Trailer Consultation
Programs

Trailer Consultation

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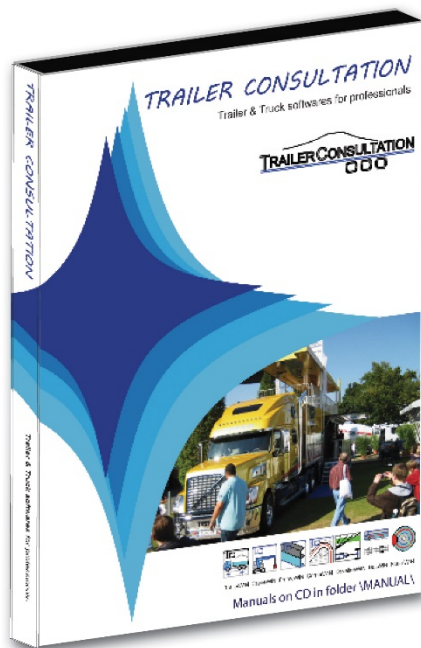
Softwares for Commercial Vehicle Technical Calculations
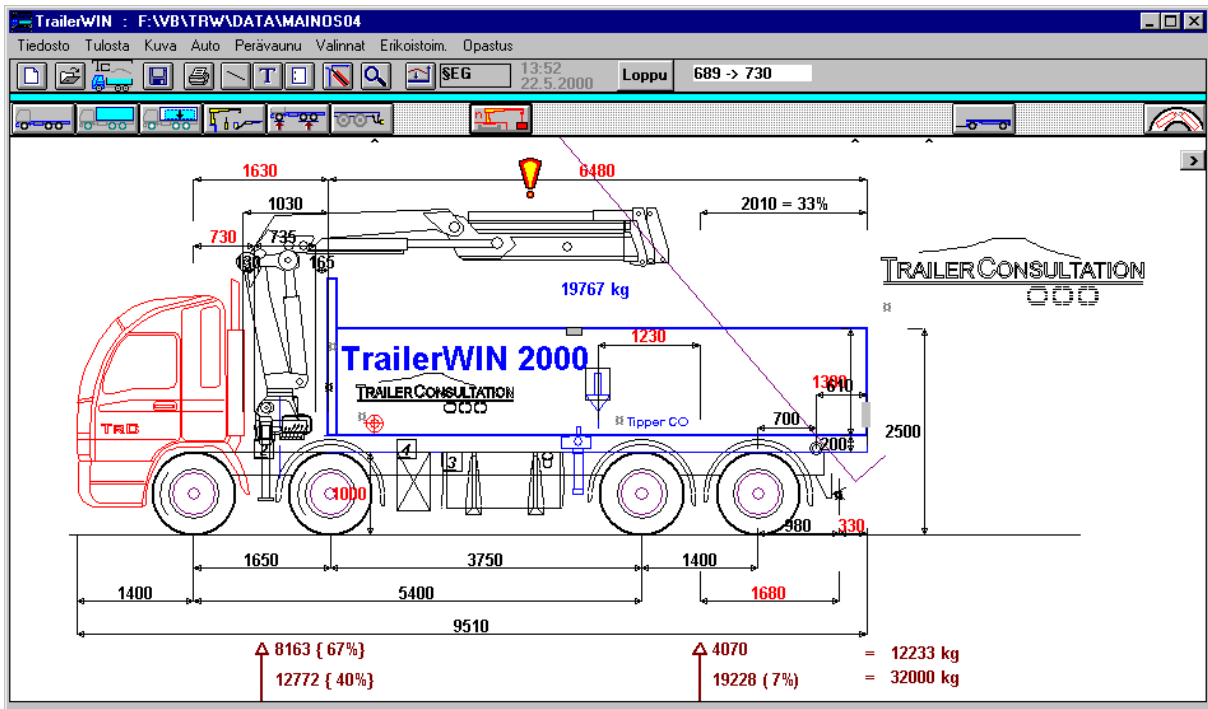
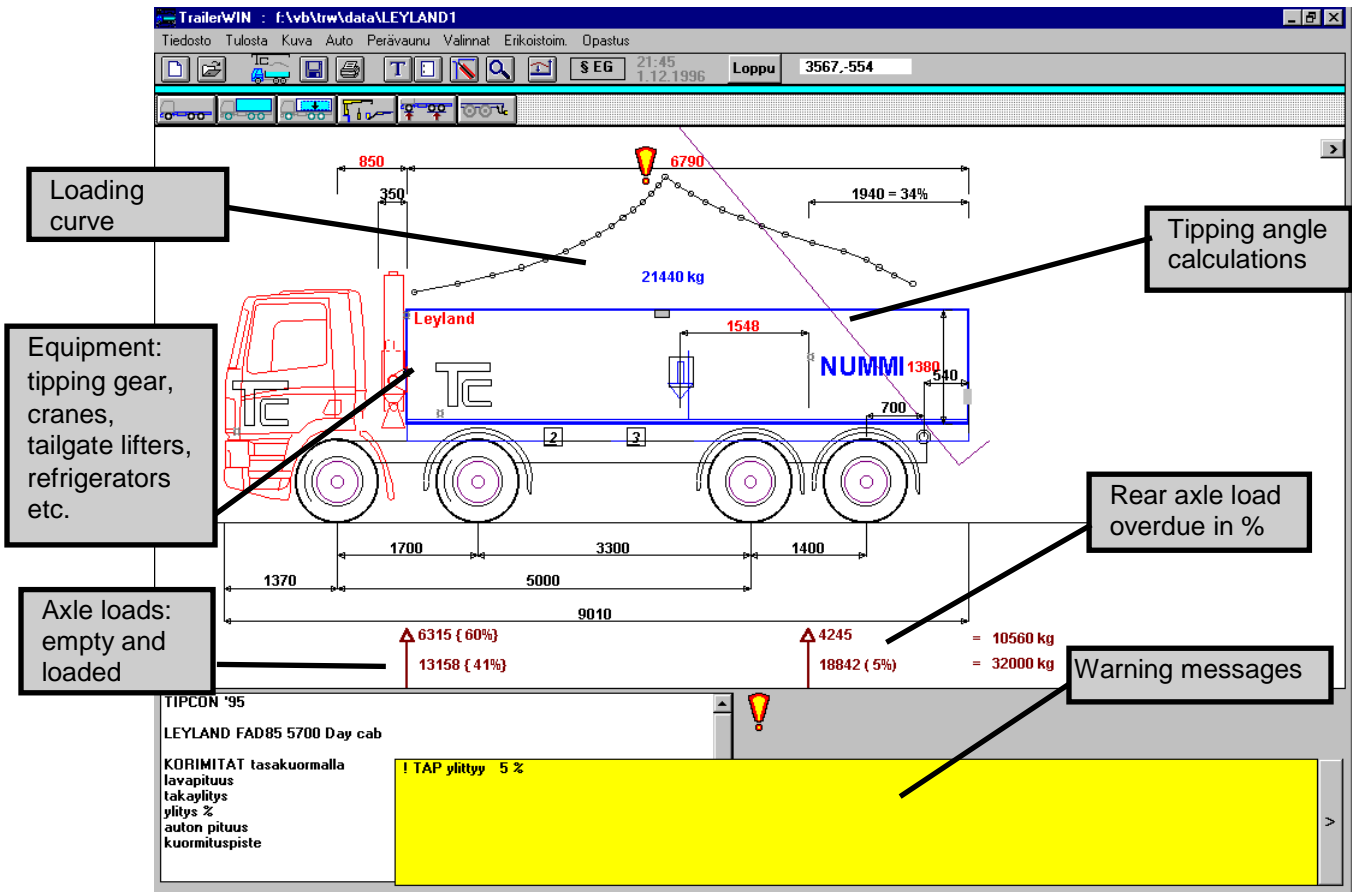|		
TrailerWIN	**Truck and trailer constructions :** weight distribution (axle loads), body building, mounting equipment (crane, rear lift, hook lift, truck mounted forklift, demountable, etc.) and turning calculation
CraneWIN	**Crane stability calculation for a crane mounted on truck**
FrameWIN	**Subframe calculation for mounting a crane**
CornerWIN	**Turning calculations**
BusWIN	**Turning calculations for bus**
BrakeWIN	**Brake calculations for trailer brakes**
DrivelineWIN	**Drive speeds and pulling force on tyres on all gears**

