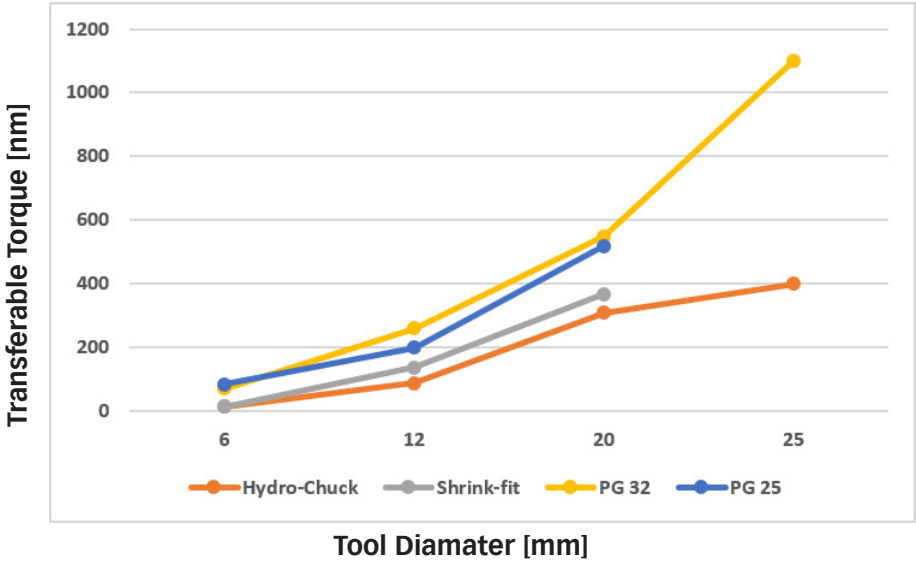
powRgrip® System

Comparative analysis of powRgrip vs Hydraulic

REGO-FIX

Clamping Force Comparison

powRgrip is a 100% contact press-fit system which results in higher clamping forces. This chart shows the powRgrip PG 25 and PG 32 series clamping forces compared to internet data from a major German manufacturers website for the comparable hydraulic systems.

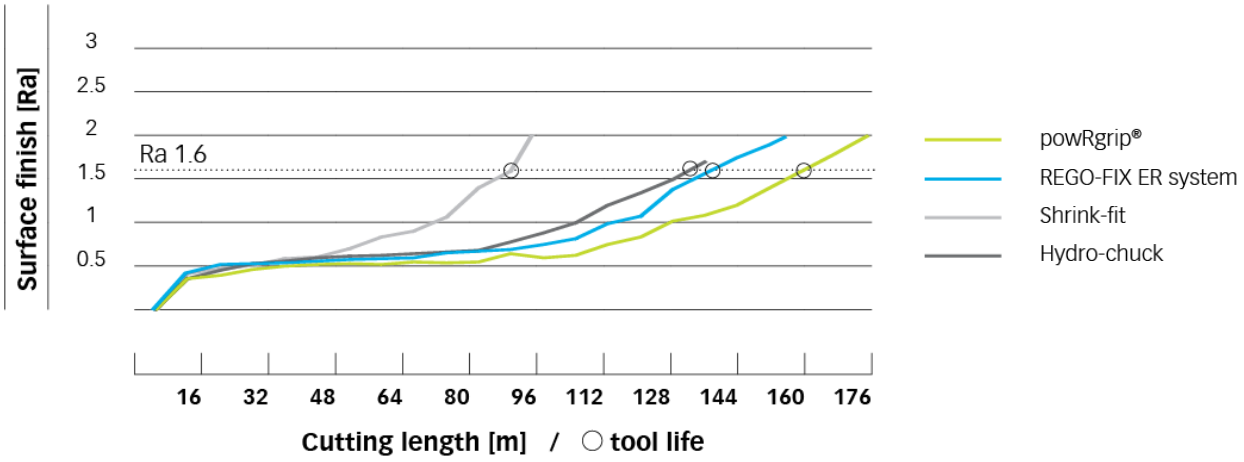


TIR Comparison

If TIR is important to your production, consider that a hydraulic holder can be a precision holder with 3 microns TIR when used without a reduction sleeve. However, when a reduction sleeve is required that 3 microns TIR is doubled to 6 microns or more. How do we know this? REGO-FIX produces hydraulic reduction sleeves for some of the largest suppliers of hydraulic holders in the world. These sleeves, by design, have a specification of 3 microns by themselves.

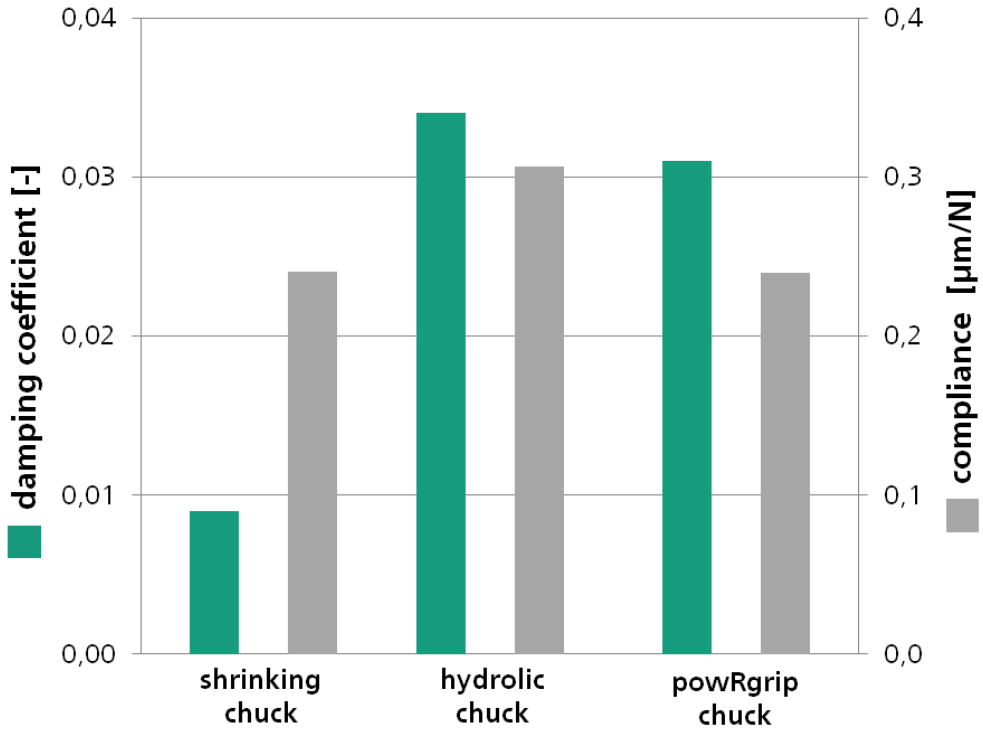
Increased cutter tool life with the powRgrip System

