

# Act now to build technical skills

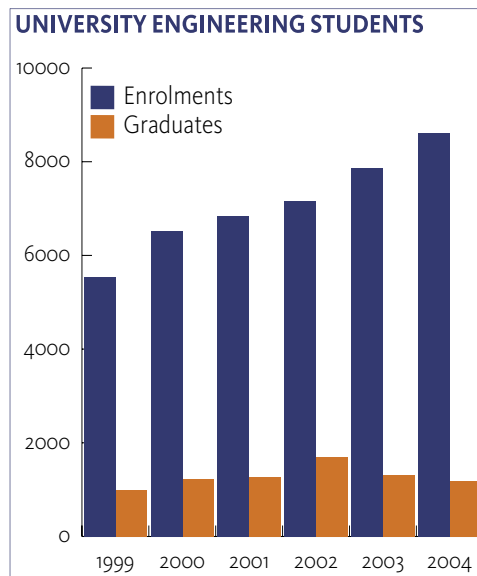
The enormity of the task facing South Africa ahead of 2010, particularly in regard to the infrastructure development needed for the event itself, and as a platform for enduring economic growth, requires quick action from agencies tasked with boosting local technical and engineering skills.

While government's Joint Initiative for Priority Skills Acquisition (Jipsa) aimed at increasing critical skills and helping to accelerate GDP growth to 6% has been generally welcomed, unions have already opposed one of the first outcomes – Sasol's importation of Taiwanese artisans for the September maintenance shutdown of its Secunda facility. Moreover, the language barrier will limit the transfer of skills to South Africans.

"It's crucial that we extend the benefits of skills importation by ensuring that skills transfer to South Africans takes place," says Becky Mosehle, managing director of Landelahni Professional and Technical Appointments. Only a multi-pronged approach will deliver the required quick fix, medium- and long-term results.

Meanwhile, Mosehle expresses concern about the poor pass rate of technical and engineering students at tertiary level. "Engineering Council of South Africa (ECSA) statistics indicate that a large percentage of learners, who presumably have the aptitude because they were accepted for enrolment, are lost to the engineering sector during their training." (See chart.)

Professor Raymond Nkado, executive dean of the Faculty of Engineering and the Built Environment at the University of the Witwatersrand confirms that at Wits the number of graduating Bachelor of Engineering students, as a proportion of intake, fluctuates between 55% and 70% five years after registration. A low 25% of the intake



**SA university engineering graduate numbers lag behind enrolments.**

graduates in the minimum four years of the engineering programme.

He believes resourcing at all levels has to be reviewed and recommends improved funding of educational institutions at primary and high school level to enhance learning styles and outcomes, particularly in mathematics, the sciences and communications skills.

"Government should also consider special funding of engineering programmes at tertiary

institutions to ensure adequate resourcing in terms of attracting and retaining highly skilled academic and technical staff, and providing laboratories with up-to-date, well-maintained equipment for student training."

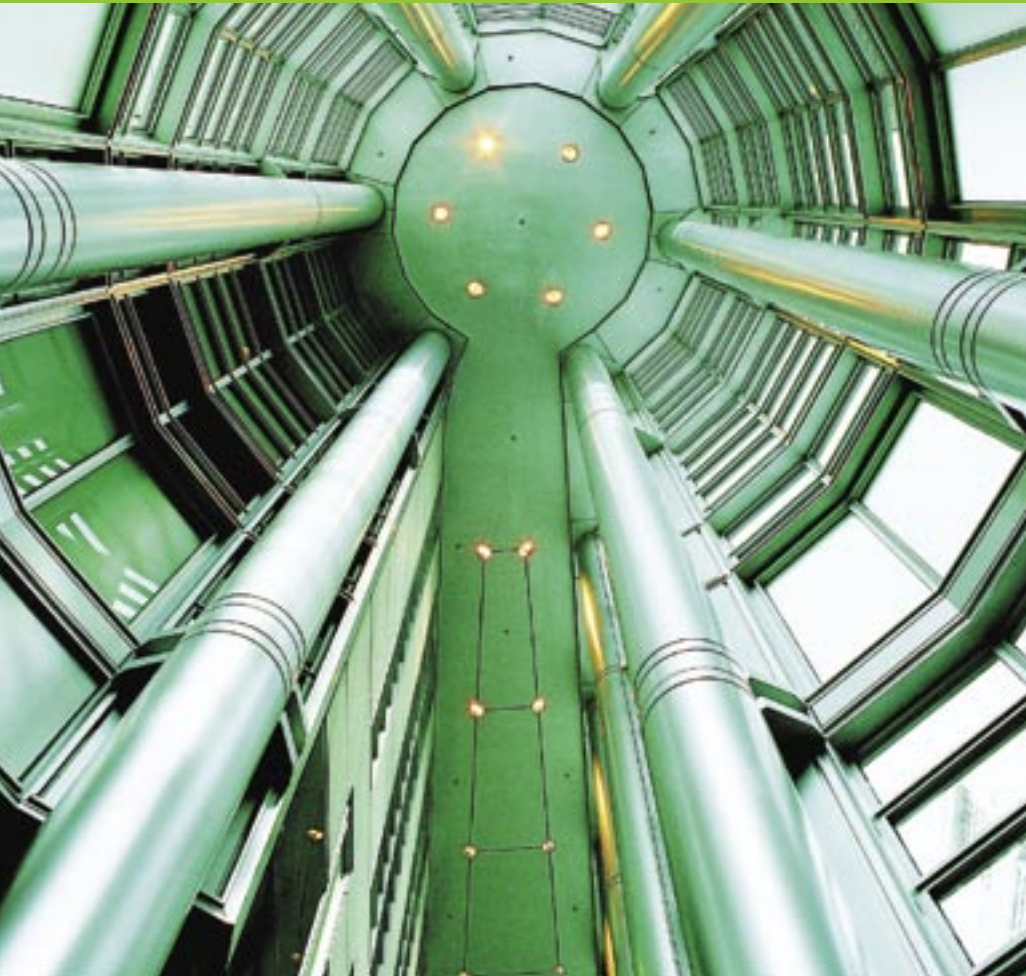
According to Mosehle, every company that uses engineering and technical skills – from large engineering houses to small manufacturers – has a responsibility to help reverse the skills shortage.

