**Software for commercial vehicle construction,
truck and trailer construction and body building**

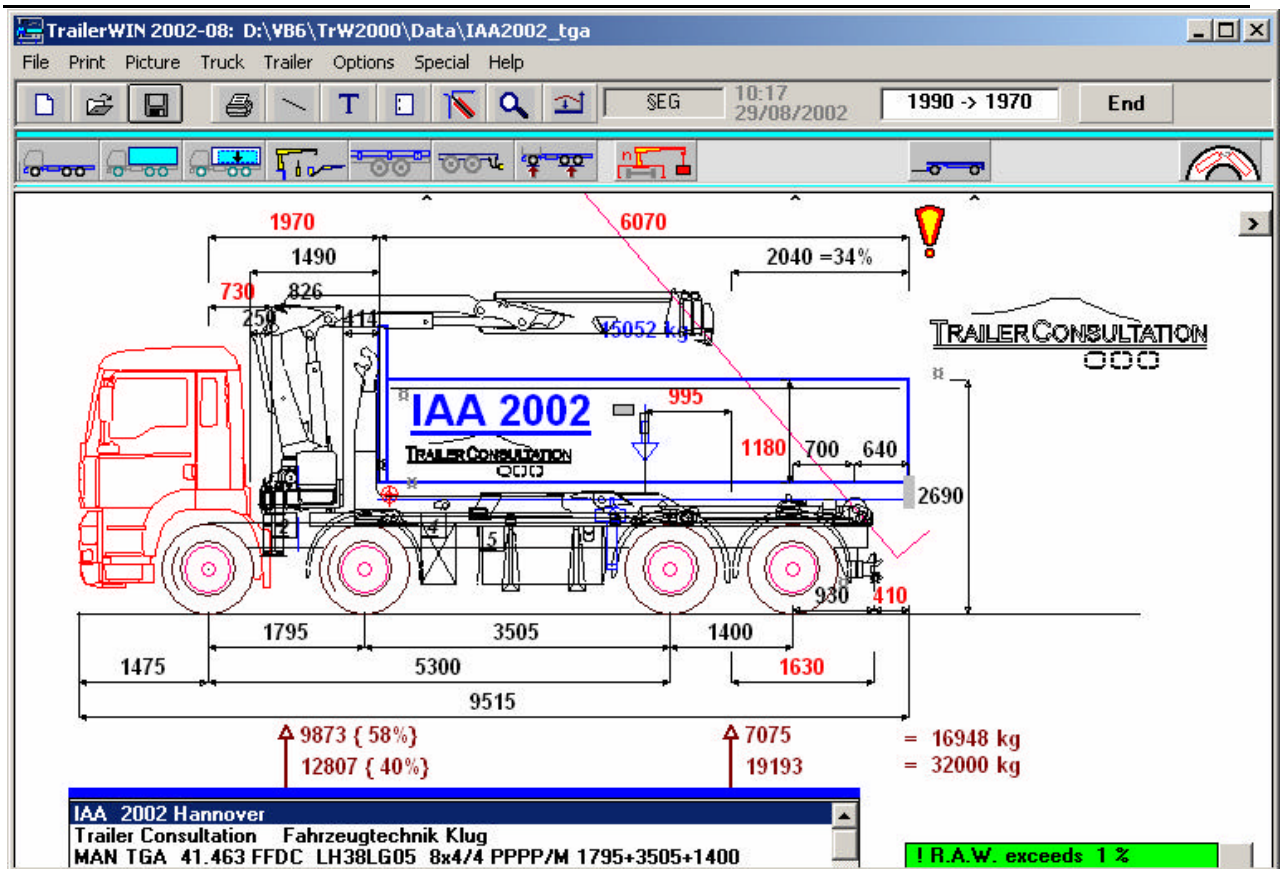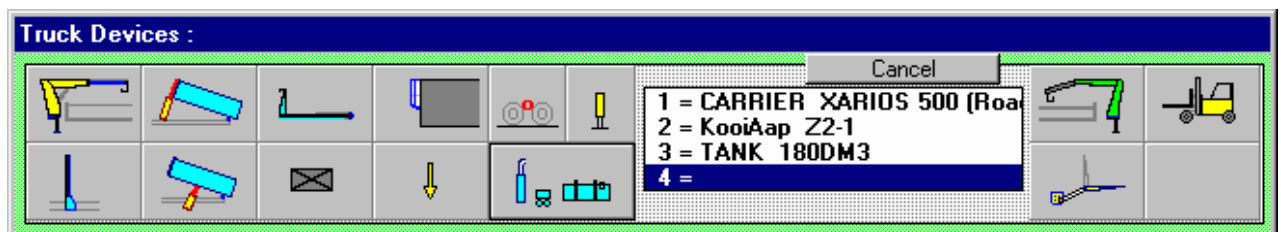|		
TrailerWIN	**Truck and trailer constructions: weight distribution (axle loads), body building, mounting equipment (crane, tail gate lift, truck mounted forklift trucks, demountable, etc.), turning calculations, ….**	
CraneWIN	**Crane stability calculations**	
FrameWIN	**Subframe calculation for mounting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

