

Warner Electric

Boston Gear

TB Wood's

Formsprag Clutch

Wichita Clutch

Marland Clutch

Industrial Clutch

Nuttall Gear

Warner Linear

Delroyd Worm Gear

Stieber Clutch

Ameridrives Couplings

Inertia Dynamics

Matrix International

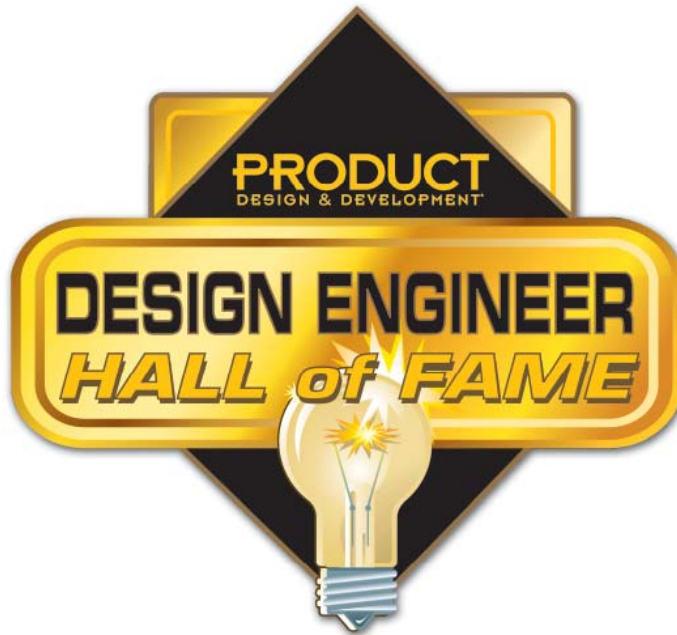
Huco Dynatork

Bibby Transmissions

Twiflex Limited

Kilian Manufacturing

Ameridrives Power
Transmission



As seen in
Product Design & Development
December, 2009



 **Formsprag**[®]
Clutch

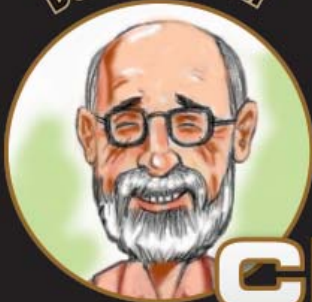
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PRODUCT
DESIGN & DEVELOPMENT

DESIGN ENGINEER
HALL of FAME



David Beach



Dr. Forrest Bird



CLASS OF
2009

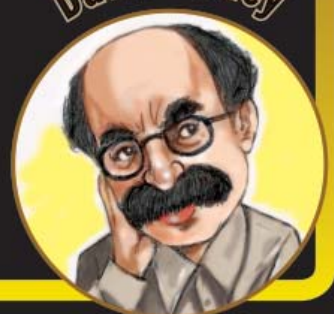
Ted Zlotek



Leonardo da Vinci



David Kelley



Ted Zlotek

Formsprag's Director of Aerospace Products, Ted Zlotek, is the overrunning clutch guru of the aerospace industry.

Perhaps most impressive is that at 90 years of age, Zlotek still works five days a week and puts in more hours than most men 1/3 his age.

Zlotek's longevity, however, only skims the surface when you're talking about a man who is universally revered in the small, yet global community of helicopter transmission engineering.

He began his career at Formsprag Clutch in 1951. At the time helicopters were first proving their worth as transport and medivac rotorcraft during the Korean War. Helicopters were in their infancy and Zlotek was quick to react by modifying automotive sprag clutch designs for improved functionality in a helicopter drivetrain.

He registered his first patent in June, 1959, for a sprag retainer in a one-way clutch that ensured all sprags would simultaneously and equally roll to carry the load torque.

In 1994, he registered his 19th patent, at the age of 75, for a sprag retainer with rotational restraint.

"We had a group from the U.S. Army here last fall for a quality audit and one of the guys just stopped and exclaimed, 'Ted Zlotek! I'm so pleased to meet you!' I think we could have passed the audit right then and there," says Jack Pederson, Formsprag business manager of aerospace and defense.

Beginning as a mechanical engineer in 1957, Tom Long grew up with Ted. He remembers when Formsprag first sold overrunning clutches to Bell Helicopter for the Hueys they supplied to the Army throughout the Vietnam War.

