G R 1

Gear Construction Kit Software

for Windows

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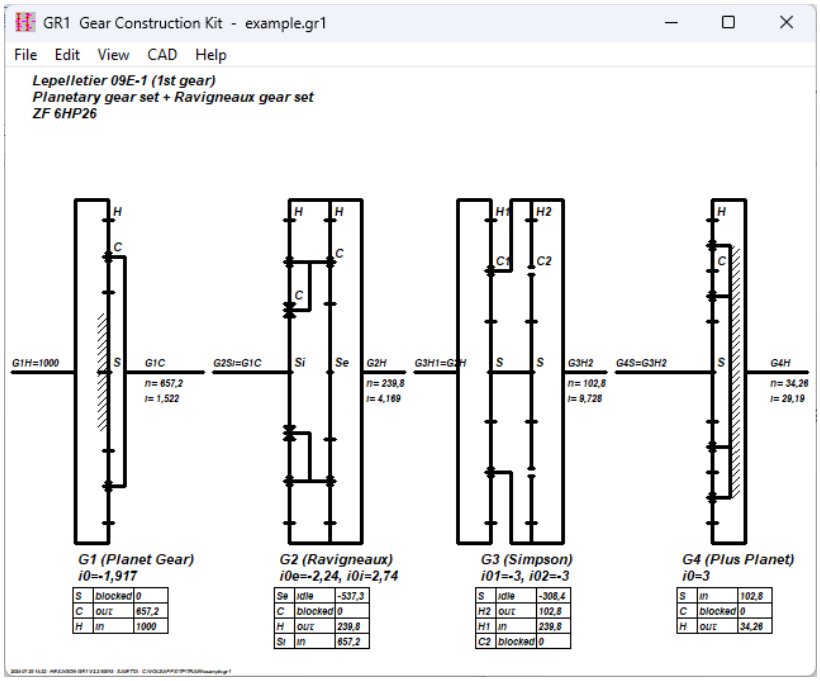
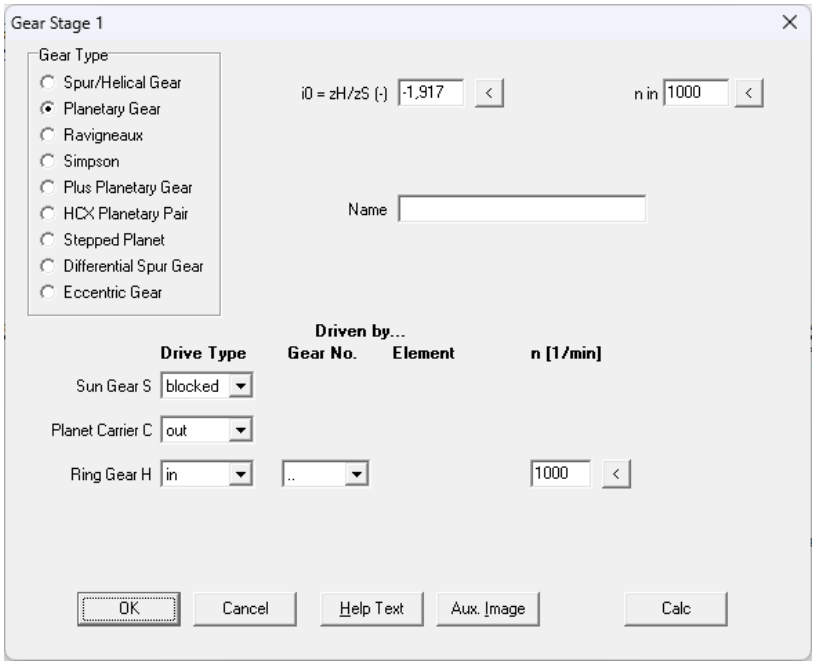




GR1 Software
GR1 is used to compose multistage gears as with a construction kit. GR1 calculates transmission ratio and speed. Up to 50 of following gear components can be used:

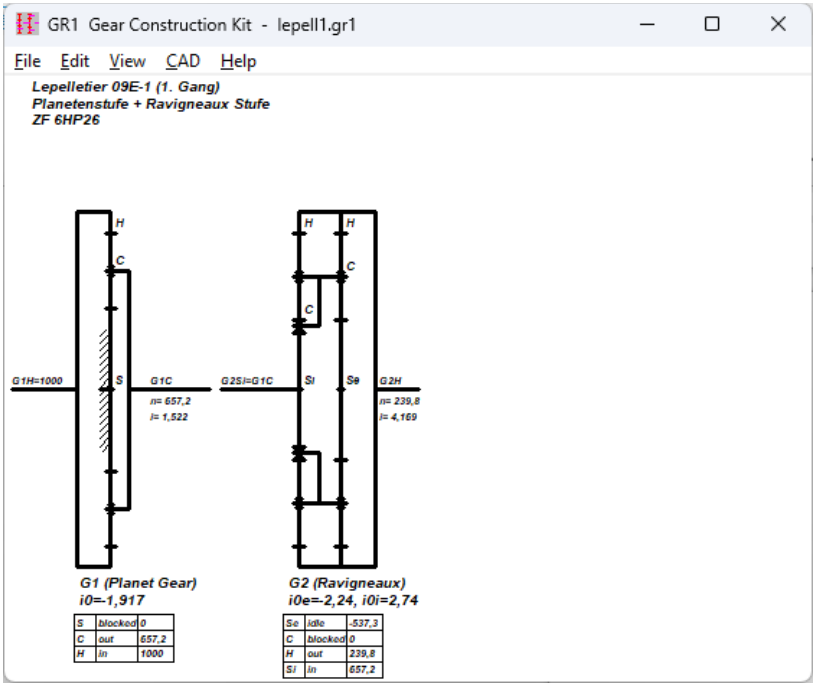
- Spur/helical gear
- Planetary gear (minus)
- Plus planetary gear
- Ravigneaux planetary gear set
- Simpson planetary gear set
- Simpson planetary gear set
- HCX planetary gear set
- Differential planetary gear set

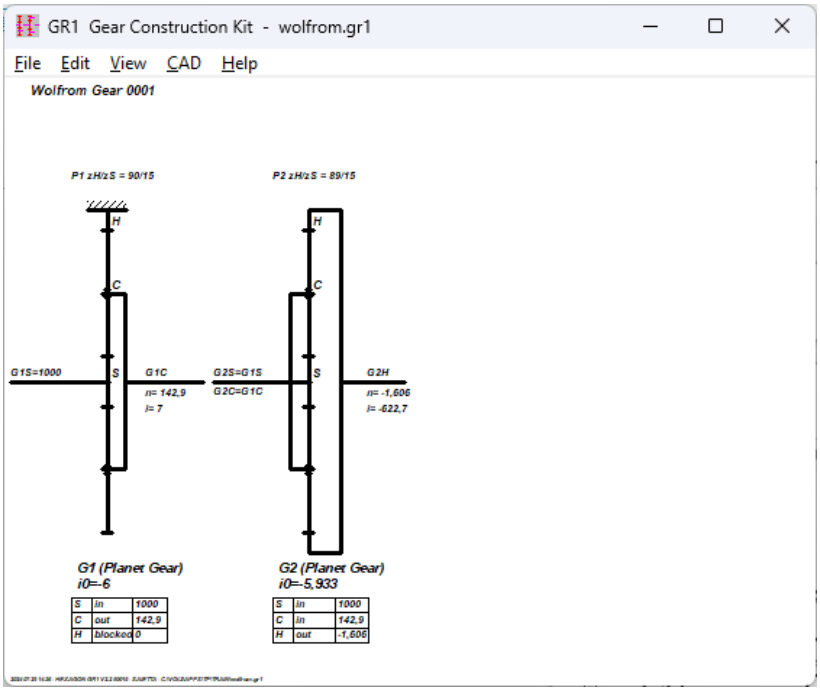
In GR1, simply select gear components and input transmission ratio (stationary gear ratio). For coupling elements of the components you have to define the coupling state:
- input
- output
- blocked
- idle