TrailerWIN

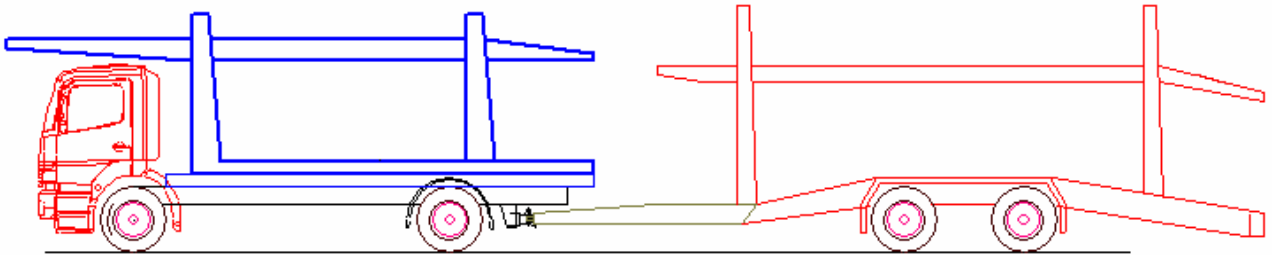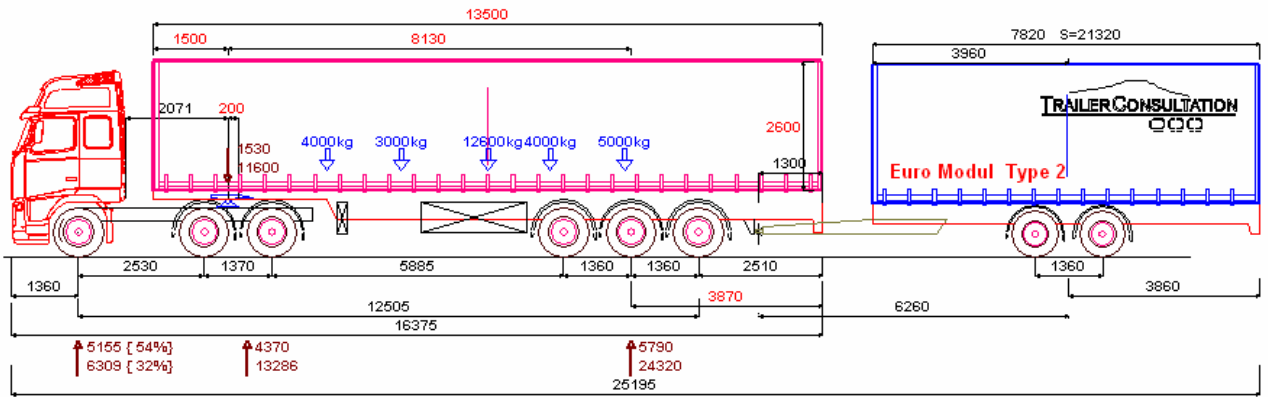Software for commercial vehicle construction

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

Truck data can be imported from a file, or data can be given using the keyboard. TrailerWIN covers data on the most models by a wide range of truck manufacturers.

The truck and trailer may include various equipment: such as a crane, a tipping gear, a rear lifter, forklift truck and a refrigerator and a lengthened cab. TrailerWIN also contains data on some of the most common extra equipment, e.g. the weights and space requirements of certain tippers and crane types.
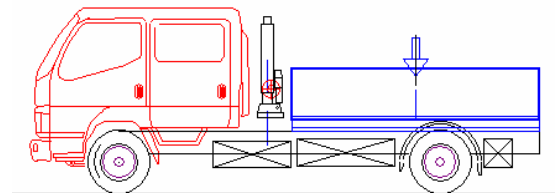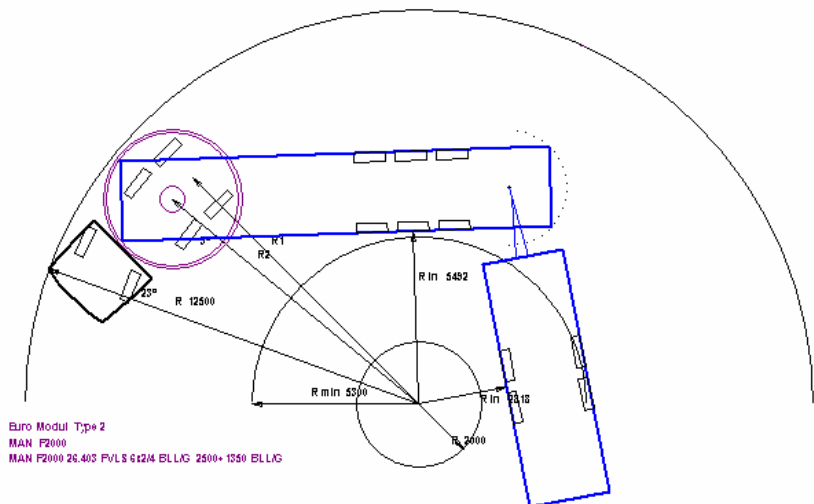
The current version of TrailerWIN identifies the following truck types: dual-axle, standard triple-axle (six- wheeler), middle axle type with steering front bogie, standard four-axle (eight-wheeler), eight- wheeler with triple bogie, and five-axle (ten-wheeler).

The trailer may have two, three, four or five axles and a semitrailer up to 4 axles. The program also identifies the single-axle (centre-axle) trailer, with a single axle or with dual-axle or triple-axle bogie.
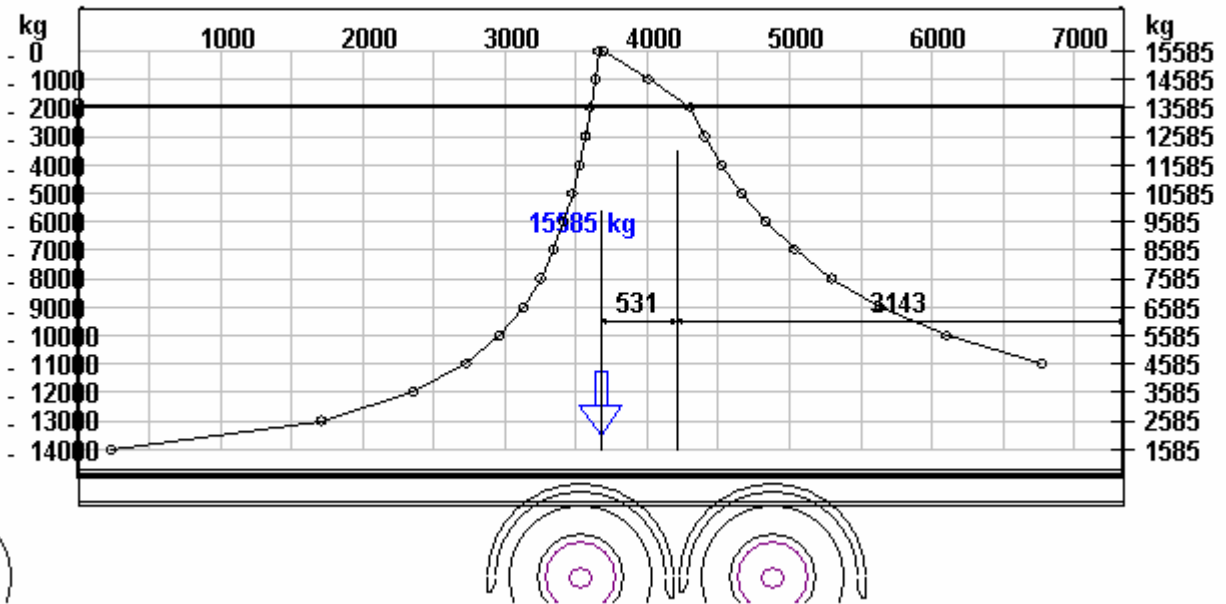
TrailerWIN allows you to select any truck and trailer combination. TrailerWIN will automatically optimize the dimensions of the trailer. Should these dimensions be found inadequate, they can be modified to suit the requirements.

