

Due to the trade-offs associated with key performance characteristics, gear types do not lend themselves to universal statements comparing one to another. If a comparison between two gear technologies is required, it must be made within the context of a specific application and focused on a specific performance characteristic.

In this case study, Helicon and Worm gear types are compared within the context of an application in which the primary objective is to **minimize space claim**. The application's requirements are shown to the right.

## APPLICATION REQUIREMENTS:

Maximum Available Space	3.7 in. x 3.7 in. x 1.0 in.	94 mm. x 94 mm. x 25.4 mm.
Minimum Torque	370 in-lb	41.8 Nm
Minimum Efficiency	70%	
Operating Speed	2,500 RPM	
Reduction Ratio	30:1	
Expected Life	1,000 hours	

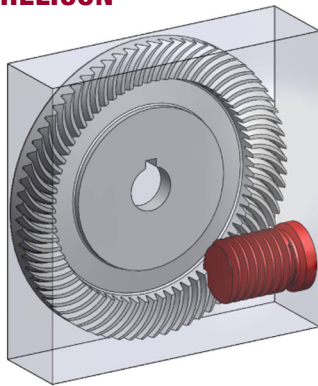
## RESULTS:

IMPERIAL	Minimum Space Claim (in.)	Minimum Space Claim (in. <sup>3</sup> )	Resultant Torque (in.-lb)	Resultant Efficiency (%)
Helicon	2.50 x 2.50 x 0.85	5.3	378	70.1
Worm*	3.67 x 2.90 x 0.97	10.3	374	78.0
Advantage	Helicon 48.3%		Helicon 1.1%	Worm 10.1%

METRIC	Minimum Space Claim (mm.)	Minimum Space Claim (mm. <sup>3</sup> )	Resultant Torque (Nm)	Resultant Efficiency (%)
Helicon	63.5 x 63.5 x 21.6	87.0	42.7	70.1
Worm*	93.2 x 73.7 x 24.6	168.5	42.3	78.0
Advantage	Helicon 48.3%		Helicon 1.1%	Worm 10.1%

\*Worm gearset design per ANSI/AGMA specification # 6034-B92

**HELICON**



**WORM**

