TECHNEWS

ATTAR
Advanced Technology Testing and Research
A division of Engineering Materials Evaluation Pty Ltd

ISSUE - SUMMER 2006

Skills drought killing productivity

THE SKILLS shortage in Australia has dealt what could be the final blow to sustained growth in the economy, according to a leading economic forecaster.

While the Australian economy has grown at an average of 4 per cent over the past 10 years, the chronic shortage of skilled labour will be a permanent drag on growth, with 3 per cent per year looking unlikely, according to BIS Shrapnel. And the Government's WorkChoices reforms will do little to improve either productivity or increase the pool of labour, the firm said.

While the tight labour market has resulted in a bumper payday for Australian HR professionals, it poses big questions over the future. "Australia has entered a new era of constrained growth," said BIS Shrapnel senior economist, Matthew Hassan. "Businesses are already grappling with the problems of tight capacity, infrastructure bottlenecks and an acute shortage of skilled labour. And both businesses and government are moving to address these constraints through new investment. But the real, enduring problem is going to be the shortage of skilled labour."

Indeed, the latest figures released by the Australian Bureau of Statistics late last month showed that job vacancies across the public and private sectors grew by 6.7 per cent between May 2005 and May 2006, with a 5.1 per cent increase in private sector vacancies between February 2006 and May 2006 alone.

New investment is on the up, but, said Hassan, this may in fact cause further damage by creating further demand for skilled employees. "Surging investment will go some way towards relieving the issue of tight capacity and inadequate public infrastructure, but will do little to fix what is set to become a fundamental shortage of skilled labour," Hassan said.

According to BIS Shrapnel's analysis, the Australian economy is going through a major shift from growth being driven by demand and expenditure to a scenario where the options for improving productivity have hit a wall. "There has been a major shift in the mode of operation of the Australian economy over the last two years. When Australia first emerged from the early 1990s recession, significant spare capacity and high unemployment meant growth was basically determined by demand and expenditure. The logic for business through much of the 1990s and early 2000s was to hold-off on investment, cut back costs and use existing resources more intensively, with improvements in efficiency flowing directly through to profits," Hassan said. "But now the rules have changed. The cycle is at a stage where there is less scope to improve productivity through simple cost cutting. Productivity growth has stalled as businesses have run into capacity constraints in terms of both labour and capital resources. For companies facing these problems, the logical thing to do now is invest. Capital improvements add to capacity, boost productivity and, when they are labour-enhancing investment, help to circumvent problems in sourcing additional skilled labour."

The challenge is on for the Government to improve productivity and increase the pool of skilled labour, Hassan added.

IN THIS ISSUE

More Australians do training: ABS

Australians are taking more opportunities to participate in work-related training courses, according to results released today by the Australian Bureau of Statistics (ABS).

Between 1997 and 2005, the proportion of people aged 15 to 64 years who were in, or marginally attached to, the labour force and not attending school, who had completed a training course increased from 42% to 48%. However the average training hours for those who were employees (excluding people in their own incorporated business) declined from 20.6 hours to 14.7 hours per course. The total training hours decreased from 148.6 million hours in 1997 to 139.0 million hours in 2005.

Thirty-seven percent of people aged 15 to 69 years had completed a total of 11.2 million work-related training courses in the 12 months to May 2005 (details were collected on up to four training courses).

Half of all work-related training courses completed were provided by the participant's employer, and 27% of participants had received some additional financial support including study leave, payment of fees or travel expenses. Financial support could beprovided by employers, the government, family members or other sources such as union or professional organisations.

Some 2.7 million people in 2005 were studying at school level, or for a vocational or higher education qualification. A further 440,000 people were undertaking a course of study not leading to a qualification, including bridging, adult education and recreational courses.

The proportion of people aged 15 to 64 years with non-school qualifications who were in, or marginally attached to, the labour force and not attending school had increased over time, from 46% in 1993 to 62% in 2005. Over this period, the percentage with a Bachelor Degree or higher increased from 13% to 23%.

Failure of Engine Bearing

During a service of an engine, copper particles were noted in the engine oil. Upon inspection of the bearing, it was found a single bearing had failed. The bearings were all of the copper-lead overlay type. The engine had only experienced a short period of service after a recent rebuilt – approximately 5% of its expected life.

Figure 1 shows the bearing removed from the engine and the separation of the two layers of metals. Inspection of the bearing using stereographic techniques indicated that the majority of the lifting of the copper was at the oil-hole regions and edges, Figure 2. Also evident was some heat damage to the bearing, indicative of it being spun in the bore and a network of cracks in the overlay material.

The cracking can result in a gradual loss of overlay material over time, and is usually attributable to excessive heat, or excessive or uneven loads. There was no indication that any of these mechanisms took place.

Separation of the copper-lead layers can occur through two main mechanisms, either poor bonding, or extreme heat. There was no evidence of extreme heat on the surfaces of the bearings.