"If every company took experiential learners under its wing and built a deep, ongoing relationship with them for the *duration* of their studies, rather than only during their practical training, we would soon see results," she says. "Companies could help to head off problems experienced by learners. They could help guide students wavering about their career choices or assist if a learner is faced with abandoning his studies for financial reasons. Companies could also use experienced technical personnel to assist students who are having difficulty with their studies." ♦



**Becky Mosehle ... urging SA companies to mentor technical learners.**

# Functional design gains momentum



*Ongoing research ... elevating the functionality of Autodesk Inventor.*

South African manufacturers are reaping the benefit of Autodesk's growing investment in the development of its manufacturing software. Over the past five years the company has almost tripled its manufacturing research and development budget – from almost US\$30-million in 2001, to more than US\$80-million in 2005.

Research is carried out at nine centres around the world, and recently developers have extended Autodesk Inventor's capability to include functional design, enhanced surfacing functions and dynamic simulation.

Speaking at the Autodesk Simplify for Success seminars held across South Africa earlier this year, Jan Ferjencik, Autodesk manufacturing sales execution manager for emerging countries, reported that four times as many research dollars are being spent on Autodesk Inventor as on AutoCAD.

"In addition," he said, "we've seen our technology acquisitions yield strong growth worldwide, with our manufacturing sector growing 23% last year."

He attributes the sector's upward trajectory to its relentless focus on research and development, combined with the maturing of its data management software, Autodesk Productstream.

Dozens of South African manufacturers took advantage of the Simplify for Success seminars to move to Autodesk Inventor. This momentum will increase with Autodesk's Catch Up Now campaign, which gives loyal Autodesk software users the opportunity to move to the latest software for less, with savings of up to 50%. ◆

Call Noko Sehume on 011 805 1555 for more details.

## Cyber resource for designers

Autodesk's recently unveiled Manufacturing Community website is fast becoming a popular technical resource.

The site, located at <http://mfgcommunity.autodesk.com>, is designed to help professionals in the manufacturing industry access pre-built parts and assemblies from organised parts catalogues, learn the latest productivity tips from experts and connect with their manufacturing peers, helping them realise their ideas.

Daily briefings filter the top news, helping users keep their finger on the pulse of lean manufacturing and design data management.