System requirements for TrailerWIN:

- PC Pentium computer,
- Memory at least 64 Mb
- Free space on hard disc 1800 Mb , when installing all truck- and equipment files
- Windows 95, 98, NT4, W2000 , XP, Vista, Windows 7, Windows 8 & 8.1 (32/64 bit), Windows 10 operating system
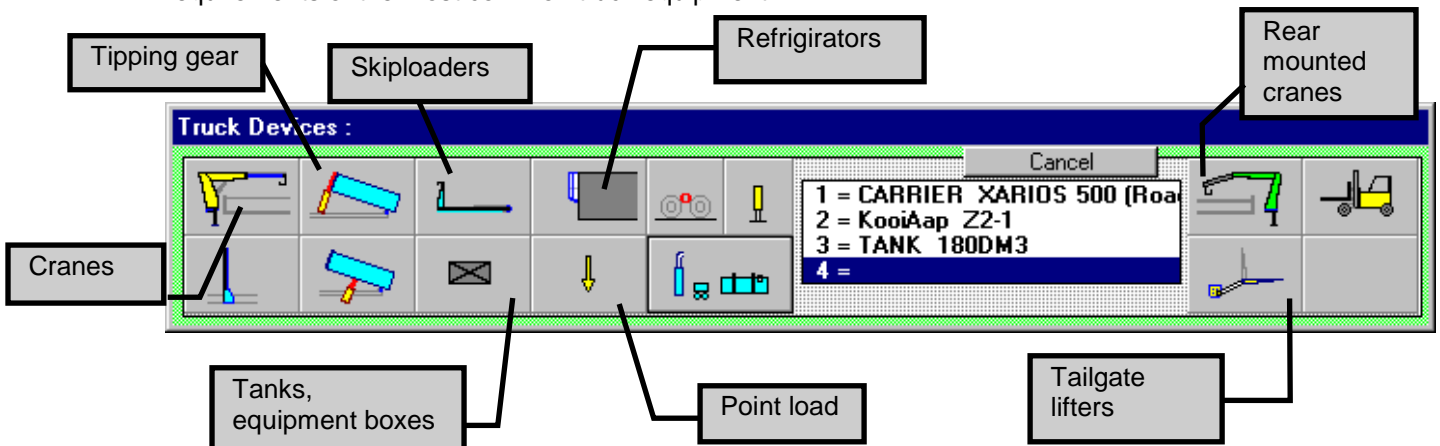
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TrailerWIN   Software for commercial vehicle construction

Loading curve

Tipping angle calculations

Equipment: tipping gear, cranes, tailgate lifters, refrigerators etc.

Rear axle load overdue in %

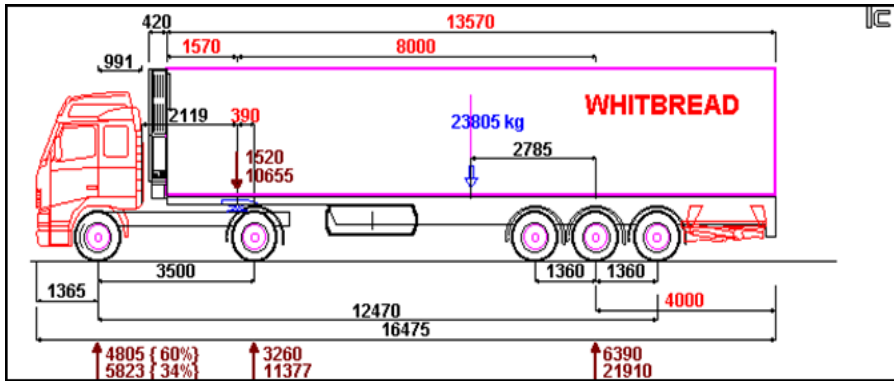Axle loads: empty and loaded

Warning messages

TrailerWIN does the truck body calculations in accordance with weight distribution, total vehicle length, load weight point etc.

TrailerWIN covers data on most models by a wide range of truck manufacturers and data can also be given or changed by the user if needed.

Truck and trailer may have various equipment such as a crane, a tipping gear, a rear lifter, a hook lift, forklift truck, a refrigerator and a lengthened cab etc. TrailerWIN also contains weight and space requirements of the most common truck equipment.

Tipping gear

Skiploaders

Refrigirators

Rear mounted cranes

Cranes

Tanks, equipment boxes

Point load

Tailgate lifters

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The **TrailerWIN** program identifies the following truck types: 2-5 axle trucks, 2-6 axle trailers, 1-4 axle semitrailers and 1-3 axle center-axle trailers as well as road trains with two trailers.