Influence of tool runout on tool life / Source: In-house testing



Vibration Damping

In a test by Fraunhofer IPK in Germany, where they compared powRgrip to shrink and hydraulic, they found that the powRgrip holder had the same deflection as the shrink holder while displaying better vibration damping. The hydraulic holder had good damping but was less rigid and had more compliance, which would result in more tool deflection.



Damping coefficient – how well the toolholder dampens vibrations

Compliance – how much defelection does the assembly have

Why such a difference?

The powRgrip system offers superior vibration damping due to is unique design. The system consist of a holder, collet and cutting tool. All three components are made from different materials leading to reduced vibrations.

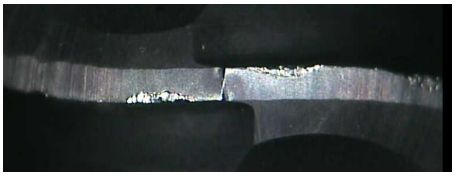
powRgrip also has the advantge of one material being under tension and one under compression to further reduce the mitigation of the vibrations. No other system offeres this unique design and ability to reduce vibrations, but still be rigid and supply unmatched clamping forces.

Emuge Testing of powRgrip & Hydraulic

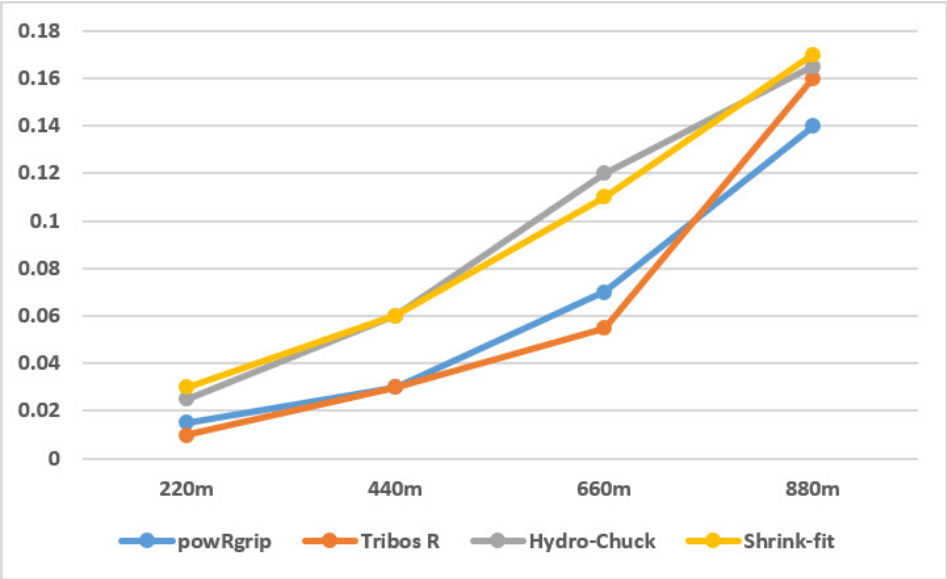
Test results provided by Emuge Franken in Germany

The results show the progressive measurements of the cutting tool flute wear during a 880m length of cut. The results show that the vibration damping of the powRgrip system allowed it to be much better than the unforgiving shrink-fit & hydro-chuck holders. As the cutter wear became more pronouced the lack of surface contact and rigidity from the hydraulic system caused an accelerated amount of wear on the cutting tool. The powRgrip systems higher vibration damping and rigidity allowed it to provide less wear on the cutting tool.

Test 1:
Tool Lifetime at HSC Milling
HERMLE C40U m/c
Material ISO 1.2312, hardened steel 56-58 HRC
End mill, 2 flute, dia 8 mm
Spindle speed 16,000 R.P.M.
Cutting speed 400 m/min.
Feed speed 4.7 m/min.
Feed/flute 0.15 mm
DOC approx. 0.1 mm w. x 0.1 mm d.
Cooling by air



Width of cutter wear marks, mm



A second more aggressive test yielded the same results of powRgrip providing better tool life and wear than either hydraulic, shrink-fit and Tribos.

Test 2:
Tool Lifetime at HPC Milling
FIDIA K 165 m/c
Material ISO 1.2379, tooling steel
End mill, 4 flute, dia 10 mm
Spindle speed 8,000 R.P.M
Cutting speed 250 m/min
Feed speed 4.78 m/min
Feed/flute 0.15 mm
DOC approx. 0.3 mm w. x 20 mm d.
Cooling by air