

1 Materials Testing Roundtable Discussion

1.1 CPUT Cape Town Campus 7 April 2010, 14h00-16h00

2 Janet Cotton (JC) opened with a welcome and overview of the need for a materials testing centre

2.1 Perception of a need but business plan doesn't show viable to create a centre with purely commercial terms.

3 Introductions

3.1 Janet Cotton (JC) and Fungui? Mufunde (FM) – One Eighty

3.2 Warwick Blyth (WB) - SAOGA

3.3 Paul Coxon (PC)– involved in Marine casualty and insurance litigation work

3.3.1 Immediate past president of SA Institute of Marine Architects

3.4 Max Rupert (MR) and Franco Du Plessis (FD)– Advanced Material Science

3.4.1 Have a commercial metallurgical lab from Sonchem/Denel

3.4.2 Been private commercial entity since 1994??

3.4.3 Do a lot of work for Sonchem but also external parties

3.5 Oscar Philander (OP) & Eugene Erfort (EE) (CPUT AMTL)

3.5.1 A national facility that does materials science

3.5.1.1 *Is distinct from department*

3.5.1.2 *AMTL is there to act as a go-between between industry and academia*

3.5.2 Have been involved in testing

3.6 Pieter Kroon (PK) & Danie Joubert (DJ) (QA Manager) – Belmet

3.6.1 Offshore O&G Fabricator

3.7 Melanie Smith (MS) CPUT Maritime Studies

3.7.1 Here in place of Prof Sneider

3.8 Zerisenay Andeghtorgis (ZA)(Spacesoft)

3.8.1 Companies provides software that integrates the information around the

3.9 Andrew Taylor (AT) & Johan Branehog (JB) (CAE)

3.9.1 Company comes from automotive products background but have diversified into rail, marine and renewable

3.9.2 Never tried to do in-house analysis for materials

3.9.3 Johan does structural analysis

3.10 DEDT PGWC – Herman Jonker (HJ) and Sibusiso Nonyati (SN) and Claude Orloill (CO)?

3.11 Michel Basson (MB)– Stainless steel devt association (not signed on attendance list)

3.11.1 Do a lot of testing to understand failure causes

3.12 Steve Horwood (SH)– 7Sea Geosciences

3.12.1 Do geosciences testing and getting more involved in the offshore marine

3.13 Ian Noble-dack?? (IN) - CPUT

4 What is the perceived need for materials testing in the industry currently?

4.1 JC: Seems to be a growing need for insurance testing (e.g. for Lloyd register)

4.1.1 Finding it increasingly difficult to do this quickly

4.2 PK: All weld have to be certified to AWS standards or others

4.2.1 Sample welds need to be sent to a lab – Metlab in Joburg – takes 4-6 weeks

4.2.2 Is taking too long to send it to an accredited lab

4.2.3 Lab needs to be accredited by

4.2.4 Required turnaround times should be 3 days

4.2.5 Need quite high tensile testing machines

4.2.5.1 Mechanical testing 600kNewton machine

4.2.6 Consani lab (Gascon is a player in this) is the current go to facility but is really old and not diversified

4.2.6.1 Do have to have machining capabilities as well as a lab

4.2.6.1.1 The machining is quite important because it can influence the results

4.2.6.2 Real problem is that need multiple entities involved to get process completed

4.2.6.2.1 PC: Agrees that this is a problem – used examples of propeller inspection

4.2.7 A problem is that there are not that many Lloyd's certified welding inspectors

4.2.7.1 There is a lot of activity between

4.2.8 PC: For us to be able to be competitive we need to move quickly

4.2.8.1 Need a single facility where everything can be done and where the appropriate inspectors are available

4.2.8.2 JC: AvCape inspection – couldn't be here today but complaining bitterly about time taken

4.2.9 Tests required

4.2.9.1 Tensile testing – high tonnage capacity tensile tester

4.2.9.2 Charpy impact tester – also able to work under different temperatures

4.2.9.3 Hardness and surface testing

4.2.9.4 Materials and spectrographic analysis for composition testing

4.2.9.5 Z-through thickness testing to test for lamination

4.2.9.6 Corrosion evaluation