TrailerWIN allows you to select any truck and trailer combination. TrailerWIN will automatically optimize the dimensions of the trailer. Should these dimensions be found inadequate, they can be modified to suit the requirements.

TrailerWIN carries out regulation check-ups of dimensions, weight distribution, overhangs, corner clearance and turning calculations of the truck and trailer combination.

The presentation of the truck cab and equipment are created as a real-life picture. You can also check measurements and measure distances with your mouse. It is also possible to add on textboxes to the picture. These can contain e.g. the customer's name or other data. The user has the possibility to draw simple shapes directly to the picture.
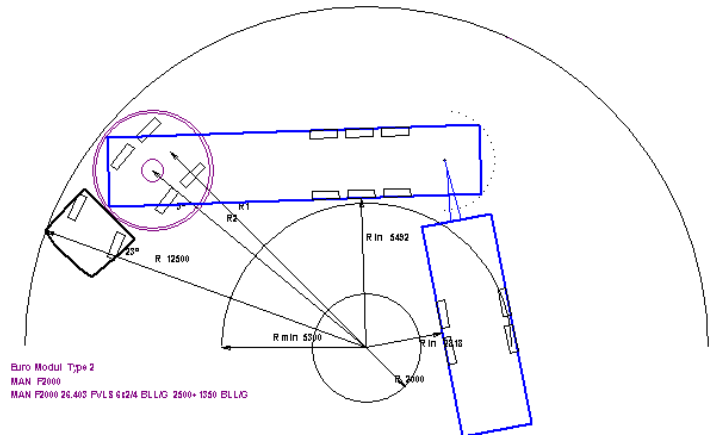
The calculation can be saved as a file and be brought up for later modification.

The picture of the truck or combination can be moved to other Windows programs by using clipboard. The picture can also be saved as a BMP-file or a DXF-file for later use in i.e. AutoCAD.

The program allows the use of own DXF-drawings from i.e. AutoCAD for truck body pictures.
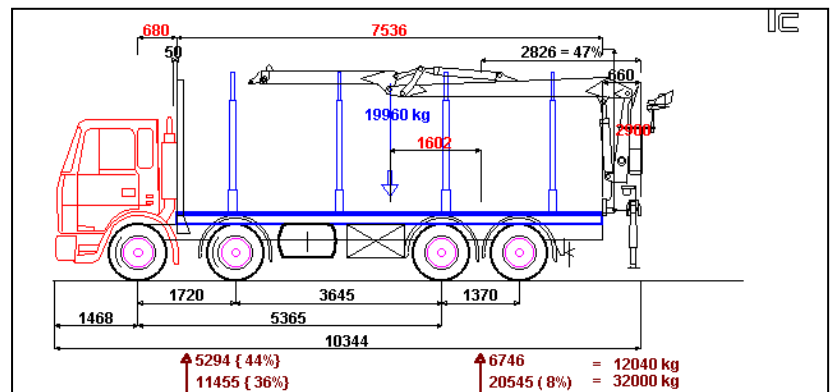
**The TrailerWIN software is easy to use.**
The user does not have to be a computer wizard to master the program, he should however be familiar with the concept of building trucks.

Painotaulukko	Mitta	Ea	Ta	yhteensä
+ Alustan paino		5090	3580	8670
+ henkilöiden lukumäärä 2	0	176	-26	150
+ kuormatilan omapaino 80 kg/m	4152	172	368	540
1 NUMMI EWC 137-152/70	695	578	-18	560
2 Tank	2900	173	127	300
3 Tank 2	3910	125	215	340
= Painot tyhjänä :		6315	4245	10560
+ kantavuus	4152	6843	14597	21440
= Painot kuormattu :		13158	18842	32000
:: AUTOLLE SALLITUT PAINOT		14000	18000	32000

Weight calculation in table

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Examples of loading / de-loading curves in TrailerWIN:

Loading curve. Shows where to put COG of load and how much we must reduce total load if COG of load is placed forwards or rearwards from optimum. The diagram shows also the actual axle loads during loading.
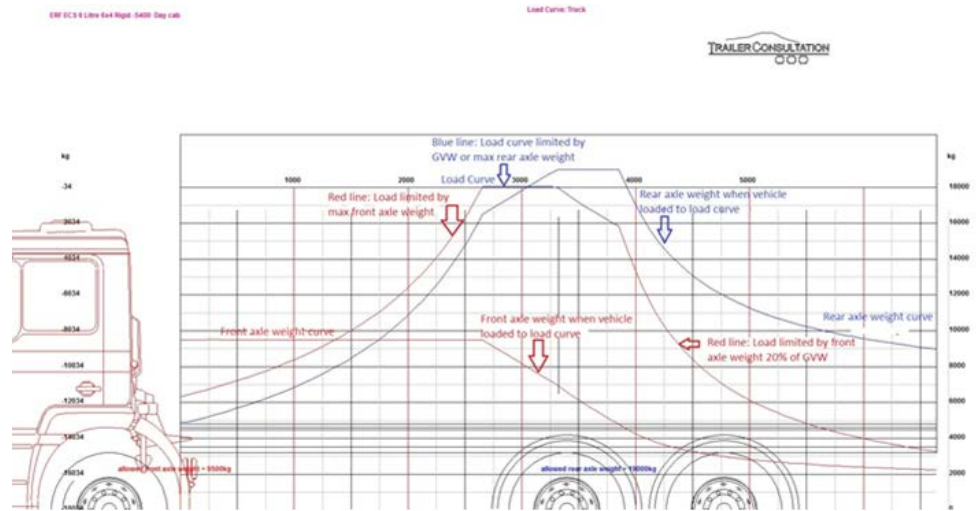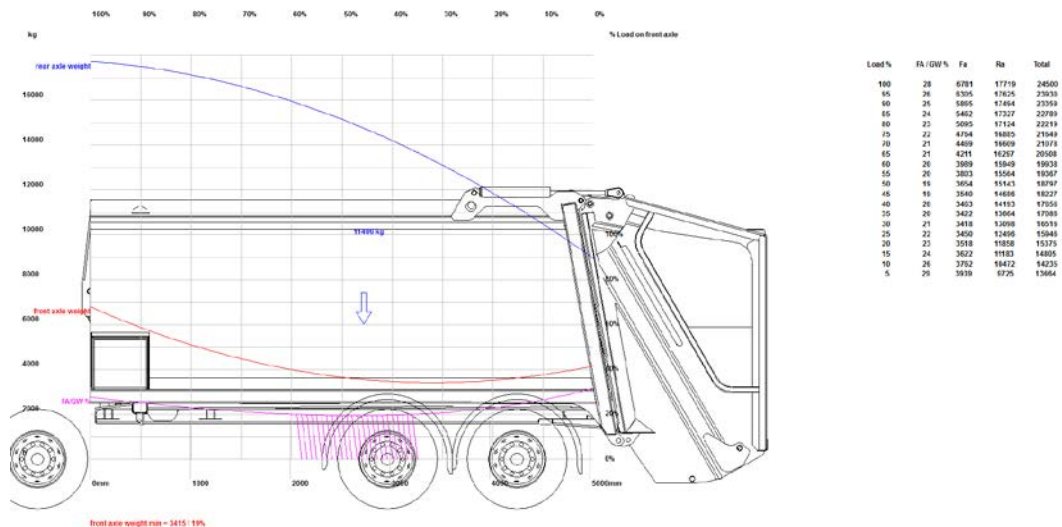

