISO/IEC 17025
TESTING
SAMM No. 442**

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MS ISO/IEC 17025 : 2005 Accredited Since Oct 2009

SAMM NO. 442



TABLE OF CONTENT

General Information and Our Achievement

Where we are (Location Map)

MS ISO/IEC 17025 (Scope of Accreditation)

Facilities

■ Equipment

- Destructive Mechanical Test
- Non Destructive Mechanical Test
- Failure Investigation
- Calibration
- WPS and WQT
- Sample Preparation



General Information

Metallurgical Consultancy and Services Sdn. Bhd. or METACOS in short, is an active company providing metallurgical consultancy, failure investigation and general testing services to the metal, construction, fabrication and, oil and gas industries in Malaysia, Thailand, Philippines and Brunei. We are willing to undertake special tests if required provided they are within the resources of METACOS.

The company was incorporated in 6th October 1988. METACOS is led by Dr. Lim Ching Liang, a metallurgist with a doctorate in Metallurgy and Materials Science (UNSW, Australia in 1987) and a basic Metallurgy and Materials Science degree (B. Sc. Hons from Birmingham University, UK in 1977) (please see his resume). We have a team of qualified test engineers (university graduates) and technicians (diploma holders).

The management of Metallurgical Consultancy and Services Sdn. Bhd. is committed to give quality testing services to our clients - to give consistent and reliable test results. Our staffs have been trained (in house) and our equipment calibrated by machine supplier and or verified locally by SST Integrated Technologies Sdn. Bhd. (formerly known as Sime-Sirim Technologies Sdn. Bhd.) or overseas by an accredited laboratory.

METACOS has a division devoted to carry out chemical analysis of metallic materials using emission spectrometers - both desk top unit and portable unit. We intend to set up a wet analysis laboratory to enhance our testing capability. We have a branch with basic mechanical testing facilities in Kemaman, Terengganu under another Company name **Metallurgical Testing Laboratory Sdn. Bhd.** We carried out NDT under the company name **Integrated Nuclear Inspection Sdn. Bhd.**

Over the years, we have included

- a) **Diffusible hydrogen** in weld metal test according AWS A4.3 or ISO 3690 technique,
- b) **Hydrogen Induced Cracking (HIC)** according to NACE MR 0175 and TM 0284,
- c) **Sulphide Stress Cracking (SSC)** for sour service according to NACE TM0177.
- d) **Boroscopy or Videoscopy**

In October 2009, we gained **MS ISO/IEC 17025** accreditation. The following month we gained the right to use **ILAC MRA** logo by signing an agreement with Department of Standards Malaysia



ILAC standards for International Laboratory Accreditation Co-operation and was established in 1977 with the aim of developing international co-operation for facilitating trade by promotion of the acceptance of accredited test and calibration results

Our Achievements

- In 1988 we established our first private metallurgical consultancy company in Malaysia to carry out failure investigation and destructive mechanical tests
- In 1990 we set up our first destructive mechanical laboratory located in No. 52 Jalan SS 15/5C Subang Jaya, Petaling Jaya, Selangor.
- We carried out charpy V Notch impact test at minus 196 degree Centigrade for the first unit of cryogenic tank production test piece for Taylor Wharton in 1990.
- In 1991, we started replica test or in situ metallography
- In 1992 we set up a similar destructive laboratory in Kemaman, Terengganu. The laboratory is located at No. 4919, Jalan Feri Lama, Kemaman.
- In 1992, we are the first private laboratory in Malaysia to carry out ferrite count (metallographic technique or point counting) according to ASTM E562.
- In 1992 METACOS laboratory carried out an experimental (proto type) Hydrogen Induced Cracking (HIC) test
- In 1992 we started to provide diffusible hydrogen in weld metal for E 7018 electrode (glycerol method) and in 2009 Thermal Conductivity Detection (TCD) method based on AWS A4.3 or ISO 3690
- In 1993 we added development of welding procedures, conducting welding test and welder qualification to our list of activities.
- In 1994 we included hot tensile test as our routine test.
- In 2000 was the year we introduced boroscopy to our clients
- In 2000 with the co-operation of SISIR, the PSB and now TUV PSB, we offer CTOD test to the industries
- In 2007 with co-operation with local university we provide strain gauging
- We collaborated with DnV to conduct SSC and CTOD tests in 2010
- In 2010 we achieved ISO/IEC 17025 accreditation for HIC and SSC

We were commissioned by our clients to design test methods for their new products or process.