4.2.9.6.1 For subsea need to simulate 10 years

4.2.9.6.2 Belmet currently has to send to the UK for this

4.2.9.7 Dolly adhesive

4.2.9.8 Bend testing

4.2.9.9 Separate system for fatigue testing so you don't tie up tensile tester

4.2.9.10 Need verifiable results data logging system

4.2.9.10.1 Everything that comes out must be certifiable and able to stand in a court of law

4.2.9.10.2 Must be chain of custody and tight operating processes to ensure this

4.2.9.10.3 Has been a problem with this in that our results are thrown out and stuff is sent to a UK lab with more credibility

4.2.9.10.4 Would be essential to have ISO 17005 accreditation – good lab management

4.2.9.10.4.1 *Need an internationally accredited lab*

4.2.10 AMTL – are most of these labs commercially owned or is there more public support for them?

4.2.10.1 Will PGWC support this?

4.2.10.1.1 Tensile testing machine is expensive

4.2.10.1.2 HJ: Yes but finding the funding is essential and problematic

4.2.10.1.2.1 *Would need a business case*

4.2.10.1.2.2 *PGWC is not allowed to subsidise infrastructure – would have to go to DTi or elsewhere for the funds*

4.2.10.1.2.2.1 IDC, Development Bank or direct grant from DTI

4.2.10.1.2.3 *JC: We are talking about equipment investment of the order of R10m*

4.2.10.1.2.3.1 Would also need a specific building structure to accommodate it – to handle vibration etc

4.2.10.1.3 *JC: Would need to build a more detailed business case*

4.2.10.1.3.1 *Would need to go around and find out what kind of testing volumes are currently in play*

4.2.10.1.4 MR: Not that many people here would need fatigue testing

4.2.10.1.4.1 *Could work with CPUT to access tensile testing machine*

4.2.10.1.5 MB: A survey of our members would establish the needs much better

4.2.10.1.6 Sense is that we should confine the market to CT for the time being

4.2.10.1.6.1 *Go beyond marine market*

4.2.10.1.6.2 *JC: Walvis Bay is a big marine*

4.3 JC: Key issue with tertiary institutions is the issue of risk and professional indemnity

4.3.1 In general tertiary institutions will not cover this risk – they will provide results but not guarantee

4.3.2 Centre should be able to provide resource to tertiary institutions (probably at discounted rate) but important to keep the equipment out of the tertiary sector

4.3.3 PK: Would definitely not sent something to a lab that doesn't take responsibility for the result

4.3.3.1 Typically this would be achieved with a professional indemnity insurance

4.3.4 AMTL: This is why we need this type of facility – needs to be accredited by accepted authority

4.3.4.1 Academic facility is for research and advice

4.3.5 AT: Stellenbosch has assets from two sources in a single building

4.3.5.1 There are Stellenbosch University assets

4.3.5.2 There are DST assets which are in principle open as a critical service to industry

4.3.5.3 This could be a good model where equipment is collocated in academic facility and run as a separate entity – properly accredited.

4.3.5.3.1 AMTL: This is essentially what we do

4.3.5.3.1.1 *There is a facility in PE like this for automotive industry and Aerosud*

4.3.5.3.1.2 *AMTL would struggle to fill the role we are talking about because the equipment still falls under the university.*

4.3.5.3.1.2.1 The new IP act and the university structures around this would

4.3.5.3.1.2.2 JC: There is no IP in this kind of work

4.3.5.3.1.2.3 AMTL: There is an issue of confidentiality

4.3.5.3.1.2.3.1 This is more than an NDA – will require a secure procedure, closed networks etc

4.3.5.3.1.2.3.2 That's why AMTL is like a security complex

4.3.5.3.1.2.4 SH: Problematic having equipment shared with teaching mission because there has to be a cross subsidy

4.3.5.3.1.2.4.1 Was pointed out that this could be a valuable 20% of time because of the recruitment potential from the students using it.