De-loading Curve.

Shows axle weights in de-loading process when unloading from the back. Example: unloading a semi-trailer.

fifth wheel weight max = 12292

truck front axle weight max = 6702
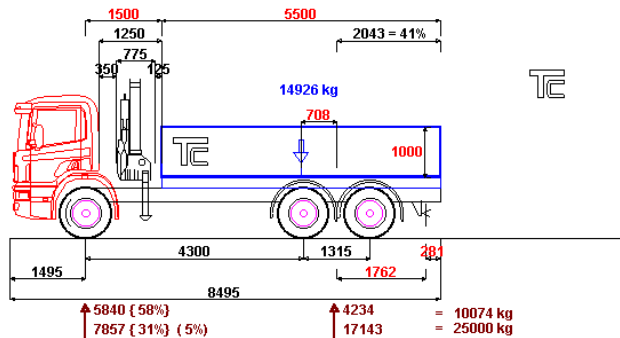
truck rear axle weight max = 12533
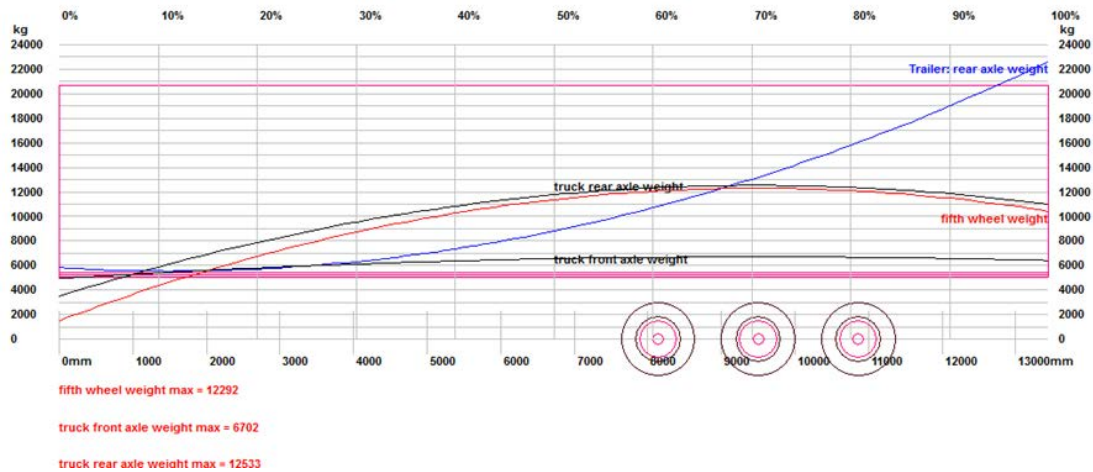
Loading curve for garbage truck. The program also gives you the opportunity to check axle weights when the body is being loaded from the rear, i.e garbage trucks.

front axle weight min = 3415 / 19%

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CraneWIN   A software for crane stability calculation

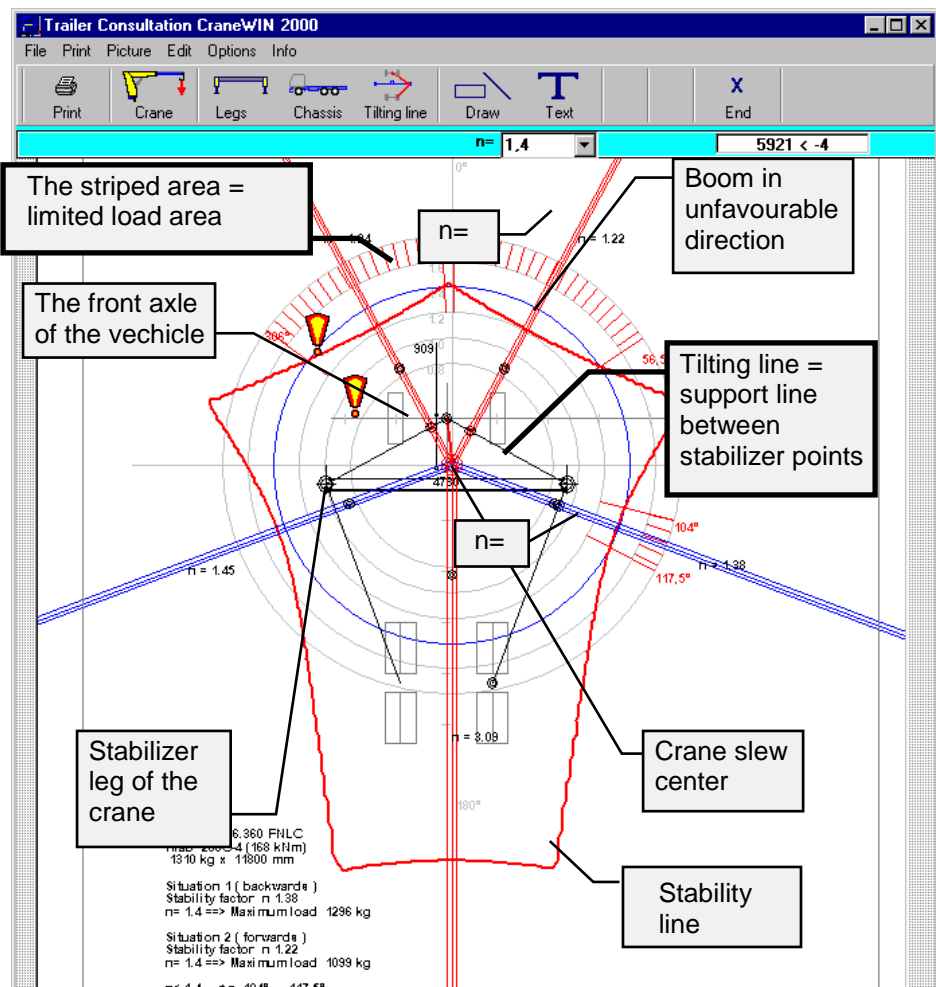The **CraneWIN** software is designed to be used together with TrailerWIN.