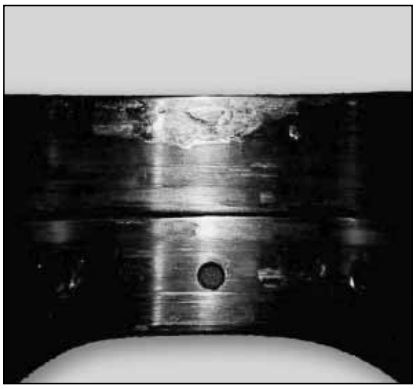

Figure 1. The inside surface of the bearing material is shown here, where it can be seen that the copper-lead overlay material has separated in certain areas.

A lack of heat related evidence, combined with the lack of damage to other bearings indicated the likely cause of the bearing failure was poor bonding of the two layers.

Figure 2. The overlay material in the vicinity of one of the oil holes. Note the well defined edges where the overlay material has lifted.

International Conference and Exhibition on Structural Integrity and Failure

The International Conference and Exhibition on Structural Integrity and Failure was for the first time jointly hosted by Materials Australia and The Australian Fracture Group in Sydney at the Carlton Crest Hotel.

Russell Wanhill from National Aerospace Laboratory NLR started proceedings with an excellent presentation regarding tear-down work completed on the new Airbus Megaliner.

Non-Destructive Testing featured heavily on Day One, with ATTAR's David Padfield (Materials Engineer) delivering a presentation on "Acoustic Emission Monitoring as a Tool in Risk Based Assessment", detailing the processes and procedures for Acoustic Emission monitoring when applied to industrial applications. Acoustic Emission is a well-established technology among large industries; however, much interest was expressed especially as a research tool for applications in other areas including crack initiation detection and pipeline condition monitoring.

The second day of the conference saw some excellent presentations on work conducted in other specialist fields such as fatigue crack growth rates, aircraft structural failures and concrete foundation condition reporting. Delegates then enjoyed a relaxed evening over dinner and drinks providing a welcome social interaction between various industries and technical bodies.

Friday saw the wrap up what was considered a very successful 2006 conference.

Many thanks to those who visited the ATTAR stand and the organisers for making the event a huge success!

"Acoustic Emission Monitoring as a Tool in Risk Based Assessment" can be viewed at www.attar.com.au

Course Schedule - 2007

SUBJECT	DATE	LOCATION	PREREQUISITE	ENROL BY
Acoustic Emission Level 1*	Contact Us	-	Math	-
Acoustic Emission Level 2*	Contact Us	-	AE1	-
Eddy Current Level 1	13 - 16 March	Melbourne	Math	27 February
	30 July – 3 August	Melbourne		9 July
	3 - 7 September	Perth		13 August
Eddy Current Level 2	19 - 30 March	Melbourne	Math	26 February
	6 - 17 August	Melbourne	Multi Sector #	16 July
	10-21 September	Perth	ET1	20 August
Hands on Introduction to NDT*	14 - 16 March	Melbourne	Nil	20 February
	12 - 14 December	Melbourne		21 November
Magnetic Flux Leakage*	16 - 20 April	Melbourne	UT2 Welds or UTCORR	26 March
Magnetic Particle Level 1	17 - 19 January	Melbourne	Nil	27 February
	22 - 24 August	Melbourne		30 July
Magnetic Particle Level 2	12 - 16 February	Melbourne	Math & Multi Sector #	22 January
	26 - 30 March	Perth		5 March
	4 - 8 June	Melbourne		14 May
	2 - 6 July	Adelaide		12 May
	17 - 21 September	Melbourne		27 August
	22 - 26 October	Perth		1 October
	26 - 30 November	Melbourne		5 November
Multi-sector	5 - 9 February	Melbourne	Nil	15 January
	19 - 23 March	Perth		26 February
	28 May – 1 June	Melbourne		7 May
	25 - 29 June	Adelaide		4 June
	10 - 14 September	Melbourne		20 August
	15 - 19 October	Perth		24 September
	19 - 23 November	Melbourne		29 October
Liquid Penetrant Level 1	15 - 16 January	Melbourne	Nil	18 December 06
	20 – 21 August	Melbourne		30 July
Liquid Penetrant Level 2	29 Jan - 2 February	Melbourne	Multi Sector #	8 January
	12 - 16 March	Perth		19 February
	21 - 25 May	Melbourne		30 April
	18 - 22 June	Adelaide		28 May
	3 - 7 September	Melbourne		13 August
	8 - 12 October	Perth		17 September
	12 - 16 November	Melbourne		22 October
Radiation Safety	22 - 25 January	Melbourne	Math	18 December 06
	5 - 9 February	Perth		15 January
	1 - 4 April	Melbourne		11 March
	20 - 24 August	Melbourne		30 July
	5 - 9 November	Perth		15 October
	26 - 30 November	Melbourne		5 November
Radiography Level 2	15 - 25 January	Perth	Math	18 December 06
	7 - 18 May	Melbourne	Radiation Safety	16 April
	12 - 23 November	Perth		22 October
	3 - 14 December	Melbourne		12 November
Ultrasonics Level 1	12 – 16 February	Perth	Math	22 January
	29 Jan - 2 Feb	Melbourne		18 December 06
	30 April – 4 May	Adelaide		9 April
	18 - 22 June	Melbourne		28 May
	30 July – 3 August	Perth		9 July
	8 - 12 October	Melbourne		17 September
	3-7 December	Perth		12 November
Ultrasonics Level 2	19 Feb – 2 March	Melbourne	Math & UT1	26 January
	7 - 18 May	Adelaide		16 April
	25 June – 6 July	Melbourne		4 June
	6 - 17 August	Perth		16 July
	15 - 26 October	Melbourne		24 September
UT2 Castings & Forgings	19 - 23 March	Melbourne	Level 2 General	26 February
RT2 Castings & Forgings	26 - 30 March	Melbourne	Level 2 General	5 March
UT2 Nodes/Nozzles	Contact Us		UT2 Welds	
UT Corrosion(UTCORR)*	10 - 12 January	Melbourne		18 December 06
	11 - 13 April	Melbourne	Minimum UT1	21 March
Liquid Penetrant Level 3	6 - 10 August	Melbourne	PT 2	16 July
Eddy Current Level 3	23 - 27 July	Melbourne	ET 2	2 July
Magnetic Particle Level 3	13 - 17 August	Melbourne	MT 2	23 July
Radiography Level 3	16 - 20 July	Melbourne	RT 2	25 June
Ultrasonics Level 3	9 - 13 July	Melbourne	UT2	19 June