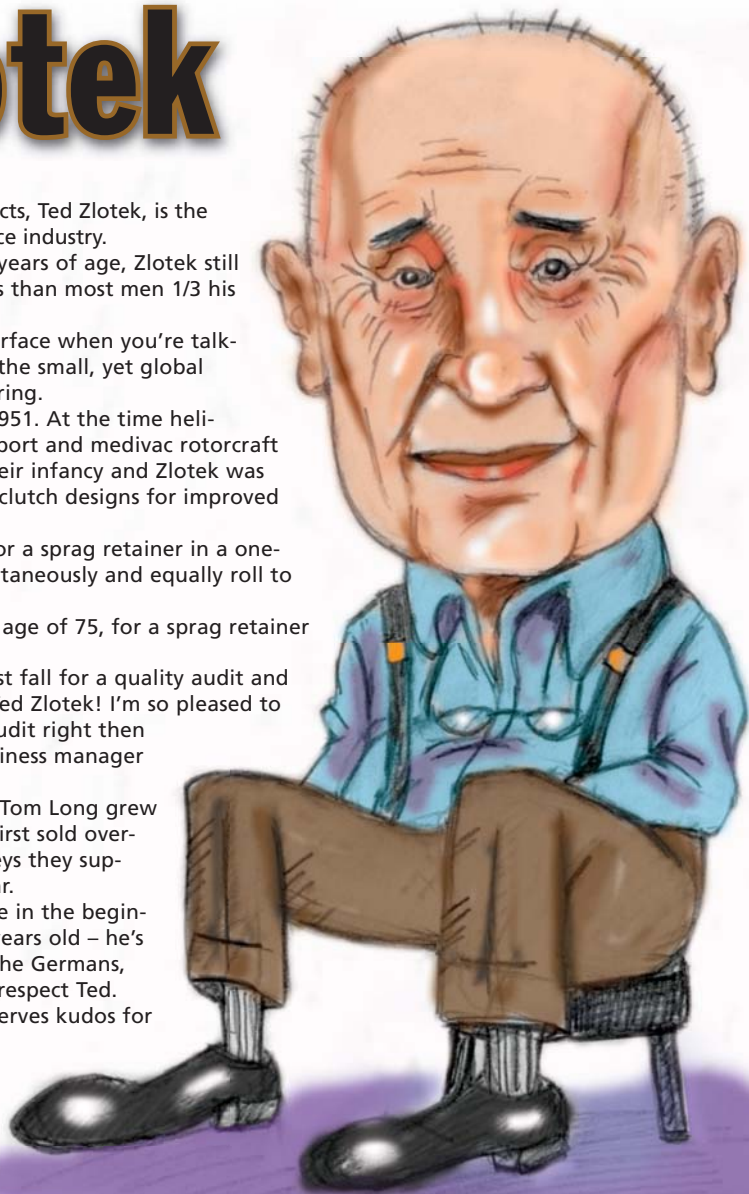
"That really put us on the map. Ted was there in the beginning – and he's still there," says Long. "At 90 years old – he's really an international figure in the industry. The Germans, Italians, French, Japanese – they all know and respect Ted. Ted's designs are the best in the world. He deserves kudos for all he's done for the helicopter industry."

"Ted is the epitome of the engineer's engineer," says Curt Orkin, former Design Specialist at Kaman Helicopters. "Very practical, very analytical, he listens to your ideas then formulates his own ideas, and he knows how to get through the 'weeds'. I worked with Ted for 20 years, and I never found a problem that was too big for him. He's always very calm, very steadfast – nothing seems to upset him. His longevity is truly impressive. His spirit has always remained young. Timeless."

Zlotek was 68 years old when he and the Formsprag team were asked to design a clutch for a twinning application in the Bell Boeing V-22 Osprey. It was one of the toughest challenges ever presented in the design of sprag overrunning clutches for a helicopter application.

In the years developing the V-22 clutch, Zlotek registered two of the 19 patents credited to his long career, including a new process for surface hardening sprags called Formchrome — the proprietary chroming process in which the surface of the hardened high-carbon alloy steel sprags are infused with chromium to form a chromium-carbide alloy that provides extra-long life, maximum wear resistance and lower maintenance costs. The Formchrome patent and Zlotek's patent for a new positive continuous engagement (PCE) capability have been the two most influential changes to sprag design.

A common mantra is that "it's all a matter of visualization. You look at something and it tells you something." To Ted Zlotek, a helicopter drive-train sprag can say an awful lot.



Engineer

About Altra Industrial Motion

Altra Industrial Motion (NASDAQ:AMIC) is a leading multi-national designer, producer and marketer of a wide range of electromechanical power transmission products. The company brings together strong brands covering over 40 product lines with production facilities in nine countries.

Altra's leading brands include Boston Gear, Warner Electric, TB Wood's, Formsprag Clutch, Wichita Clutch, Industrial Clutch, Ameridrives Couplings, Kilian Manufacturing, Marland Clutch, Nuttall Gear, Stieber Clutch, Twiflex Limited, Bibby Transmissions, Matrix International, Inertia Dynamics, Huco Dynatork, Ameridrives Power Transmission, Delroyd Worm Gear and Warner Linear. For information on any of these technology leaders, visit www.AltraMotion.com or call 815-389-3771.



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