Building up the truck with crane and making the weight calculations is to be done in TrailerWIN. After this we can continue to CraneWIN for checking the stability of the vehicle.

CraneWIN shows a circle diagram with stability factors n in all directions.

The stability is shown as a red curve in the diagram. The picture also shows a striped area where the stability is smaller than the required stability factor n.

You can also see all the support points and tilting lines as well as the stability factors (n) and the maximum allowed load in all critical directions.

This calculation method follows the SFS 4677 standard. The requirements on the size of the stability factor varies in different situations and between different countries. According to the SFS requirement, the stability factor (n) should be at least 1,4.

The striped area = limited load area

The front axle of the vechicle

Boom in unfavourable direction

Tilting line = support line between stabilizer points

n=

Stabilizer leg of the crane

Crane slew center

Stability line

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FrameWIN   Subframe calculation

Trailer Consultation FrameWIN 2000

File Print Edit Options Help

Open Save As Print Moment Subframe Data Dynamic co Draw Text End

-627, 205   n=1,2   c dyn=1,1

Profile Combination 9/2000 vm Calculation control by SM 09-2000			

Multiprofile 6 parts

Possibility to write texts on the drawin

Mounting with shear resisting plates

Flexible mounting

Data on the combined beam mounted with shear resisting plates

Data on the combined beam with flexible mounting

Ix (cm4)	31964	37969
Wx (cm3)	2368	1519
s stat (N/mm2)	16	50
s stat (N/mm2)	43	69
n stat	8,31	5,13
n dyn	7,55	4,66

	Profile	H mm	A mm2	Ix cm4	Wx cm3	M kg/m
1	U 100x80x6	100	1488	246.43	49.29	11.7
2	120x60x4	60	1376	84.77	28.26	10.8

FrameWIN is a software created for subframe calculation and it helps you to choose a suitable subframe-profile when assembling crane and tailgate lifters.

Data on lifting capacity and forces on frame beams will be transferred automatically from TrailerWIN to FrameWIN.

In the picture shown above you can see a cross section of the calculated chassis frame with the subframe mounted on top of it. On the left side of the picture, beams are mounted flexibly. On the right side of the picture, beams are mounted with shear resisting plates.
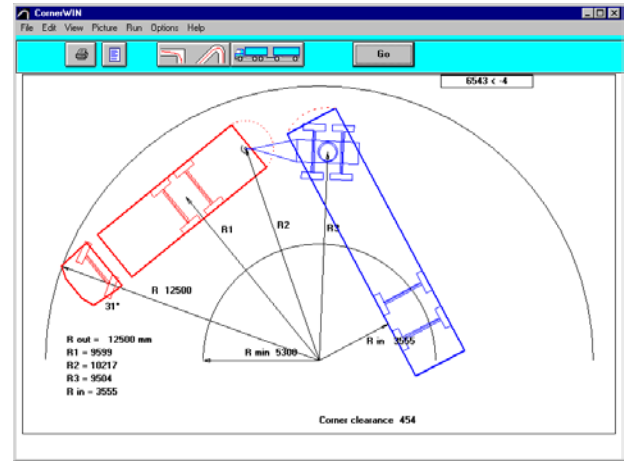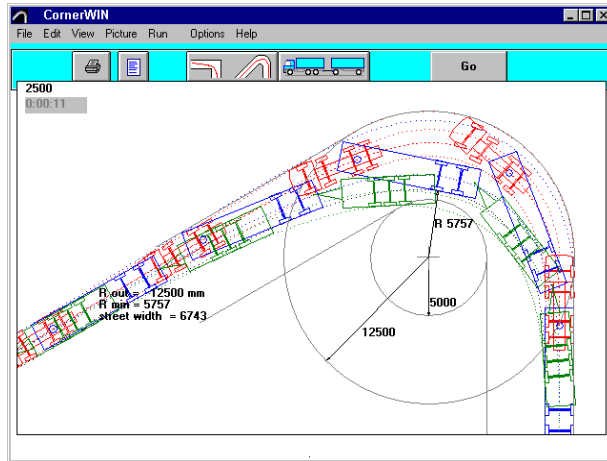
Below the beams you will see the calculation results for the combined beam:

Second moment of area	Ix	(cm^4)
Section modulus	Wx	(cm^3)
Stress (on the subframe)	s	(N/mm^2)
Stress (on the chassis frame)	s	(N/mm^2)
Safety Factor Static	n stat	
Safety Factor Dynamic	n dyn	

The program gives you the option to use the EN12999/13001 standard.

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CornerWIN   A software for turning simulations

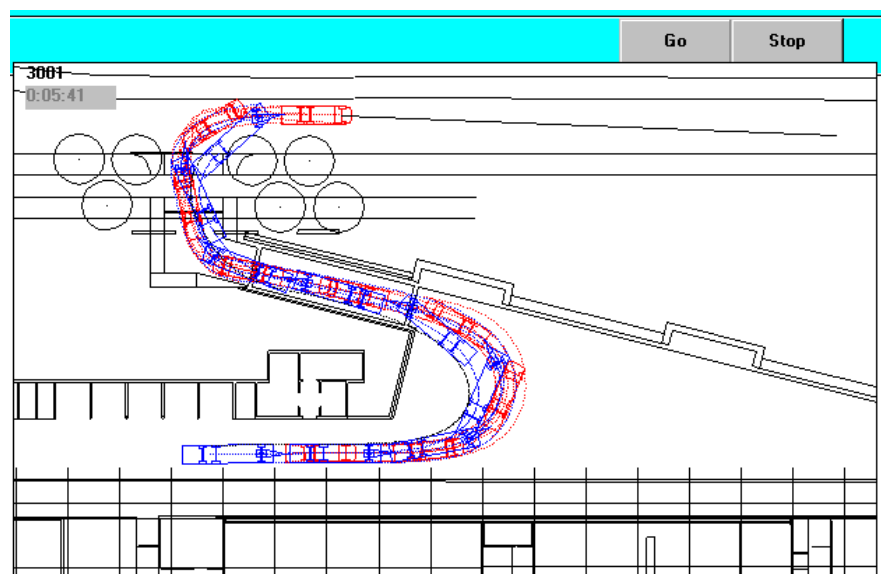CornerWIN provides the following simulation possibilities:

- Turning in EU-circle (12,5 m circle)
- Turning in 120° arc, Turning in 180° arc etc.
- Driving in continuous circle,
- 90° rectangular corner. (Swedish rule).

