

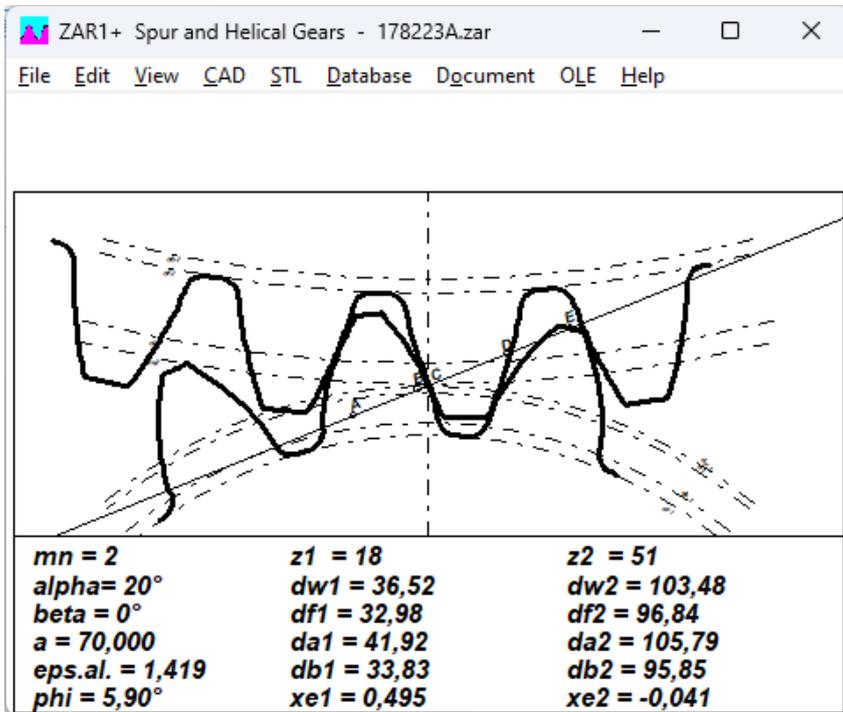
ZAR1+



Gear Design Software Spur and Helical Gears

for Windows

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Bases for Calculation

The ZAR1+ gear calculation program calculates geometry and strength of spur and helical gears with involute toothing (external or internal) in conformance to industrial standards DIN 3960, ISO 1328 or DIN 3961, DIN 3967, ISO 6336 or DIN 3990. Calculation method can be configured. The program contains appropriate interfaces for linking it to CAD systems and databases.

Geometry Calculation

Once the user has entered pressure angle, helix angle, normal module, number of teeth, facewidth and addendum modification coefficients or center distance, ZAR1+ calculates dimensions of gear, gear teeth, tool, and contact ratio factors. On entering gear quality and tolerance zone, the program calculates tooth flank tolerances, tooth thickness, backlash, span width, diametral dimensions over or between balls and pins, and permissible errors according to ISO 1328 or DIN 3961.

Pre-Dimensioning

By input of transmission ratio, rotational speed, power or torque and center distance, ZAR1+ suggests possible combinations with different number of teeth, transmission ratio, and profile shift..

Strength Calculation

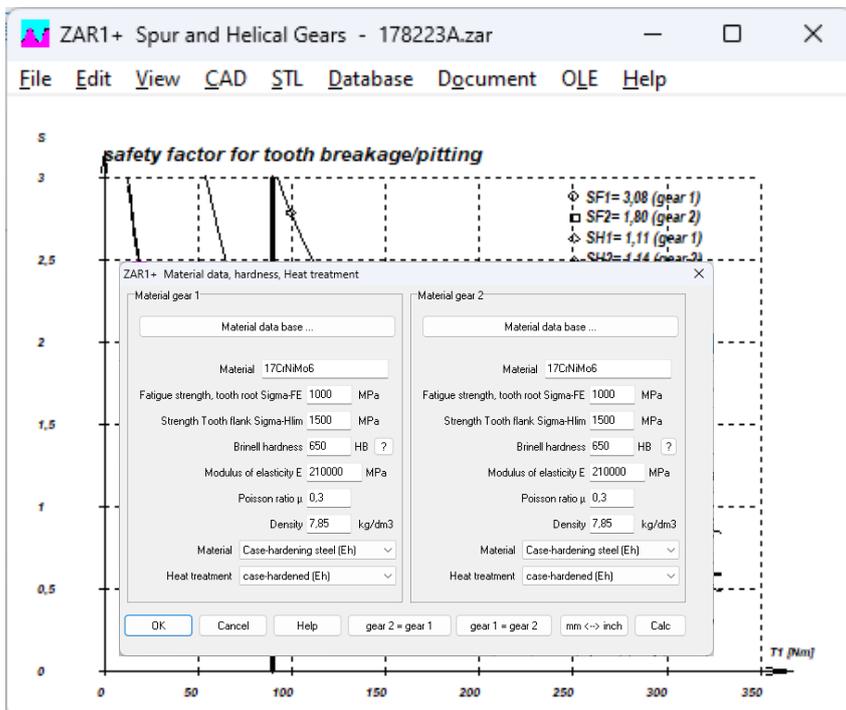
The load capacity with respect to tooth root fatigue fracture and pitting can be calculated in conformance with either ISO 6336 or DIN 3990-1,2,3 or DIN 3990-41 (Vehicle transmission).