TrailerWIN carries out regulation check-ups of a trailer and combination dimensions regarding the weight distribution, overhangs, corner distance and turning circle. The presentation of the truck cab is created as a real-life picture. The program provides a wide range of cab picture options, which can be supplemented later if necessary.

TrailerWIN calculates also the Load Curve and the Deloading Curve

Load Curve: Truck
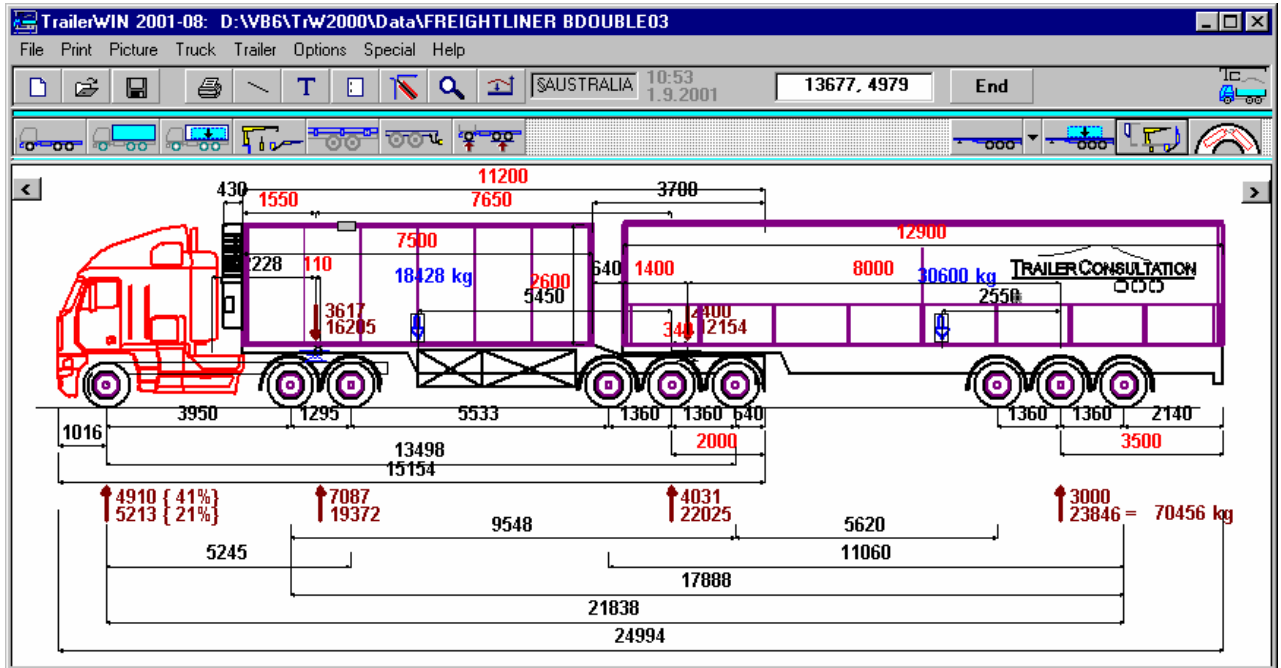MERCEDES-BENZ SN 2535L 6X2 4500+1350_F015

Deloading Curve:

fifth wheel weight max = 12809

truck front axle weight max = 7125
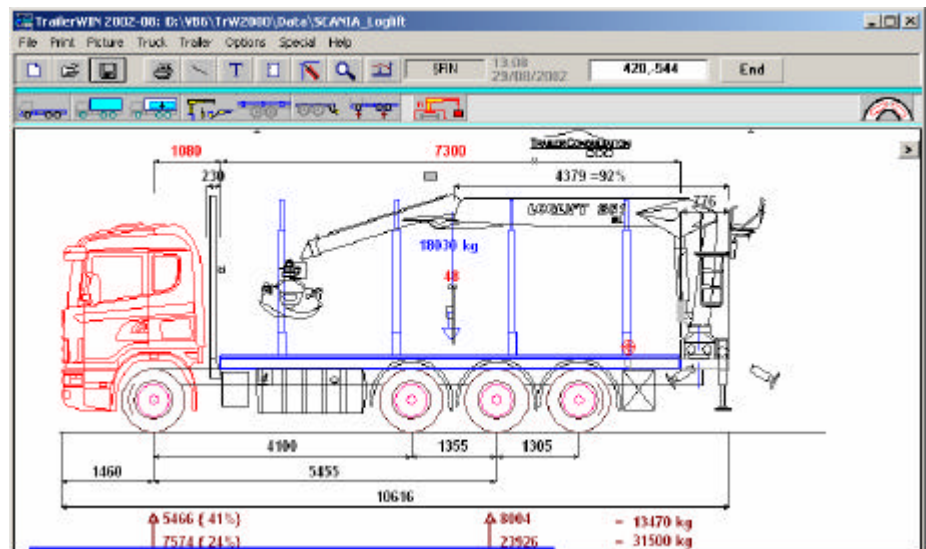
truck rear axle weight max = 13994

TrailerWIN is easy to run, however user should be familiar with the concepts of the calculations although no previous PC computing experience is required.