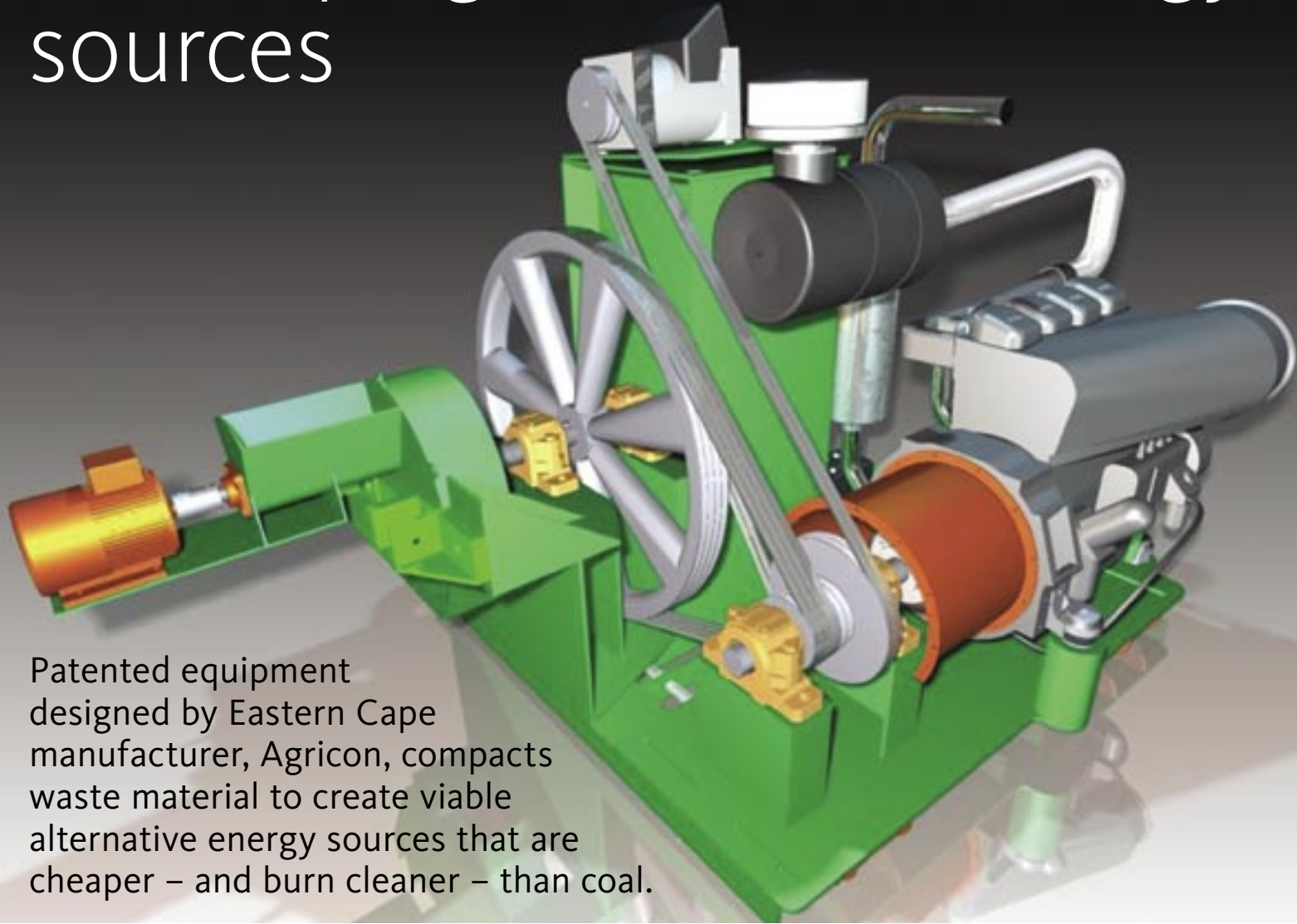
Tutorials and a series of technical papers cover a broad range of subjects, including Feature Generator and 3D Grips. Online resources are a goldmine of manufacturing-related links, blogs, and user-submitted tips and tricks. And browsing detailed information in the skills builders and tutorials sections helps users stay abreast of the latest product knowledge.

One of the most popular features of the site is the member-submitted components – from threaded hexagon spacers, ball joints, gear guards and wave spring washers – which visitors can download and use in their own projects.

Top rated Autodesk Inventor 11 tips:

- When projecting cross-part geometry in an assembly file, prevent the geometry, sketch and part from becoming adaptive by holding down the Control key while selecting. This projects the geometry and places a 'lock' constraint on it in the sketch.
- Autodesk Inventor R11 users can now set an application option to "Autoproject part origin on sketch origin" by using the Tools>>>Application Options>>>Sketch tab. Creation of templates with the first sketch projecting the origin is no longer necessary. An added benefit is that the origin is also projected for each new sketch.
- Viewing a model or assembly from a few different camera angles can sometimes help with design choices. Using the pull down menu Window>>>New Window, creates a new window for the active document, which can be resized or tiled as required. ◆

# Developing alternative energy sources



Patented equipment designed by Eastern Cape manufacturer, Agricon, compacts waste material to create viable alternative energy sources that are cheaper – and burn cleaner – than coal.

When Agricon was established by managing director André Eksteen five years ago, it focused on the design and assembly of animal feed pelletising equipment, aimed at replacing costly imported machinery.

In 2005, when the company moved to Autodesk Inventor Professional software, Eksteen re-designed and improved the company's original Agri 150 pellet mill, producing a much more robust and less expensive product.

The ease of modelling with Autodesk Inventor Professional, combined with its cabling and harnessing capability, simplified and accelerated design work. In addition, the FEA capability of the software enabled Eksteen to analyse the stresses on the shafts, which he discovered were badly under-designed. The resulting robust shafts, together with the automatically controlled feeding system, ensure smoother operation and reduced user maintenance.

