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2013 PneuDrive Competition – Strategic Platform for SA Engineering Education

Johannesburg: Sponsors of this year’s PneuDrive Challenge competition, SEW-EURODRIVE and Pneumax, strongly believe that their competition is a platform that is critical in strengthening the quality of South African engineering qualifications.

2013 has seen a wide range of policy papers, discussions and speeches made, which highlight the importance of competent engineers as part of the solution to meet the growing needs of our young democracy. The PneuDrive Challenge 2013 Engineering Design Competition, which is in its 6th year, offers a unique learning experience that brings together the study of engineering theory, the latest technology in drive engineering and pneumatics, and the need to solve existing business problems. It is a unique business initiative that offers a vital link between the academic study of engineering and the need to develop engineering competencies that businesses need.

Acknowledging the Need for Competent Engineers

In a developing democratic society such as ours it is engineering practitioners who will be required to design, develop and implement the technological processes required for increasing industrialisation and improving our global competitiveness. Business sustainability and competitiveness cannot be achieved without competent, skilled and innovative engineers coming through the South African education system. This was highlighted in a response to the National Development Plan where it was stated that “South Africa’s success hinges on our ability to strengthen its engineering qualifications in order to provide the skills to implement the plan”.

Earlier this year, Consulting Engineers SA (CESA) president, Naren Bhojaram, stated that crumbling education standards was one of the main issues threatening South Africa’s competitiveness and future sustainability”. He suggested that South Africa needs to produce 10 times as many engineers as it is presently doing. “We need about 30,000 engineers per year to be able to carry out planned future infrastructure development projects. However, we are only currently producing about 3000”. He also pointed out that many other developing countries are delivering substantially more graduate engineers with higher quality skills.

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Recent research undertaken by ECSA regarding the number of citizens per registered engineer supports these concerns by pointing out that South Africa falls very far behind in comparison to developing countries such as China, India and Brazil. What this highlights is that more needs to be done in educating young engineers – and quickly.

Business Needs to Support Education

The PneuDrive Challenge is a practical and successful example of how learning bridges can be built between tertiary institutions and business. For example, this year the sponsors suggested a "Greener Mining" theme and have created a platform where student engineers can engage with industry experts who will help them to explore and design the practicalities of solving problems faced by those in the mining industry. By inviting mechanical, electronic and mechatronic engineering students to design applications for managing and disposing mining waste in a manner that is financially viable, the challenge undoubtedly stretches students beyond their typical academic and engineering design boundaries.

Adrian Buddingh, managing director of Pneumax, emphasises that “by asking students to review mining waste challenges, and then to submit designs that can improve and influence the profitability and longevity of mining operations, we believe that we have provided an important learning platform that requires students to step beyond academic theory”.

Effective Learning Needs to Go Beyond Academic Theory

Besides creating an opportunity to bring together academic theory, the latest pneumatic and drive technology and then real-life business and design challenges, the PneuDrive Challenge also generates personal learning experiences that develop important characteristics for young professionals entering the job market. Engineers of the future will need to be problem solvers, planners, designers and application constructors. They will need to understand the consequences of extracting resources from the environment and know how to apply innovative ideas and solutions across interrelated disciplines. These are learning skills that cannot take place within the context of a traditional four-year academic degree.

Rene Rose, general manager for communications at SEW-EURODRIVE, points out that “by having access to up-to-date technology, experiencing how to work in teams, developing new ideas,

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engaging with industry experts and then applying theory on a practical, real-life business level, students get an insight into how they will need to perform once they graduate.”

During the competition students are offered an opportunity to attend small learner-driven workshops that focus on introducing the interface and functionality of engineering design software. Autodesk, a world leader in 3D design and engineering software, joined the challenge mid-year and has offered free software to all participating universities. Having access to subject matter experts who can advise on how to select products and test proposed applications is an important step for engineering students who need to effectively learn how to bring together complex software and difficult engineering concepts.

A range of prizes are available to competing teams, for example the winning lecturer of the team that wins the Autodesk component of the competition will receive an all-expenses paid trip to the company’s university conference in Las Vegas. The team that submits the best “Greener Mining” engineering design receives an all-expenses paid trip to Germany and Italy where they will present their design at the head offices of SEW-EURODRIVE and Pneumax, a once-in-a-life-time learning opportunity to kick start their careers. The winning university also has an opportunity to claim R 100,000 worth of SEW-EURODRIVE and Pneumax products.

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