TrailerWIN runs on computers with Pentium processor and minimum of
16 Mb memory.
The needed free space on hard disk is
300 Mb ... 500 Mb.
Operating systems :
Windows 95, W98, ME, NT, W2000 or XP.

TrailerWIN, CraneWIN, FrameWIN
Programs are available in following languages:
Danish, Dutch, English, Finnish, French, German, Italian, Norwegian, Spanish, Swedish and Turkish.
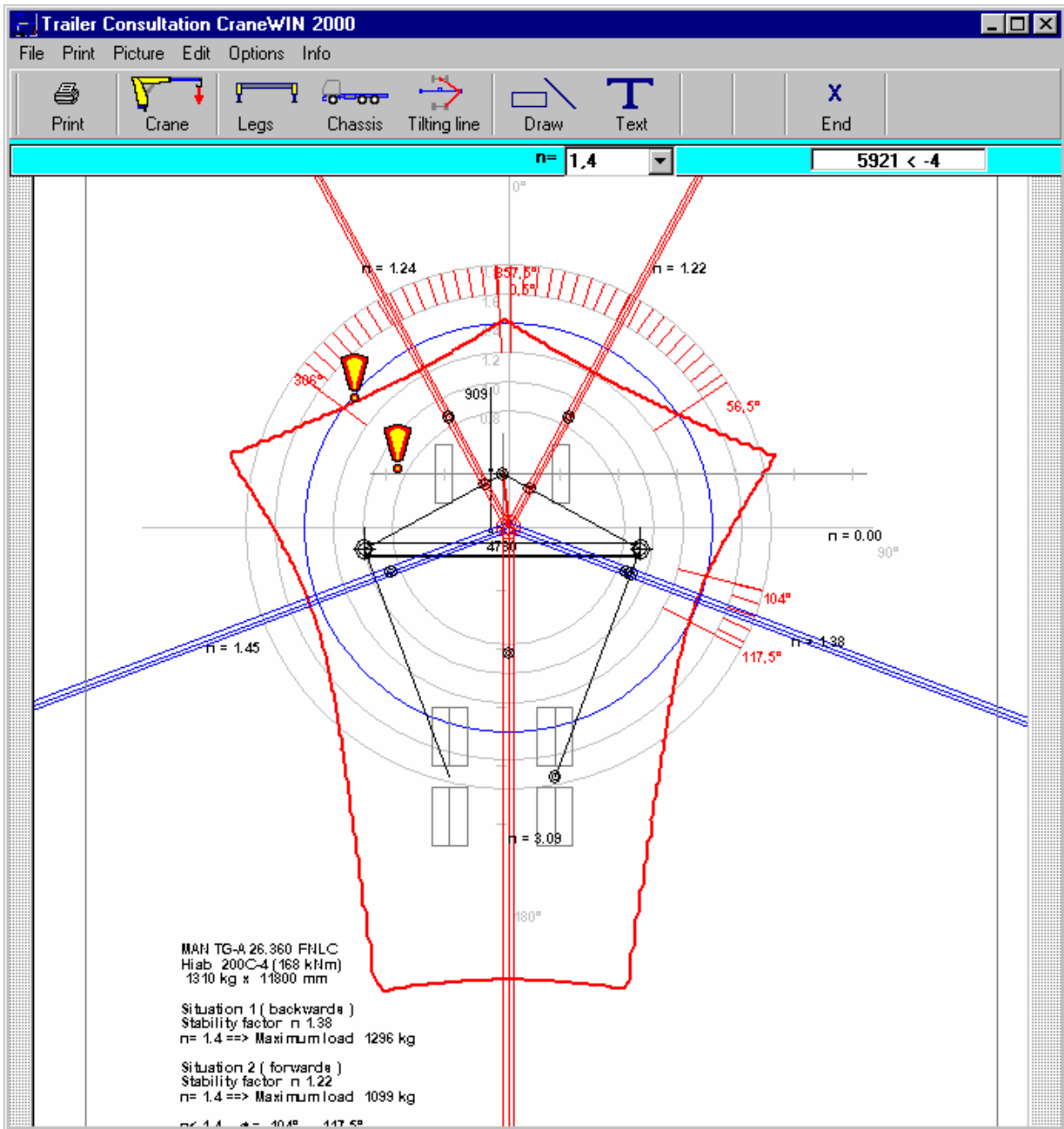

Weights	x CoG	Fa	Ra	Total
+ Chassis weight		5570	4885	10455
+ number of persons 1	0	70	0	70
+ body weight 0 kg/m	4730	0	0	0
1 Cab protection wall	940	99	21	120
2 LOGLIFT F 201 SL 80 A	7555	-780	2680	1900
3 GRAB X55_2	2160	134	91	225
4 TANK 600DM3	2500	373	327	700
= weights unloaded :		5466	8004	13470
+ carrying capacity	4730	2107	15923	18030
= Weights loaded :		7574	23926	31500
:: Gross Vehicle Weight		7500	24000	31500

File export formats:
.DXF for CAD programs (AutoCAD, ...);   .BMP for Paintbrush, Word, Excel,
.TXT text data to text programs., Clipboard