Autodesk Inventor Professional also helped overcome the hitches the company had been experiencing during assembly. By providing the companies that waterjet and laser cut the machine parts with electronic design files, Agricon could be certain that all parts would be 100% correct. This eliminated delays and costly reworks that had previously hampered assembly.

Agricon has also been able to extend its product line by adding seven more pellet mills, with capacities ranging from 200 kg to five tons/hour, to the Agri pellet mill range.

The bigger machines compact virtually any waste biomass material, including coal dust, sawdust and grape husks, converting it into alternative energy sources for use by industry. Animal manure can also be pelletised to produce fertilizer.

With Agricon's Agri pellet mill, millions of tons of coal dust that have accumulated in mine dumps in Gauteng, creating serious ground and air pollution, can be compacted into pellets. Produced at 65% of the cost of mining fresh coal, they can be used to fuel industrial burners.

"At a time when fuel is at a premium in this country, with an over-extended electricity grid and soaring oil costs, this is a viable, eco-friendly fuel supplement for industry," says Eksteen.

"Our past year's 60% turnover increase and 85% rise in net profit are largely attributable to the use of Autodesk Inventor Professional software in extending our product line to meet new demands." ♦

## To: Autodesk Africa

"Wow, what a surprise! When Agricon decided to move to Autodesk Inventor Professional software, little did we know what it would mean.

"As a company, we have developed new, more advanced designs and our market has expanded into a global one.

"Personally, the whole design experience has changed for me, and work has become fun. I can't wait to sit down in front of my computer with a new design and have tackled projects I would never have considered before we got Inventor Professional.

"Our success story has opened more new doors for us and we've even seen Agricon listed in Autodesk's entry in the Wall St Journal Technology Innovation Awards.

"Looking ahead, we're anticipating new challenges, confident in the knowledge that we have the backing of Autodesk and its Eastern Cape reseller, Micrographics.

"Thank you!"

From: Andre Eksteen, Agricon

# All-digital design review

Autodesk Design Review software (formerly Autodesk DWF Composer) is the all-digital way to review, markup and track changes to 2D and 3D designs.



*Users can move, rotate, isolate, make transparent and hide/show any part of a 3D DWF model—and then save views and positions back into the DWF file.*

Adding a wealth of new functions and features to the earlier product, Autodesk Design Review accelerates manufacturing projects, enhancing collaboration between extended development teams.

“The software helps streamline a design’s round trip from concept through review, markup and approval, accelerating sharing of digital design information during the product development cycle,” says Imraan Lambat, Autodesk technical manager. “It’s particularly useful for suppliers, the manufacturing shop floor, customers and others who don’t use design software and can’t accommodate data-intensive files.”

Users can accurately measure, redline and markup DWF, DXF, AutoCAD DWG, Autodesk Inventor and raster formats. They can communicate changes in the context of the design by adding comments, tracing status and dragging information of any type including product specifications, change orders or estimates – and combining them into a single file. The file is then returned to an Autodesk design application, where the designer overlays the digital markups on an original CAD file for fast revisions.

Advances include 3D pull-apart and cross-sectioning, new batch publishing capabilities and printing and viewing in black and white, which makes the review process even easier. Enhanced measure and markup functionality, automatic tracking of all changes and tighter integration with all Autodesk design products result in more powerful, compact reviewing technology for users of Autodesk software.

In addition, team members who work in collaboration with Autodesk Inventor customers can now analyse assembly instructions, BOM data, Inventor representations and FEA results published from Autodesk Inventor 11 DWF Extension.

## FREE DWF VIEWER AND WRITER

Autodesk’s free DWF Viewer is the smartest way to share accurate design information across project and design teams. The software has been downloaded more than 11-million times and, according to IDC Research, is already an industry-leading vehicle for sharing design data. The latest release offers product teams increased sharing of design data critical to the manufacturing collaboration process.

Autodesk DWF Writer offers more options to freely publish 2D and 3D design data to DWF files. It supports publishing 2D files and 3D models that retain imbedded intelligent design information, including specialised plug-ins for Solidworks 2005 and 2006, Pro/ENGINEER Wildfire 2, and CATIA V5.

## AVAILABILITY

DWF Composer users should contact their reseller for more information, while Autodesk Inventor subscription customers can get Autodesk Inventor 11 DWF Extension at <http://usa.autodesk.com/adsk/servlet/item?id=7430881&siteID=123112>. Find Viewer and Writer downloads at [www.autodesk.com/dwfviewer](http://www.autodesk.com/dwfviewer) and [www.autodesk.com/dwfwriter](http://www.autodesk.com/dwfwriter). ♦

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