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The Best Products of 2004

When it comes to technical products, working design engineers really do know best. So for this year's *Design News* Best Products of the Year contest, we decided to put all the contenders up for a direct vote and ask our readers to be the only judges. This year's contest drew a record number of entries from vendors in five categories only an engineer could love—electronics, motion control, fluid power, software and hardware, and materials and joining. Here's a look at the winner in the catergory of pneumatic systems and controls:

BEST PRODUCT OF THE YEAR

Design News readers cast their ballots for the year's best products

Cushion Softens the Blow

Viscoelastic cushion adjusts to load variations

Ace Controls Inc.'s viscoelastic NuCushion softens the "bang-bang" blows of pneumatic actuation without adjustment, no matter the velocity or force of the blow. The viscoelastic cushion, designed to fit on air cylinder pistons, represents a departure from the air-based devices that have long been used to soften the impact of fast-moving pneumatic actuation.

BEST PRODUCT OF THE YEAR

Unlike air cushions, the new device doesn't need to be tweaked whenever an end user changes the size or speed of a load. Ace Controls' engineers say that the viscoelastic material's rate dependency under load allows them to naturally adjust to variations. "Whereas air will react in the same manner under all conditions, a viscoelastic material will react one way if you hit it fast, and another way if you hit it slowly," notes Mike Ferkany, engineering manager for Ace Controls. "It's ideal for someone who has variability that they can't control in their operation."

NuCushion, which employs a proprietary variation on DuPont's well-known Hytrel thermoplastic elastomer, lends some simplicity to automation projects: It not only does away with the need for air adjustments but also eliminates the need for bleed needle assemblies and cushion spuds, as well as the seals that are part and parcel of air cushioning systems. Moreover, the viscoelastic cushions also cut the clicking noise that normally occurs when pistons hit home during fast cycling. "If you have an application where the end users object to noise, or have a lot of variability in their operation, this is a good solution," Ferkany says.

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NuCushion