

Gear tooth profile grinding

Objective

The particular challenge of gear tooth profile grinding is the extremely high sensibility to thermal damage caused by a relatively high contact between the workpiece and the grinding wheel. To avoid thermal damage of the workpiece ATLANTIC recommends using very porous, vitrified bonded aluminium oxide grinding wheels. ATLANTIC grinding wheels master the special challenge of combining a cool grinding process with simultaneous high wear-resistance. Benefit from the great deal of experience and manufacturing expertise that ATLANTIC company offers to you and reach an increase of your material removal rate ($V'w$) and stock removal volume ($Q'w$).



Grinding wheel

ATLANTIC specification of grinding wheels for gear tooth profile grinding

EX3 80 - D11 VY 40N

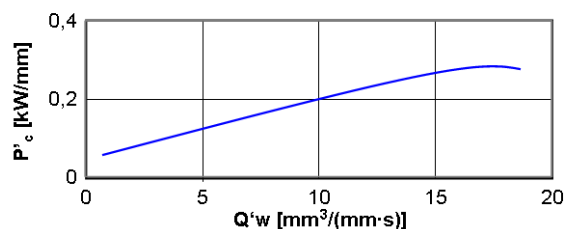
- EX3 - grain type
- 80 - grit size
- D - hardness (very soft)
- 11 - structure (open)
- VY - ATLANTIC bonding for gear tooth profile grinding (V = vitrified)
- 40N - porosity of the grinding wheel

Results of the machine tool laboratory (WZL) Aachen

The machine tool laboratory (WZL) of the University of Aachen is one of the leading institutions in the field of gearing technology. The WZL and ATLANTIC concluded a cooperation agreement on the development of a specification for gear tooth profile grinding.

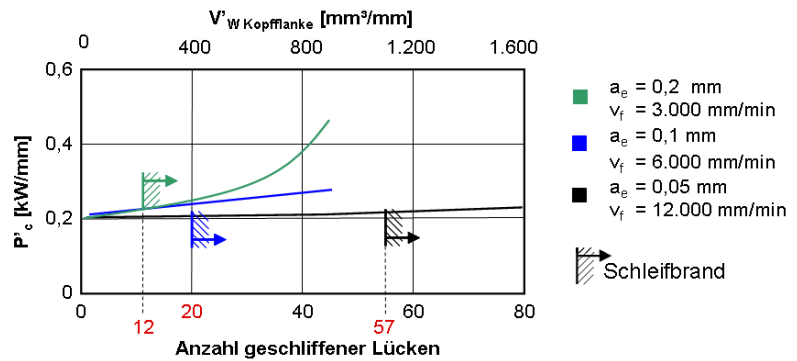
The aim of this cooperation was the evaluation of the performance of grinding wheel specifications for roughing during gear tooth profile grinding.

The tests were made on a Kapp machine. During the test set-up a gear wheel of material 20MnCr5 (60 HRc) got used. The module [mn] was 4.5 mm at a number of teeth of 47.



The curve illustrated shows the grinding power [P'_c] in comparison to the stock removal rate [$Q'w$]. Because of the decreasing power at a $Q'w$ of approx. 17, the risk of grinding burn on the workpiece is minimized by a reduction of the grinding wheel.

The chart shows the grinding power a constant stock removal volume. Grinding burn could be proven as of tooth gap 57 by the usual test procedures like Barkhausen Noise Analyses and nital etching. ATLANTIC could increase the grinding performance by about 15 % compared to the specification known on the market so far.



Stock list

Stock Number	Specification	Grinding Wheel Dimensions (OD x W x ID*)
05999 3001 SLS	EX3 80 -D11 VY 40N	350 x 40 x 127,0 [mm]
05999 3002 SLS	EX3 80 -D11 VY 40N	400 x 30 x 127,0 [mm]
05999 3003 SLS	EX3 80 -D11 VY 40N	400 x 45 x 127,0 [mm]
05999 3004 SLS	EX3 80 -D11 VY 40N	400 x 70 x 127,0 [mm]

*OD = outer diameter
 W = grinding wheel width
 ID = inner diameter

The grinding wheel dimensions given are to be considered as semi-finished product program. The dimensions given can be reworked in accordance with your individual requirements. That means the external diameter (ED) and the wheel width (W) can be reduced and the inner diameter (ID) can be increased.

Our service

Our application engineering department provides comprehensive support and thus additional optimization possibilities for the solution of customer-specific tasks.