Note * = Non AS3998/ISO 9712 Training Courses. # Completion of a Multi-Sector course is not compulsory. However most students without a formal background in materials engineering or metallurgy may find aspects of the industry specific exams (PT 2, MT 2 & ET 2) difficult without completion of the multi-sector course. Math = Basic Math Skills. Examples of the typical math requirements can be found on our NDT Aids / Tools Page. Suggested Prior Knowledge, Enrolment & Prerequisite Information can be found at **www.attar.com.au**. Also Available - Specialised & On-Site Training, Level 3 Support Services Additional courses are expected to run in Brisbane, Darwin and Newcastle dependant upon demand. **For further details contact Paul Grosser or Carol Owen.**

ATTAR Fitness Challenge Winner - UPDATE

Regular readers of Technews will recall that the ATTAR Fitness Challenge commenced in March 2006, and employees completed a 3 month challenge to improve their fitness, health & well-being!

Congratulations to John Cacic – Mechanical & Electrical Engineer based in our WA office. John managed to achieve a 33% improvement in his fitness, which incorporated cardio fitness, flexibility and strength and he continues to remain a big advocate for the gym! John, like all good sons is planning on using his $100 Wishlist Gift Voucher to buy a pressie for his Mum!

So if you are one of the many Australian's thinking you need to make a change to your fitness, health or lifestyle, we hope we have inspired you!

Engineering Technician

Simon Langdon commenced with ATTAR on Monday 9 July 2006 as an Engineering Technician, based in Melbourne. Simon comes to ATTAR having completed 2 years of an Engineering Degree (Electrical) and will be sponsored by ATTAR to continue this degree with a swap to Materials Engineering in 2006.

Simon has worked at a variety of places from KFC, where he was a Shift Supervisor, through to Jayco Caravans and the Frankston Pool. He has spent time on various tasks throughout his employment including installing plumping and gas fittings in Caravans, lifting and moving ice-cream in an extremely cold freezer and even customising kitchens! His position at the Frankston Pool also means he has the unique skill in the Engineering world of being a qualified Pool Lifeguard! Simon enjoys car mechanics, plays basketball, golf, and whenever possible attends the gym, swims or cycles!

Simon is predominately working on Slip Resistance Testing and is looking forward to establishing his Engineering career with ATTAR!

Training and Administration Assistant

Christine Elliott's introduction to ATTAR was as a temporary receptionist in May 2006. Although thrown into the deep end of a busy company, Christine handled herself with impeccable professionalism and was invited to join ATTAR as a regular part-time assistant in July 2006.

As a Training and Administration assistant, Christine specifically handles the steadily increasing volume of student enrolments for ATTAR Non-Destructive Training courses.

Christine's background is in customer service, having worked with companies such as South East Water and ITP. Christine thrives on meeting deadlines and does so with a constant smile and a rather wicked sense of humour, and has become an integral part of the ATTAR team.

Want to know more?

Fax back to ATTAR Aust. 03 9574 6133 New Zealand 06 758 6426

Company Name:	Date:
Contact Name:	Phone:
Postal Address:	Fax:
Comments:	Email:

Comment	Page	Need more	
Skill Drought Killing Productivity	1	☐ YES	☐ No
More Australian do training: ABS	1	☐ YES	☐ No
Failure of Engine Bearing	2	☐ YES	☐ No
International Conference and Exhibition on Structural Integrity and Failure	2	☐ YES	☐ No
Course Schedule 2007	3	☐ YES	☐ No
ATTAR Fitness Challenge Winner - UPDATE	2	☐ YES	☐ No

VISIT WWW.ATTAR.COM.AU