CraneWIN   A software for crane stability calculating

MAN TG-A 26.360 FNLC
Hiab 200C-4 (168 kNm)
1310 kg x 11800 mm

Situation 1 (backwards)
Stability factor n 1.38
n= 1.4 ==> Maximum load 1296 kg

Situation 2 (forwards)
Stability factor n 1.22
n= 1.4 ==> Maximum load 1099 kg

Circle diagram

CraneWIN gives a circle diagram with a stability factor n with different crane turning angles.
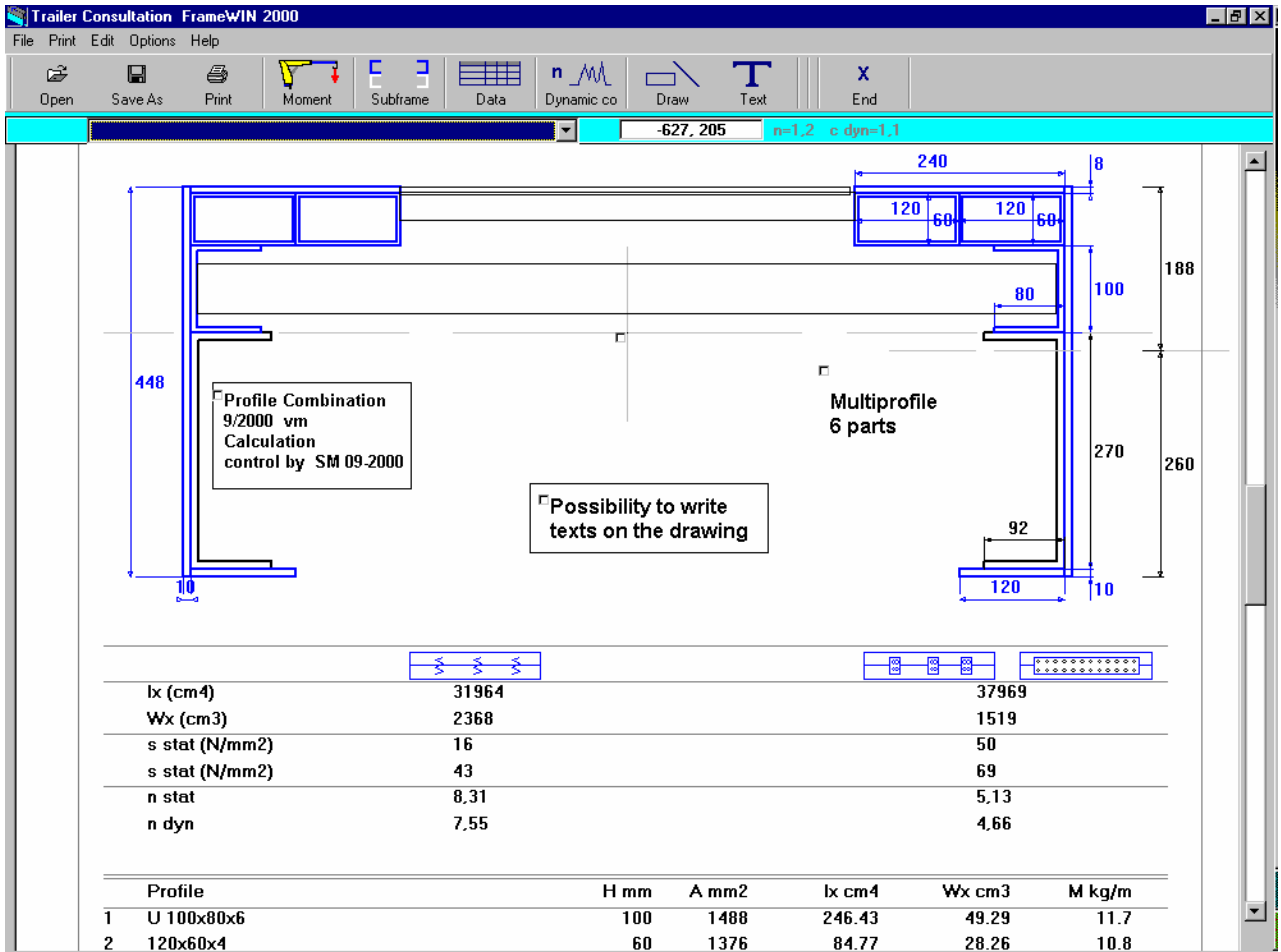
A straight line is displayed from the center of the circle to the direction in which the crane is turned. The stability factor to that direction is: a=0° straight forwards, a=90° straight angle to side, a=180° straight backwards.

The stability factors are shown in the form of different sized circles. The centre of the circles is the cranes slewing centre. The circle with the biggest radius stands for the stability factor n=1.8 and the smaller for: 1.6 , 1.4 , 1.2 , 1.0 , 0.8 . The chosen critical stability factor will show on the screen in a different color from the others. The figure is shown above the diagram in the toolbar.

In the diagram there are two stability factors as n-curves. One for each tilting line.

FrameWIN   Subframe calculation

Trailer Consultation FrameWIN 2000										
File	Print	Edit	Options	Help						
Open	Save As	Print	Moment	Subframe	Data	Dynamic co	Draw	Text	X 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 drawing

Dimensions shown: 240, 8, 120, 60, 120, 60, 188, 80, 100, 448, 270, 260, 92, 120, 10, 10

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

The FrameWIN screen will show pictures of the calculated Chassis Frame Profile and the Subframe Profile 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.

Firstly with shear resisting mounting without the plates being calculated in strength calculation (mounting with many separate plates), secondly the plate being calculated in the strength calculation as a part of the beams (in this case the plate must be a continuous plate).

Below the beams You will see the calculation results for the combined beam - on the left side with flexible mounting and on the right side with mounting with shear resisting plates.

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		

Software is available in following Languages:
Danish, Dutch, English, Finnish, French, German, Italian, Norwegian, Spanish and Swedish.