- Turning in 360° arc
- Turning in arc, with chosen angle
- Pull feature which allows you to drive the combination with the mouse.
- Possibility to add own DXF-drawings as street- or yardview

- The picture can be saved as a DXF-file for further use in a CAD program.
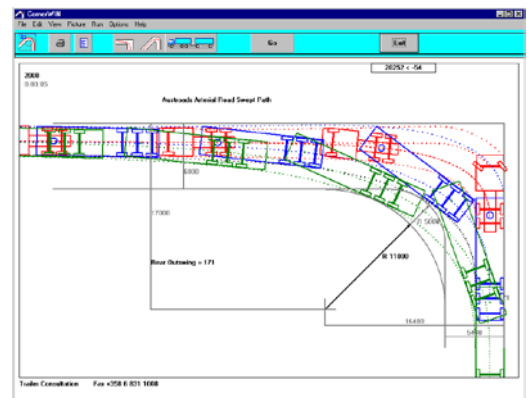
CornerWIN is normally used in conjunction with **TrailerWIN**. The dimensions for the truck and trailer are made in TrailerWIN and this combination will be transferred automatically to CornerWIN.

CornerWIN also contains modelcombinations, such as trailers where all tyres are steerable and specialtrailers with up to 15 axles.
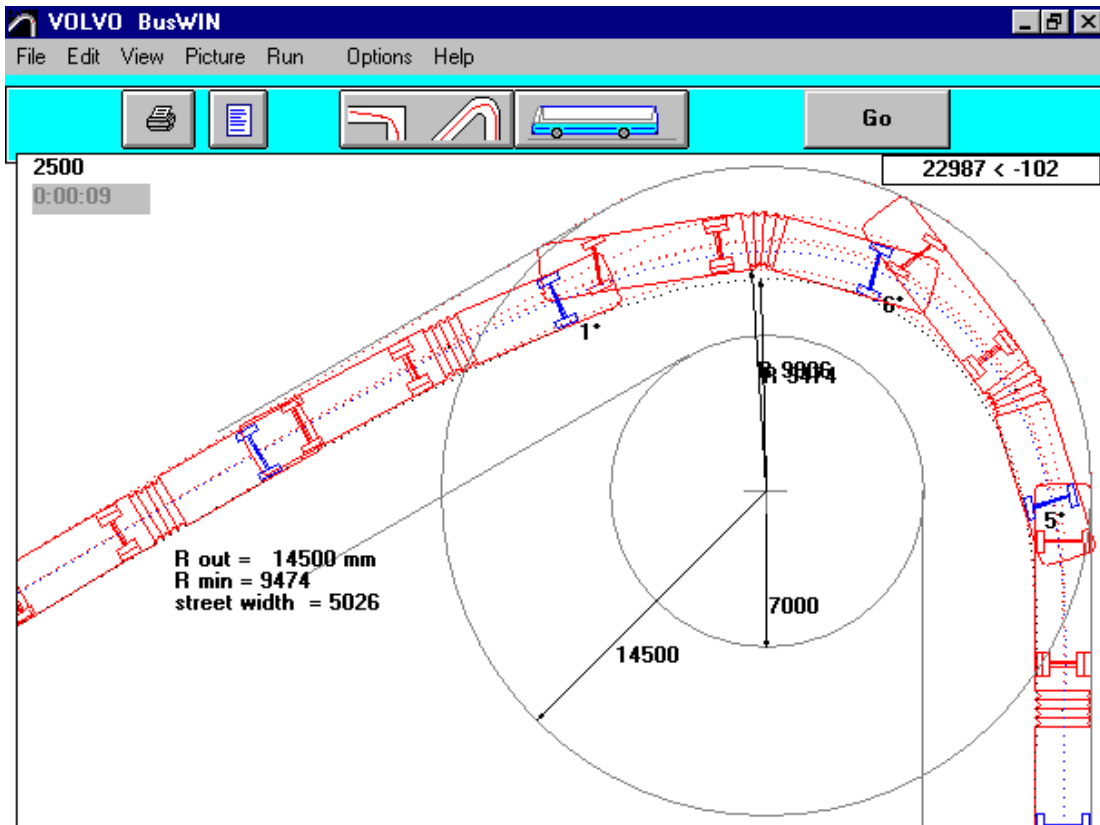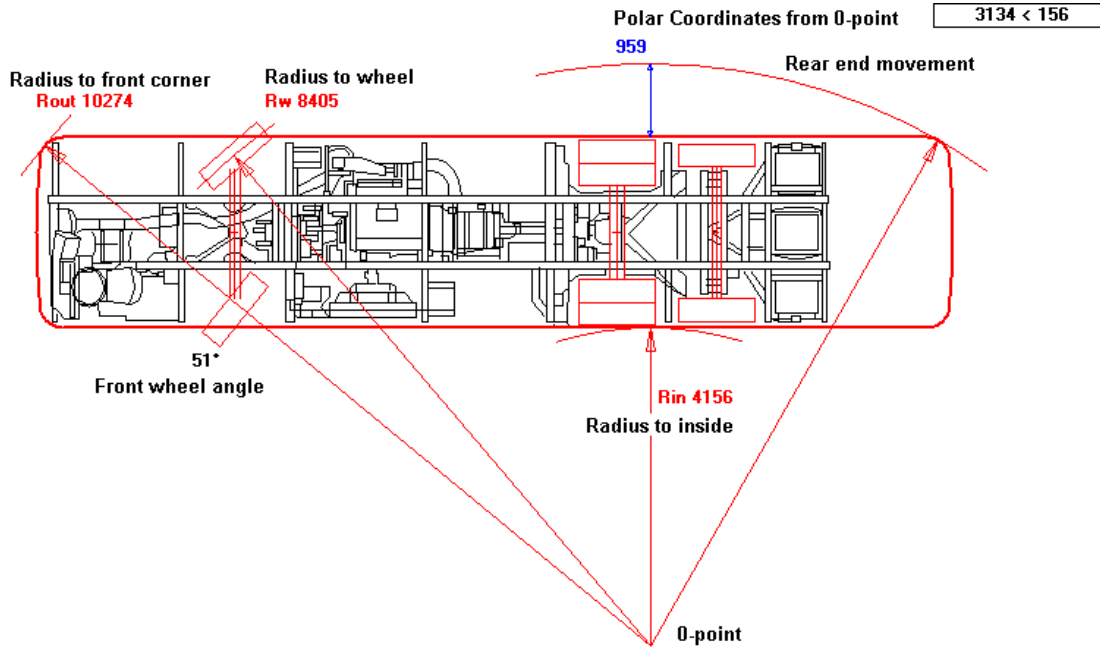
It is also possible to use **CornerWIN** as a standalone module without TrailerWIN.
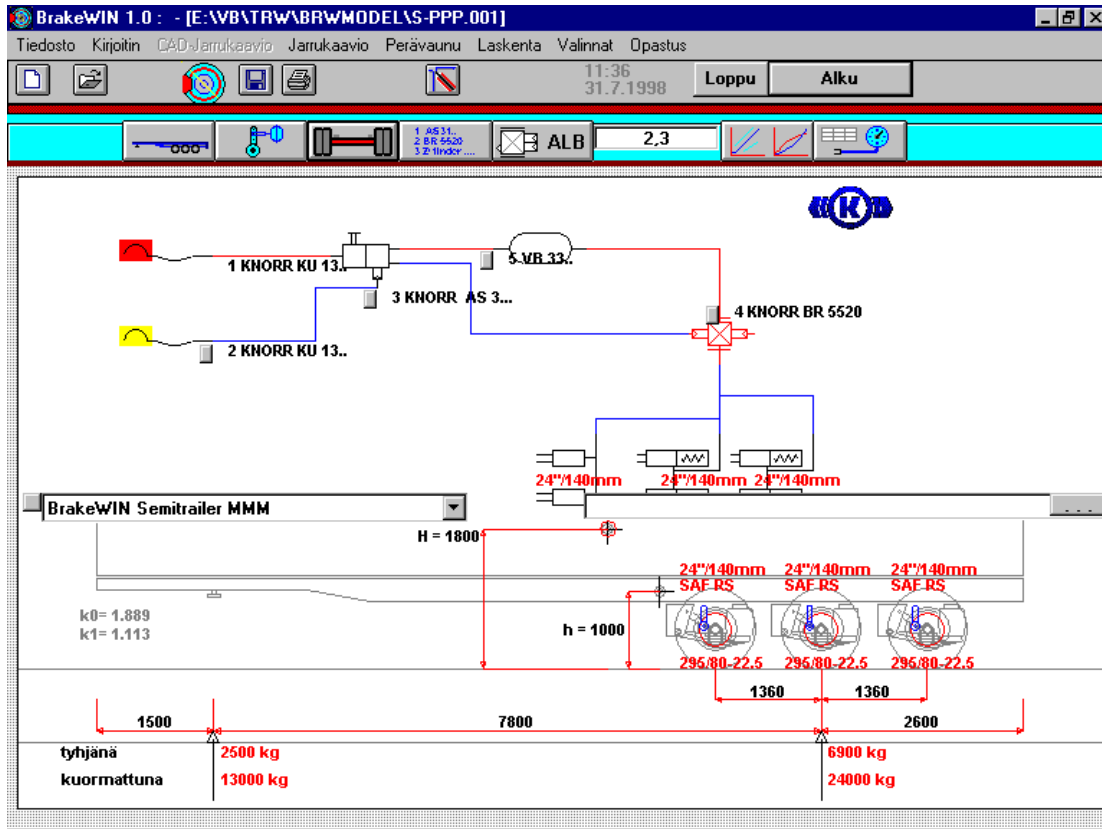
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BusWIN   Turning Calculations for Bus