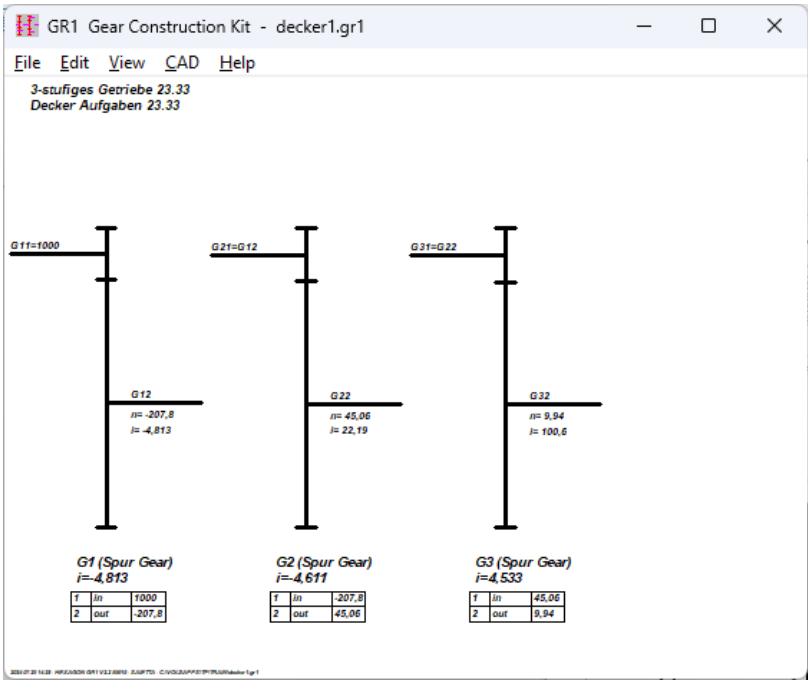
For input coupling you can enter input speed, or select a coupling element of a previous defined gear component. Predecessor coupling element must already be defined, backcoupling cannot be calculated. Torque and efficiency are not calculated by GR1.

Default Gear Shift
For Ravigneaux planetary gear set or Simpson planetary gear set, you can click buttons to set connections and couplings for standard forward gears 1, 2, 3, 4 and reverse gear R.

Example 1: Multistage Helical Gear
Gear wheel 1 of first gear is defined as input shaft with input speed, wheel 2 is driving. Enter transmission ratio negative if rotation of wheel 1 and 2 is opposite. For gear pair with ring wheel, transmission ratio is positive. In second stage, gear wheel 1 is defined as input wheel driven by wheel 2 of gear 1. In the third stage, wheel 1 is the input wheel driven by wheel 2 of gear stage 2.







Example 2: Lepelletier Planetary Gear
Set A Lepelletier planetary gear set is composed of a simple planetary gear followed by a Ravigneaux planetary gear set. Practically used as automatic gear box with 6 or 7 forward gears. Ravigneaux gear set can be driven directly by the input shaft, or driven by output shaft of the minus planetary set, or driven by both in differential mode with different speed. Ravigneaux gear set in differential mode has two input shafts, one output shaft and one idle shaft, in simple mode one input shaft, one blocked shaft, output and idle shaft. In GR1, now connect the gear elements for the gears you want to switch. In first gear, small sun wheel Si of Ravigneaux gear set is input shaft, driven by carrier of predecessor minus planetary gear. Carrier of Ravigneaux set is blocked, output shaft is Ravigneaux ring gear.

Example 3: Wolfrom Planetary Gear Set
A Wolfrom gear is composed of two planetary gear sets with slightly different transmission ratio. Sun gears and carrier of both planetary gear sets are connected. Input is sun wheels, output is ring gear of the second planetrary gear, ring gear of first planetary gear set is blocked.

Text Printout
Calculation results can be printed, saved as txt or HTML file, or directly exported to MS-Excel.

Graphic Printout and CAD Interface
Drawings with gear components and tables can be printed by each Windows printer, or exported into CAD as DXF or IGES file.

HEXAGON Help System
Auxiliary text and images are available for all dialogue windows. If error messages appear, you can get description and remedy suggestion.

Export Formats
DXF, IGES, HTML, TXT, Excel, GR1.

Import Formats
TXT, Excel, GR1.

System Requirements
GR1 is available as 32-bit app or as 64-bit app for Windows 11, Windows 10, Windows 7.

Scope of Delivery
Program with user manual (pdf), example applications and help images, non-expiring license for unlimited time use with update rights.

Software Maintenance
HEXAGON Software is continuously improved and updated. Registered users are regularly kept informed of updates and new editions.

Guarantee
HEXAGON gives a 24 month guarantee on full functionality of the software. We provide help and support by email without extra charge.