NuVinci
DELTASERIES™

BETTER PERFORMANCE. MORE ECONOMY.

NuVinci® DeltaSeries™ AC Compressor Drives Provide:

- Increased compressor output at low engine speeds
- Reduced compressor speed during cruise improves fuel economy
- Flexible packaging
- Opportunity to rightsize AC compressors
- Reduce startup torque transients to clutch, compressor, accessory beltline, thereby reducing NVH
- Optimized, demand-based compressor performance during cruise and acceleration

Traditional AC Power, Untraditional Performance

Transit buses, government trucks and commercial vehicles share a common AC problem – namely that a belt driven AC compressor is undersized for the refrigerating capacity desired because installation of a larger compressor is limited by available package space in the existing engine compartment. Scroll compressors are one solution, but they can't be spun fast enough on the existing belt line.

A *NuVinci* *DeltaSeries* AC compressor drive improves AC compressor performance by decoupling the engine speed from the compressor speed, enabling the compressor to operate in its optimal range based on demand regardless of engine speed. As a result, the *NuVinci* compressor drive delivers the ideal compressor speed all the time – optimizing AC operation and performance, thereby enhancing performance, increasing system efficiency and improving fuel economy.

NuVinci CVP Technology

At the heart of every *NuVinci* accessory drive is Fallbrook's award-winning *NuVinci* continuously variable planetary (CVP) transmission technology. The *NuVinci* CVP is a new class of CVT transmission technology that acts as a power management system to control the speed and optimize the performance of the accessory drive. Unlike conventional CVTs, the *NuVinci* CVP uses a set of rotating and tilting balls positioned between the input and output components of the transmission that tilt to vary the speed of the transmission. Tilting the balls changes their contact diameters and varies the speed ratio. As a result, the *NuVinci* CVP offers a seamless and continuous transition to any ratio within its range.

NuVinci

NuVinci DELTASERIES™

BETTER FEEL. BETTER PERFORMANCE. BETTER SOLUTION.

A *NuVinci DeltaSeries* AC compressor drive improves AC compressor performance at low engine speeds, with minimal complexity, easy installation and low cost. It has also proven to improve fuel economy, by slowing the compressor speed down at higher engine speeds.

Figure 1 illustrates a thru-drive power path configuration. The AC compressor drive receives power from the belt, transfers it to one traction ring, through the planet balls, and out of the other traction ring. Tilting the balls provides a smooth ratio transition from overdrive to underdrive. In overdrive, the *NuVinci* accessory drive provides high compressor speeds at engine idle. In underdrive, it keeps the compressor from over-speeding at high engine speeds.

The *NuVinci* AC compressor drive enables control of output speed (see red line in Figure 2), independent of engine speed (the white line). At engine idle, output speeds may be increased providing more performance from the compressor. At higher engine speeds (such as accelerating from a stop or cruising), accessory speeds may be reduced, saving energy. The *NuVinci* CVP also shifts quickly, help to smooth out transients.

The Result

The graph in Figure 3 illustrates the improvements in both refrigerating capacity and volumetric efficiency that result from a *NuVinci* AC compressor drive. The improvements in capacity will vary with compressor type, but the benefit to refrigerating capacity at idle can be as much as double for some compressor types.

Thus, *NuVinci* AC Compressor Drives Deliver:

- Better AC compressor performance at Idle
- Reduced AC compressor power consumption at engine speeds above idle
- Quiet, smooth operation
- Compact, in-line packaging

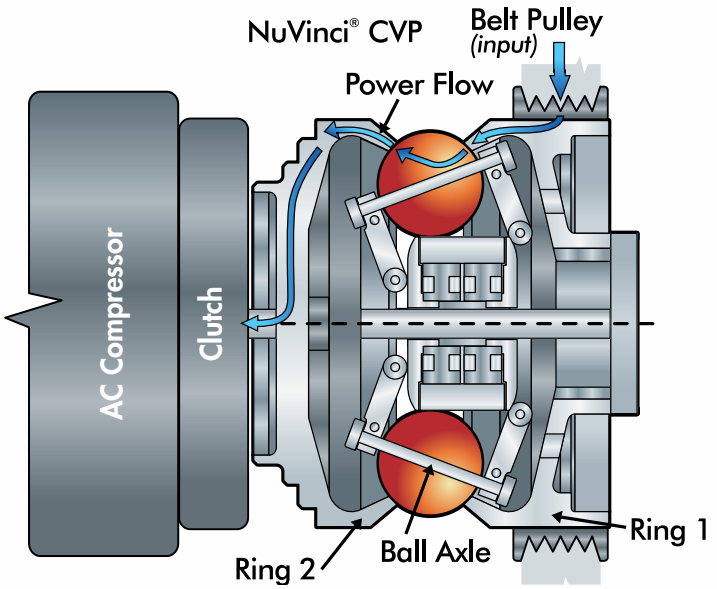


Figure 2. Speed Comparison

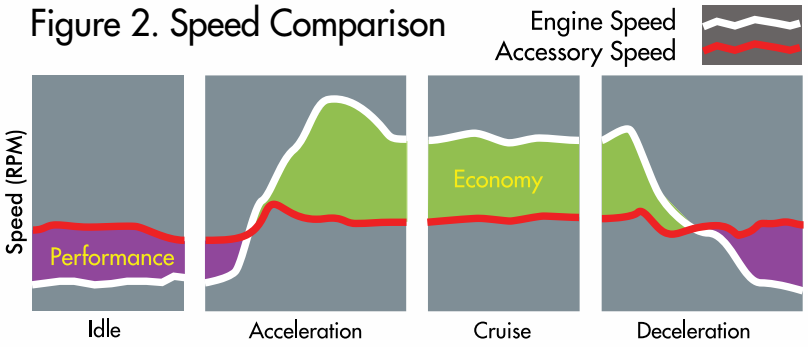
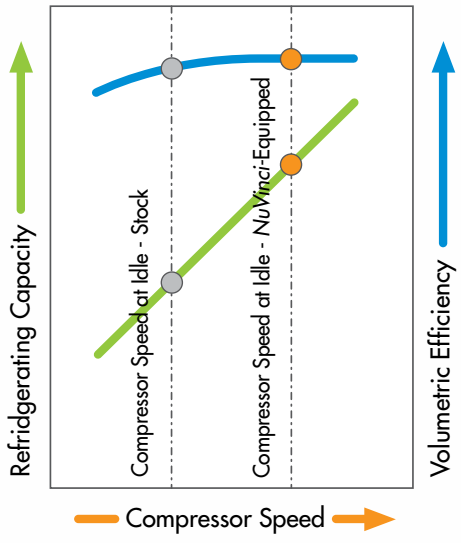


Figure 3.
Relative Performance Improvements at Idle



Become a *NuVinci* Development Partner

Fallbrook Technologies is currently selecting *NuVinci* CVP accessory drive development partners in several cleantech/ heavy duty market areas. Becoming a development partner gives you first-strike capability in reaching your market with innovative new products, as well as access to the comprehensive and unmatched *NuVinci* technology portfolio of over 350 patents and patent applications worldwide.

WWW.FALLBROOKTECH.COM

Fallbrook Technologies Inc.
505 Cypress Creek Road, Suite C
Cedar Park, TX 78613
Toll Free: +1 (888) NuVinci (688-4624)
Tel: +1 (512) 279-6200
Fax: +1 (512) 267-0159
support@fallbrooktech.com

In Europe
EU@fallbrooktech.com

In Asia Pacific
AsiaPac@fallbrooktech.com

FALLBROOK® TECHNOLOGIES

For more information, visit:
www.fallbrooktech.com