Same functions as in CornerWIN, but specifically designed for buses.

Polar Coordinates from 0-point   3134 < 156

959

Rear end movement

Radius to front corner
Rout 10274

Radius to wheel
Rw 8405

51°
Front wheel angle

Rin 4156
Radius to inside

0-point

VOLVO BusWIN

File   Edit   View   Picture   Run   Options   Help

Go

2500   22987 < -102
0:00:09

1°

6°

R 9906
R 9474

5°

7000

14500

R out =   14500 mm
R min = 9474
street width = 5026

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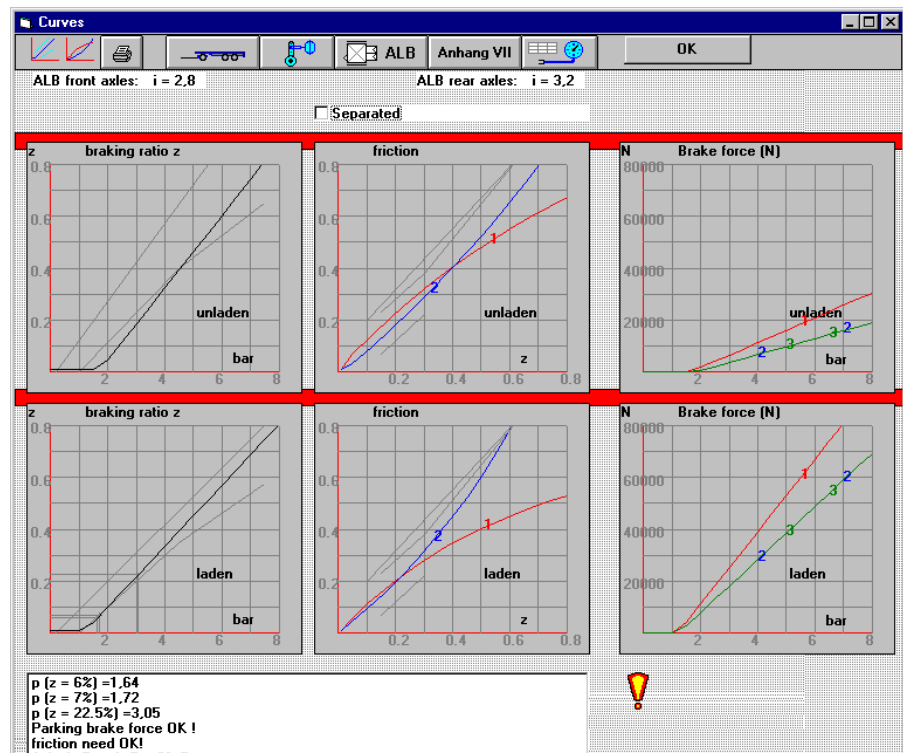# BrakeWIN   A software for Trailer brake calculation

BrakeWIN does the theoretical brake calculation for trailer brakes.