CornerWIN Turning calculations
A software for complicated turning calculations

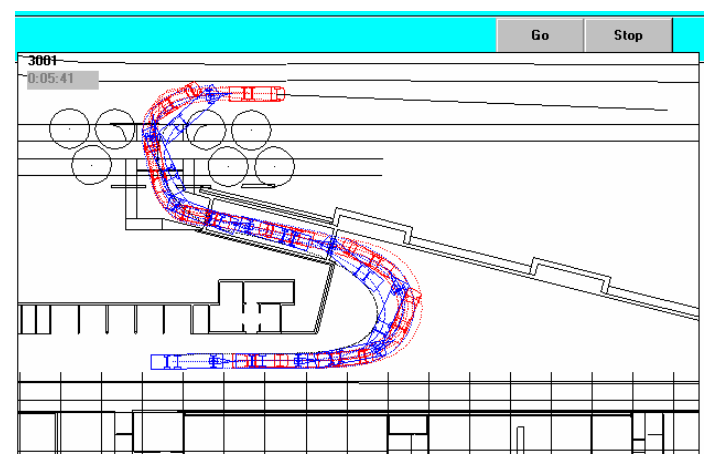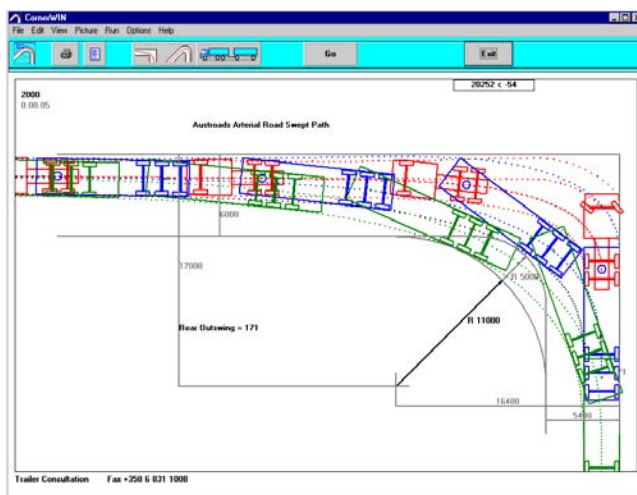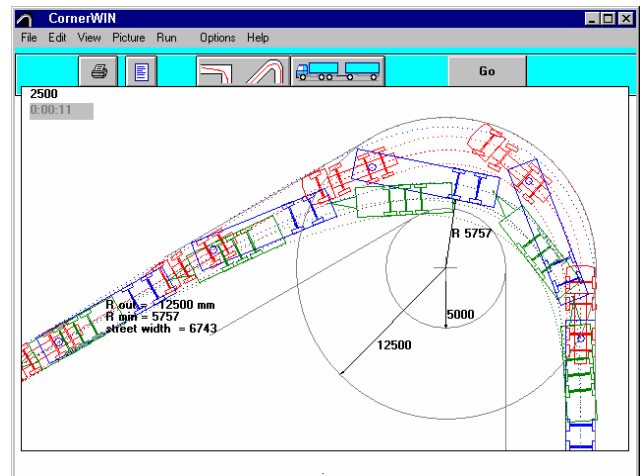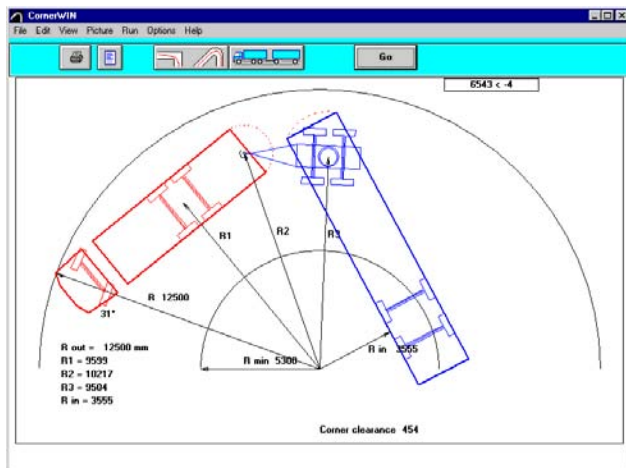CornerWIN provides the following calculation possibilities:
Turning in EU-circle, Turning in 120 deg arc, Turning in 180 deg arc, Circle with the chosen radius,
90 deg rectangular corner. (Swedish rule). Austroads Arterial Road Swept Path,
Austroads Major Arterial Road Swept Path, Turning in 360 deg arc, Turning in arc, with chosen arc.
Pull feature which allows You to drive the combination with the mouse.