4.3.5.3.1.2.5 JC: Very difficult to have this facility within a cumbersome bureaucratic environment (e.g. university)

4.3.5.3.1.2.5.1 Need to repair equipment quickly

4.3.5.3.1.2.5.2 From a CPUT perspective it would have to be staffed by people outside the system – others agreed with this

4.4 Where would work come from?

4.4.1 What is the industry demand

4.4.1.1 JC: Not sure, this would have to be investigated

4.4.1.1.1 The work is definitely out there

4.4.2 HJ: Government would say – if idea is so good then why doesn't the private sector do it

4.4.2.1 JC: Not viable on straight commercial terms

4.4.2.2 AMTL: Suggests it is a strategic resource; also nature of the equipment is very relevant to engineering education

4.4.3 AT: Lab would need to be piggy-backed on another activity e.g. academic or some other commercial activity

4.4.3.1 e.g. Chevron has a lab on the back of the refinery

4.4.3.2 Probably a lot of underutilized equipment lying around in the tertiary institutions and elsewhere

4.4.3.3 JC: Most of the existing labs were started by commercial companies for other purposes and then spun out

4.4.4 WB: What is the global model

4.4.4.1 JC: Commercial labs is the norm (e.g. Exponent)

4.4.4.1.1 Bigger markets, revenues are in dollars.

4.4.4.2 WB: Shouldn't we focus on a national rather than regional facility

4.4.4.2.1 JC: Look at West African market in general

4.4.5 PK: Pick one kind of testing and do it well

4.4.5.1 Build a business plan around this

4.4.5.2 Start with the most demanded testing

4.4.5.3 PK: Would be willing to share cost info on what they are spending to get testing overseas

4.4.6 WB: How would a new facility impact private labs in the market?

4.4.6.1 MR: Will impact the incumbents

4.4.6.2 There is a problem with using public funding to create entity that will compete with private companies

4.4.6.3 AT: Would make sense to get the incumbents involved in the lab

4.4.7 ZA: What is the main issue with the existing labs?

4.4.7.1 Shortage of skills

4.4.7.2 Can't afford the necessary equipment

4.4.8 HJ: Has to go but summarise

4.4.8.1 Need to quantify demand by procedure - survey

4.4.8.2 Need an operating model to combine tertiary institutions with private sector

4.4.8.3 Current supply of services – how are we currently servicing things

4.4.8.4 These things should give us an idea of what the breakeven and business plan points are

4.4.8.5 AT: Stock-take of what equipment is in the province or country

4.5 ZA: What would be the criteria used in setting up the lab?

4.6 SH: Overheads high and margins low in labs

4.6.1 Takes a lot of time to pay off capital

4.6.1.1 Need 10years to pay off

4.7 WB: Is there a different way of doing this? A virtual arrangement, common operating procedures?

4.7.1 PK: Not sure what can be done here?

4.7.2 Turnaround times are quite difficult to solve in a virtual/distributed environment

4.7.2.1 Difficult to do high volume

4.7.3 What is missing is a centre that can take on the job and get it done whenever

4.7.4 CPUT: Happy to rent out machines/facilities but the problem is ISO certification and other overheads that are not core to the academic enterprise.

4.7.5 AT: We could have private sector contract for time on machines with SLAs to be filled by the labs.

4.7.6 PC: What is the utilization of equipment?

4.7.6.1 CPUT: Generally quite low and limited to certain periods

4.7.7 ZA: How much expertise is available to staff these facilities

4.7.7.1 Currently limited

4.7.8 AT: Example of Sasol making a facility available to university

5 Moving forward – Who would be interested in continuing to participate?

5.1 Basically everyone is happy to support but not drive

5.2 CPUT would

5.3 Belmet

5.4 PC

5.5 AT: can support and not drive

5.6 SH: can support and not drive