The user can choose: axles, tyres, brake cylinders, levers, valves (also EBS valves included), from the menu in listboxes.

BrakeWIN calculates braking ratio, coefficient of friction, brake forces, etc. for different control pressures.

The program allows you to print the brake corridors and other documents needed for trailer brake approval.

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DrivelineWIN   Driving speeds and pulling forces on all gears
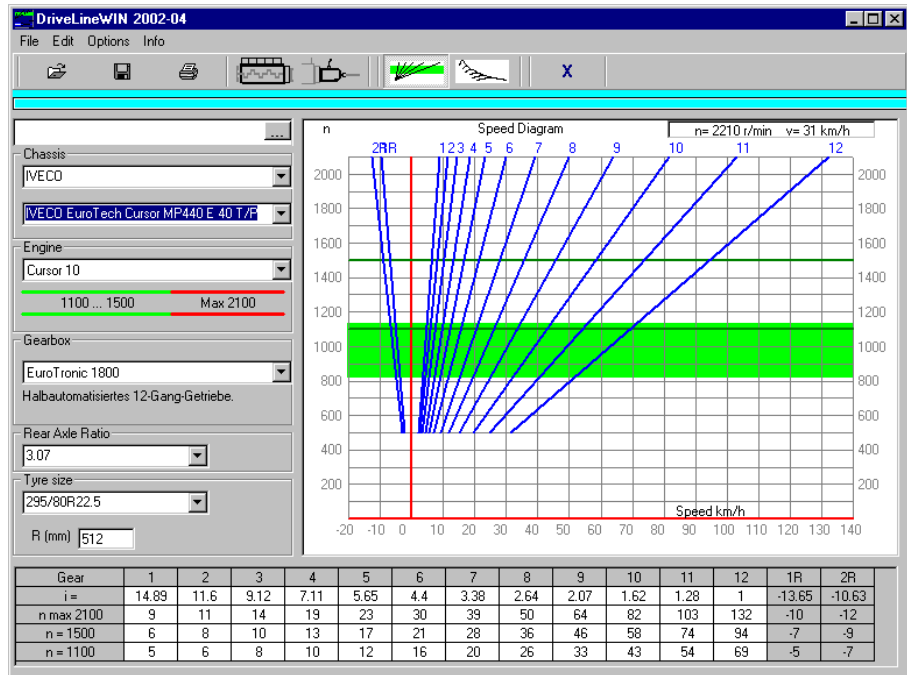
DrivelineWIN is a software for calculating the driving speeds and pulling forces on all gears.

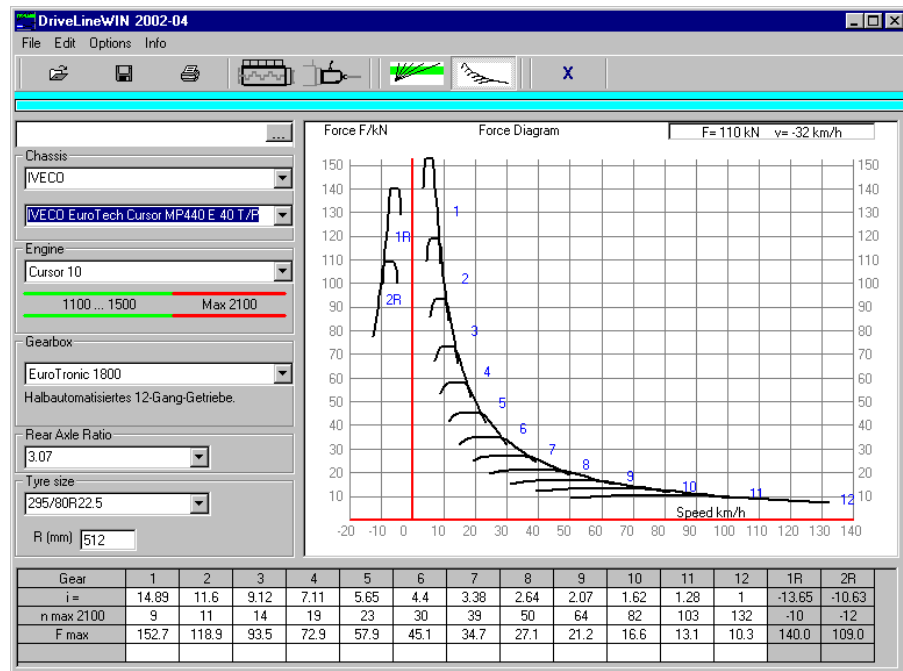The program contains data on a variety of truck models.

The user can modify this data to match their own needs.

It is also possible to add own engines and gearboxes.

Gear	1	2	3	4	5	6	7	8	9	10	11	12	1R	2R
i =	14.89	11.6	9.12	7.11	5.65	4.4	3.38	2.64	2.07	1.62	1.28	1	-13.65	-10.63
n max 2100	9	11	14	19	23	30	39	50	64	82	103	132	-10	-12
n = 1500	6	8	10	13	17	21	28	36	46	58	74	94	-7	-9
n = 1100	5	6	8	10	12	16	20	26	33	43	54	69	-5	-7

DrivelineWIN is mainly used for trucks and buses, but it is also possible to calculate such diagrams for passenger cars.

The program also contains hill climbing performance diagrams.

Gear	1	2	3	4	5	6	7	8	9	10	11	12	1R	2R
i =	14.89	11.6	9.12	7.11	5.65	4.4	3.38	2.64	2.07	1.62	1.28	1	-13.65	-10.63
n max 2100	9	11	14	19	23	30	39	50	64	82	103	132	-10	-12
F max	152.7	118.9	93.5	72.9	57.9	45.1	34.7	27.1	21.2	16.6	13.1	10.3	140.0	109.0

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