

# Innovative clutch design launched

Ballscrews are key in a new design of clutch for automated transmission systems, delivering 100% efficient disconnection

In one of the first automated transmission systems on the market, Swiss ballscrew and leadscrew manufacturer, Eichenberger Gewinde, has developed the critical structural element for a cutting edge, automatic version of the clutch, taking it from a one-off prototype to series production. Using a cold-formed steel ballscrew of diameter 12mm and pitch 3mm, this novel clutch is able to fully engage at low motor rotation speeds by merely pressing a switch.

Operating the clutch is also adapted according to information supplied by a tilt sensor and the required starting gear, while the motor rotation speed can be increased for a smooth start if required. The clutch does not slip when it is used, meaning the speed of the mechanisms in frictional contact does not deviate. The clutch, therefore, is 100% efficient at disconnecting the transmission from the engine. This efficiency effectively protects the clutch and other drive train components against mechanical overloading.

Frequent gear shifting is unavoidable with commercial vehicles in urban environments. Normally this increases clutch plate wear, and the necessity for subsequent replacement. However, Eichenberger's novel

clutch system reduces wear, increasing its service life and positively impacting maintenance and fuel costs.

The smoothly coordinated shifting process - that moves a load of 3500N in 0.02 seconds - demands the ultimate in terms of dynamic response. This took fully six years of fundamental research and development time in drive and lubrication fields, and it was found that only a ballscrew can stand up to these incisive demands between dynamic forces and momentum. Eichenberger's robust Carry ballscrew meets these demands impressively. Moreover, thread rolling has an extremely positive impact on the roughness value of the thread flanks and the base radius, resulting in very low notch sensitivity.

## Impressive efficiency

Lifetime lubrication is demanding and difficult to guarantee. With seven-digit load changes at around 4000rpm, achieving the impressive 90% efficiency factor of the Carry ballscrew for the entire service life required extensive tests. Some of the endurance tests lasted nine months, while lubrication tests to achieve the service life took more than two years. Eichenberger used



their proven steel tube type ball return system for the 12x3 ballscrew, and a highly efficient connection of the deflection pipe was realised as a result of the developments.

Eichenberger ballscrews and leadscrews are available in the UK through Moore International. [www.mooreinternational.co.uk](http://www.mooreinternational.co.uk)

## the Machine Building Show

THE UK'S ANNUAL AUTOMATION SHOWCASE

30th September & 1st October 2015 Hall 3 - NEC Birmingham

- The UK's ONLY national machine building show
- Dedicated and focused seminar programme
- High quality visitors from all sectors of industry
- Backed by the UK's leading industrial publications
- Everything for the machine builder and system integrator
- Co-located shows make it a 'must attend' event
- The chance to network with industry peers

For more information call Kathy Ambrose on 01622 699129  
or email: [kambrose@datateam.co.uk](mailto:kambrose@datateam.co.uk) or Marlene Carr  
on 01822 614671 or email: [mc@trident-exhibitions.co.uk](mailto:mc@trident-exhibitions.co.uk)

[www.machinebuildingshow.co.uk](http://www.machinebuildingshow.co.uk)

IF YOU SUPPLY COMPLETE SYSTEMS, SUBSYSTEMS OR COMPONENTS – IT'S A MUST!



This event is supported by:

**Automation**  
PRACTICAL SOLUTIONS FOR MANUFACTURING EFFICIENCY

**DesignSolutions**  
SOFTWARE, MATERIALS AND COMPONENT SOLUTIONS FOR THE DESIGN ENGINEER

**Industrial Technology**

**MachineBuilding.net**  
news, articles and resources for machine builders