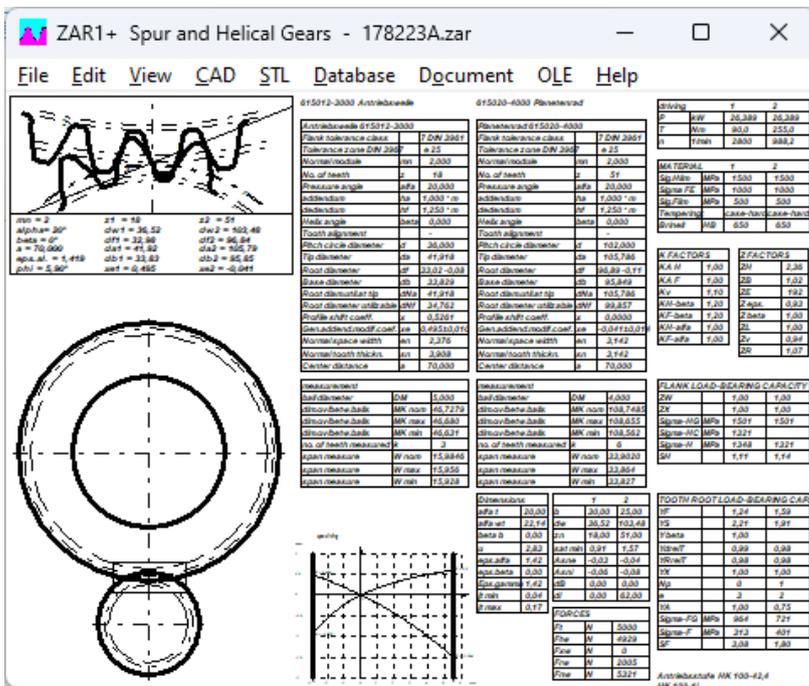
Life expectation

If safety factors are less than 1, ZAR1+ calculates time and load cycles until pitting and tooth breakage.

Special Profiles

To enable users to optimize gear pairs with extradepth teeth, the program allows the tool dimensions of normal and protuberance profiles to be defined freely, even with chamfer.





Material Database

ZAR1+ is delivered with an integrated material database (may be modified by the user).

Animation

ZAR1+ provides animation with rotation of the gear wheels to observe tooth contact on screen. You can define start angle, end angle, and number of steps.

Production drawing

ZAR1+ generates gear drawings with tables of gear data, dimensions and tolerances with ISO 7200 data field.

Diagrams

Safety factors and life expectation as function of input torque and gear quality can be displayed as diagram. Another diagram shows specific sliding along the tooth contact line.

Quick View

Quick View of ZAR1+ displays drawings, diagrams and tables altogether on one screen.

Multistage Gears

For large transmission ratio, ZAR1+ calculates module, number of teeth and center distances of multistage gears.

Load Spectrum

ZAR1+ allows you to define and calculate a load spectrum, with output of a life expectancy diagram.

CAD Interface

Gear drawings, tables and diagrams, true-scale drawings of gear profile, single tooth or reference profile can be generated as DXF or IGES file.

User Interface

The dialogue windows of ZAR1+ allow even the less experienced PC user to find his way around the program quickly. ZAR1 provides users with a relevant help text wherever they are in the program. When the demo mode is selected, ZAR1 runs through a demo program in which an example calculation is performed. ZAR1+ contains more than 50 auxiliary pictures with geometrical signs and formulas used.

Units

ZAR1+ can be switched between metric units (mm, N,MPa) and imperial units (inch, lbf, psi).

System Requirements

ZAR1+ is available as 32-bit app or as 64-bit app for Windows 11, Windows 10, Windows 7.

Scope of Delivery

Software with user manual (pdf), non-expiring license for unlimited time use with update rights.

Guarantee

HEXAGON gives a 24 month guarantee on full functionality of the software. Registered users are regularly kept informed of updates and new editions.

