

# D P N

# DESIGN PRODUCT NEWS



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### Explosion proof transducer

Balluff has introduced the Micropulse TA12, a non-contact linear position sensor with a compact, explosion proof housing. The sensor is designed for continuous feedback on hydraulically and pneumatically actuated valves for oil and gas refining, storage, transport and handling. The magnetostrictive sensor is designed for both extended duty and quick replacement.

[balluff.com](http://balluff.com)

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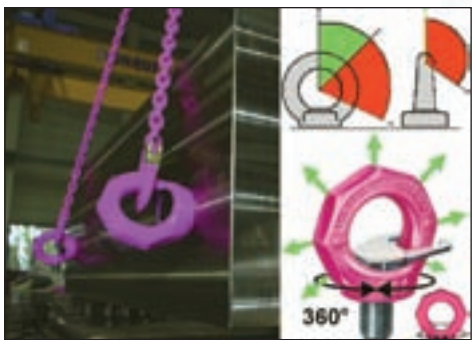


### Terminal block system

Clipline Complete terminal blocks from Phoenix Contact are screw-on, spring cage, spiral spring and Quickon quick connectors. All connection systems can be freely combined with one another via a patented bridge plug system.

[phoenixcontact.ca](http://phoenixcontact.ca)

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### Adjustable eyebolts

RUD has introduced the Starpoint line of adjustable eyebolts. The unit is adjustable through 360° and can be adjusted to the direction of pull before attaching to loads up to 70,550 lb.

[rud.com](http://rud.com)

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# Keilhauer task chair design

## an ergonomic breakthrough

By Mike Edwards

Once you sit in one of these babies, you may never want to sit in another chair.

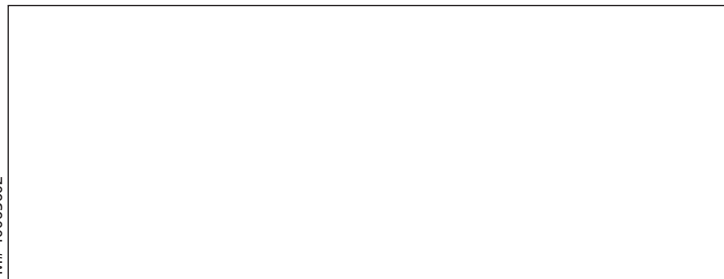
Taking its cue from Pilates ball fitness exercises and exhaustive ergonomic scientific research, Keilhauer ([keilhauer.com](http://keilhauer.com)) of Toronto has designed a breakthrough task chair. The Sguig chair also addresses the different ways that men and women sit, accounting for our biological differences.

Due for commercial release in April, the IDEX/NeoCon 2006 Gold Award-winning Sguig chair is the culmination of more than seven years of research on gender-based differences in sitting, in-depth exploration of seating ergonomics in North America and Europe, and market-proven Keilhauer design intuition. By offering one, ergonomically appropriate seating solution for men and women, the chair could represent a quantum leap for workplace comfort, health and productivity, regardless of gender, physical build or personal working style.

"We poured our hearts into this product and

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## Cover Story

# Sguig chairs put Pilates principal into the everyday working environment

### From Front Page

are confident the effort has paid off in what is truly an innovation in seating,” said Mike Keilhauer, president, Keilhauer. “Not only does Sguig mean both men and women can finally have equal comfort and support, it represents a new era in office seating.”

A task chair intended for use in any office environment, the Sguig design incor-

porates three distinct principles of seating inspired by the healthy concept of active sitting. It addresses static sitting, which causes fatigue; compensates for individual sitting balance and center of mass, which is directly related to physical differences between genders; and allows full range of motion for the shoulders and upper body.

Sguig prototypes underwent a period of rigorous testing by a leading ergonomic evaluation centre. The company knew that

women, due to their inclination to sit forward or perch in their chairs, rely on the seat pan for support, while men generally do the opposite – they recline and let the chair back support them. Keilhauer also discovered a gender difference in the rotation of the pelvis while in the seated position. The Sguig chair, unlike any other product available, accommodates these gender-driven sitting tendencies, and eliminates any need to provide separate chairs for men and women.

According to Steve Keilhauer, director of Technical Development at Keilhauer, the chair project “began with paper sketches of potential designs of the mechanism that were then taken into Pro/ENGINEER mechanical CAD software. We then ran four prototypes to provide a proof of concept for the mechanism.”

Steve Keilhauer noted that the project was a collaborative effort between designers at Keilhauer, the Vienna-based design firm EOOS and Markham-based genexis design inc. ([genexisdesign.com](http://genexisdesign.com)).

Genexis president Vladimir Zila, who is both a professional engineer and industrial designer, as well as a certified Pro/E professional, said the whole chair had to be adapted to the new way of using the chair. “We had to mimic the rolling of a sitter on a Pilates pneumatic ball.

“Thirty different concepts were explored inside the Pro/E modeling environment to evaluate the viability.” Zila also used Pro/MECHANICA finite element analysis to do iterative static testing on groups of the



The central mechanism for the Sguig task chair design is located in the base, not in the cylinder of a traditional chair.

chair’s load-bearing components.

The central mechanism for the Sguig design is located in the base, not in the cylinder of a traditional task chair, said Steve Keilhauer. “The Sguig had to mimic the ankle pivot and bounce, while restricting the range of motion for safety and from a functional perspective.”

The mechanism behaves like a floating ball joint that tilts both side-to-side and back-to-front. Keilhauer had the challenge of testing a variety of durometers of the main flexible rubber element.

The development of spring bouncing action in the design invokes the principle of core training – a popular exercise method practiced to maintain spinal health, while encouraging back and abdominal muscle activity. The Sguig chair also provides greater flexibility in helping users find the most comfortable position for how they prefer to sit by allowing free movement of a user’s body in all directions.

Additionally, Sguig’s innovative back design supports and nourishes lumbar, kidney and upper thoracic areas of the spine, while featuring flexible areas behind the shoulders for unimpeded movement with Keilhauer’s T1-L5 Free Shoulders technology.

The features of the Sguig design combine to create a dynamic sitting experience that helps to increase alertness and maintain concentration, while addressing the causes of seating-related muscle pain. And after sitting in a prototype for about 90 minutes, I didn’t want to switch back to my old task chair.

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