CornerWIN has got the official approval from the AB Svensk Bilprovning in Stockholm, which is
The Swedish Motor Vehicle Inspection Company.
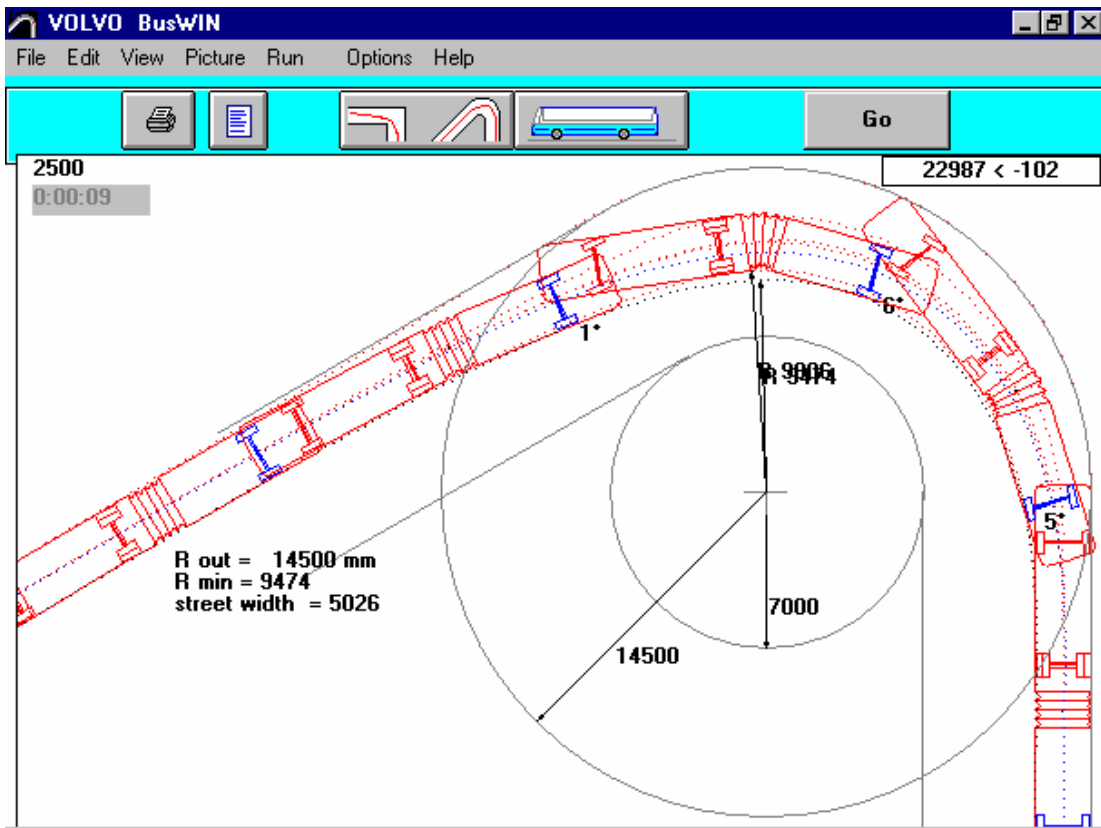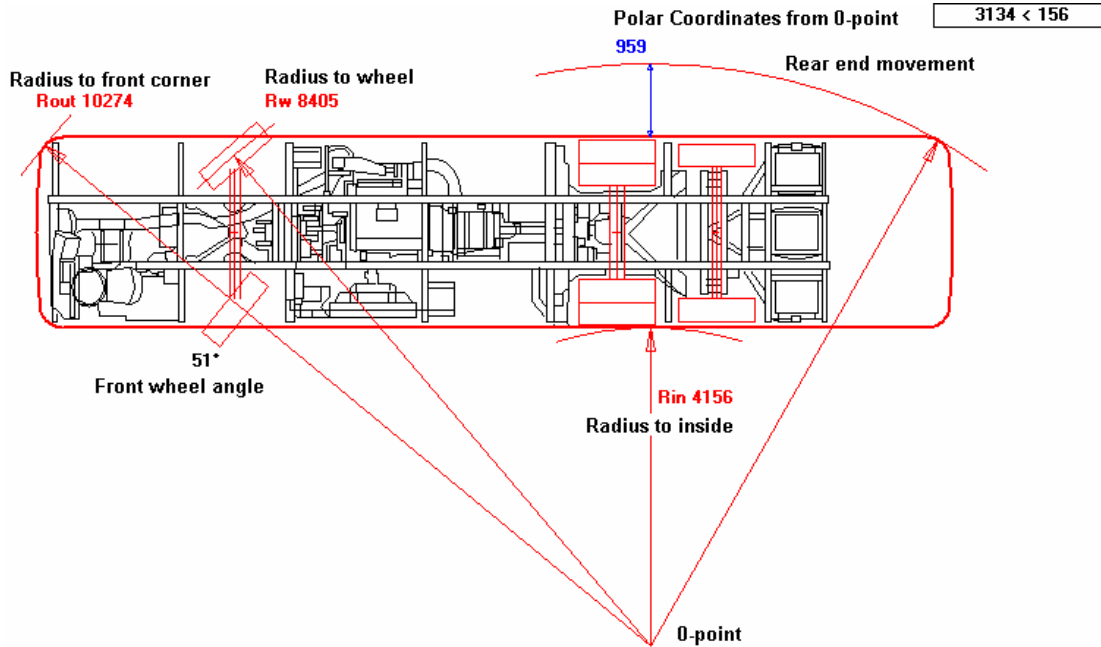'AB Svensk Bilprovning' is working to improve Road safety, environment and vehicle economy.

The picture is outputted in DXF-file so pictures can be transferred into CAD program.
CornerWIN is normally used in conjunction with TrailerWIN. The dimensions for the truck and trailer are
chosen in TrailerWIN. It is also possible to use CornerWIN as a standalone module without TrailerWIN.
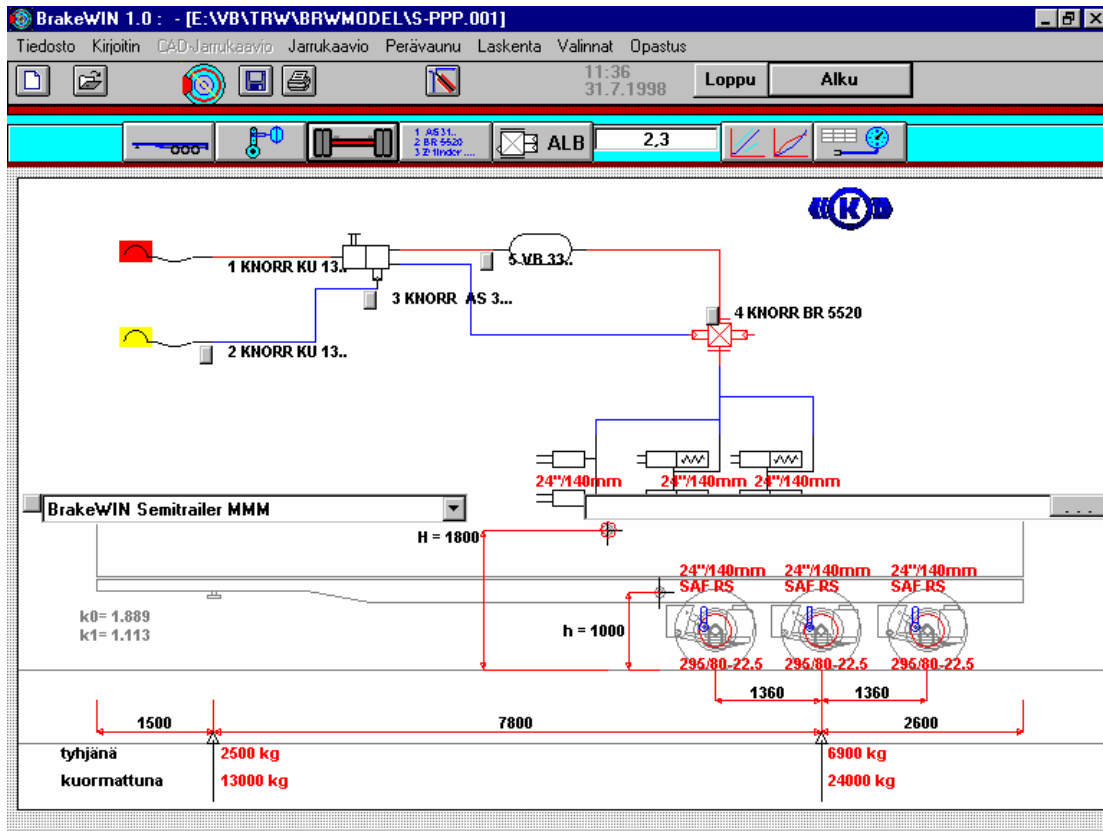
BusWIN Turning Calculations for Bus

Calculations as for CornerWIN but specifically designed for buses.

