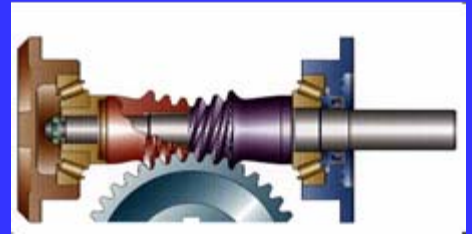


Application case study

Aerospace Series W - zero backlash

HIGH FLYING PERFORMANCE AND IMPROVED PRODUCTIVITY



The new reducer packages in this aerospace wing drilling application handle four times the torque of the previous units in the same restricted footprint.



engineered to keep you moving

At the outset the customer was skeptical that all their design criteria could be satisfied, but a few months after installation they contacted Cone Drive to report that the project was an unqualified success. The reducer packages were performing to plan and had indirectly given rise to significant improvements in productivity.

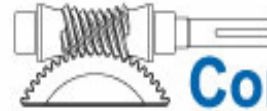
In fact an axis oscillation observed during operation of the previous system had disappeared. Productivity had improved because the settling time of the vibration had been removed, and the drilling operation could begin immediately after each axis move. With several hundred holes to drill, time savings amounted to several minutes per wing.

The machine has two reducers driving a vertical rotary axis consisting of an 8 foot long frame supporting a horizontal drilling unit, free to move up and down on a linear axis.



"With Cone Drive we were able to increase the axis torque capacity by roughly a factor of four (2060 vs. 522 in.lb. x two reducers) using the same limited space for the boxes to fit into. What's more the reducer packages are performing exactly as they ought to perform, without any shake, vibration or detectable backlash. With a third wing produced on the machine, the axis is still running solid - the machine's production rate is up, and the only thing any of the controls people can attribute that to is the fact that there is no settling time as the axis comes into position. The old anti backlash air cylinder is still mounted on the machine, but now it is just used to mount our axis limit switches!"

www.conedrive.com



Cone Drive
A Textron Company

The project involved replacing two Alpha 050 model reducers which the customer reported had failed on multiple occasions. The original design utilized a crude system to eliminate backlash using an air cylinder to push against the axis output in one direction. The customer was worried that he might not be able to fit any higher capacity reducer into the limited space defined by the small existing reducers. He also did not want to use the existing anti-backlash system. The zero backlash Cone Drive units solved both problems.

Before the Cone Drive units were installed, it had been possible to flex the little Alpha 050's by hand quite easily. By comparison when the Cone Drive units were first installed, it was not possible to move the axis at all.

Once the zero backlash Cone Drive units were installed, they were tested for about five hours, running the axis continuously back and forth at about four times the normal operating speed with a significantly increased duty cycle. The temperature of the motors remained far below what they had run at while driving the Alpha units and the "air cylinder" anti backlash system.

Cone Drive

North America: +1 888 994 2663
Central & South America: +1 231 946 8410

Sister companies

David Brown & Benzlers

Africa: +27 11 748 0000
Australia: +61 2 4283 0300
China: +86 21 5396 6360
Europe: +33 3 89 37 01 13
Scandinavia: +46 42 18 68 00
Thailand: +66 38 459044
United Kingdom: +44 (0)1484 465500

engineered to keep you moving



The customer had also been concerned that the existing motors would not have the torque capacity to handle the tight zero backlash setup and Cone Drive had given the option of buying spacers which would allow the removal of the springs to convert the new reducers to low backlash if necessary. In the final event the zero backlash setting was left unchanged because the estimates made as to loading and the backlash setting were exact.