- Commissioned by Universeal Sdn. Bhd. - container seal manufacturer in Malaysia to design and conduct test on their products for conformity to international standard
- Commissioned by OGP to conduct corrosion test on duplex steel production weld under positive CO₂ pressure for a period of 30 days

Where we are

REFER TO OUR WEB PAGE

MS ISO/IEC 17025 Scope of Accreditation

Refer to separate Document or open the pdf file on the above

Facilities

We have a fully equipped metallurgical laboratory to carry out destructive mechanical tests, selected non destructive examination, optical microscopy work, failure analysis, selected heat treatment, diffusible hydrogen in weld metals, Post Weld Heat treatment

Equipment

For Destructive Mechanical Test

1. 2 units of Shimadzu and 2 Units of T Machine Universal Tensile Testing Machine calibrated by SIRIM. One has a maximum capacity of 100tf, 2 units have a maximum capacity of 50 tf and the fourth unit has the maximum capacity of 10tf
2. 2 units of Avery Denison Universal Impact Testing Machine designed and to both BS131 and ASTM E 23:1982 standards. Calibration Certificate using Watertown Arsenal Charpy Specimen for ASTM standard to show conformity to standard or by Sime Sirim is available for inspection.
3. 1 Unit of Matsuzawa and 1 unit of Mitutoya AVK C21 Vickers Hardness Tester for Hardness measurement.
4. 1 Unit of Shidmazu Micro-Hardness Tester for Micro Hardness Measurement.
5. 1 Unit of Affri Rockwell Hardness Tester for Rockwell B or C Scale Hardness Measurement.



6. 1 Unit of Brinell Hardness Tester.
7. 1 Unit of Three Zone Split Cylindrical Furnace and Controller for Hot Tensile Test.
8. 1 Unit of Shimadzu Direct Readout Emission Spectrometer.
9. 1 Unit of Bruker G4 Phoenix for Diffusible Hydrogen in Weld metal
10. 2 Units of Incubators for ASTM G28 and G48 Corrosion Test

For Non Destructive Test

- 11 2 units of Equotip Hardness Tester – Digital
- 12 1 unit of Poldi Hardness Tester
- 13 1 unit of Y6 Electromagnet yoke for Magnetic Particle Inspection
- 14 2 units of Fisher Feritscope - Model = MP3 - GAB.3D Fe
- 15 1 unit of Mitutoyo profile Projector Model PH-3515F Series 172
- 16 3 Units of Positive Materials Identification (PMI) Machines
- 17 2 Units of Handheld Ultrasonic Thickness Gauging Equipment
- 18 1 Unit of Handheld Ultrasonic Paint Coating Equipment
- 19 1 Unit of Vizaar Boroscope
- 20 1 Unit of 30 channels stain measurement data logger

For Failure Investigation

- a. Mesotom Cut Off Wheel
- b. Buehler and Struers grinding and polishing machine.
- c. Leica and Nikon optical microscope capable of bright field, dark field and differential interference contrast work.
- d. Nikon stereo-microscope



- e. Struers Movipol - Electro - polishing and etching machine
- f. Struers Prestopress - 3 - a hot mounting press machine
- g. JVC CCTV for Ferrite Counting in Duplex Stainless Steel

For Calibration

- h. 2 Units of Ametek Manfield and Green Dead Weight Tester - 15, 000 P.S.I. maximum.
- i. Clamp meters for calibration of welding machines

For Welding Procedure and Welder Qualification Test

- j. 3 Units of Lincoln Idealarc 350 welding set for SMAW and TIG welding
- k. 1 Unit of EWS oven for baking of low hydrogen electrodes
- l. 2 Units of Quiver
- m. 2 Units of Tong Meter and 3 Units of Digital Thermometer
- n. 1 Unit of submerged arc welding (SAW) machine
- o. 1 Unit of MIG/MAG/FCAW welding machine

For Sample Preparation

- p. 8 Units of Milling Machines with DRO for sample preparation
- q. 5 Units of Band Saw
- r. 1 Unit of Shaping Machines
- s. 1 Unit of Surface Grinding Machine.
- t. 1 Unit of Hydraulic Press
- u. 2 Units of Lathe machines