Polar Coordinates from 0-point   `3134 < 156`

Radius to front corner
Rout 10274

Radius to wheel
Rw 8405

959

Rear end movement

51°
Front wheel angle

Rin 4156
Radius to inside

0-point

VOLVO BusWIN

File   Edit   View   Picture   Run   Options   Help

Go

2500
0:00:09

`22987 < -102`

1°

6°

R 9806
R 9474

5°

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

7000

14500

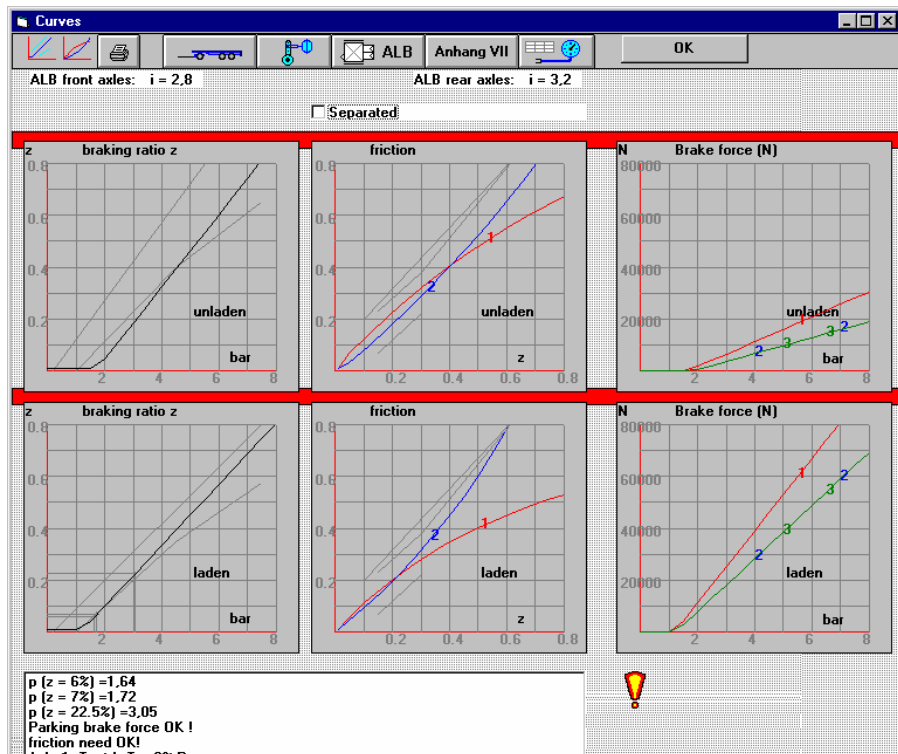Program languages: **CornerWIN, BusWIN :** English, Finnish, German, Swedish

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BrakeWIN A software for trailer brake calculation

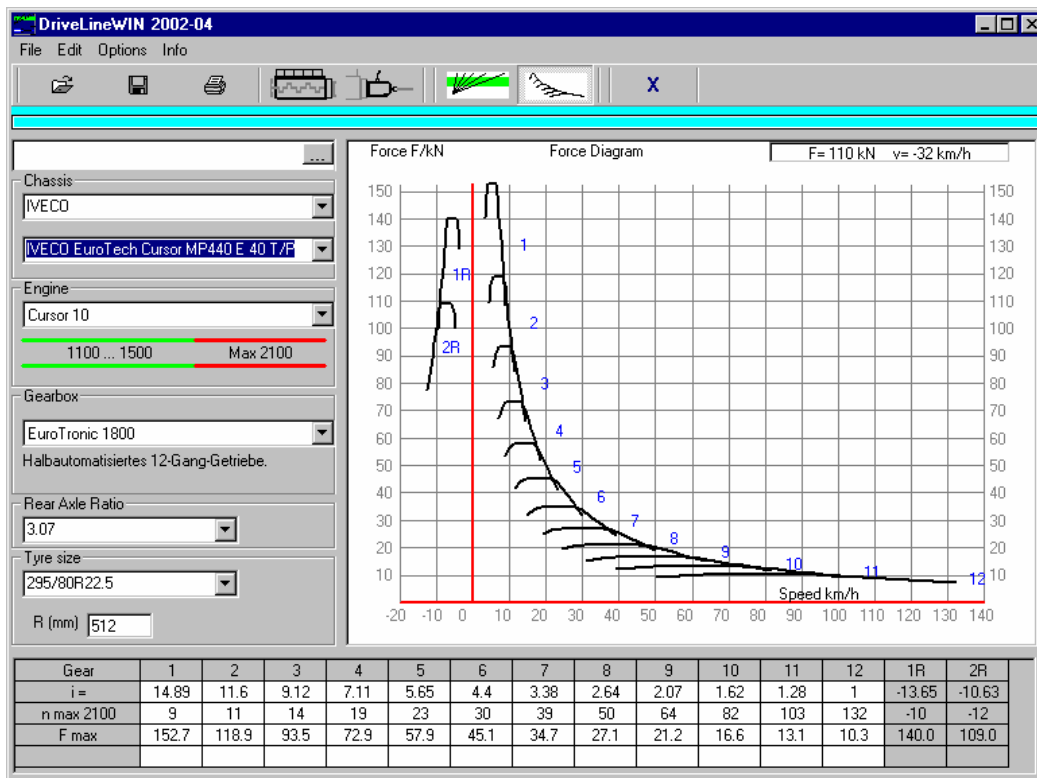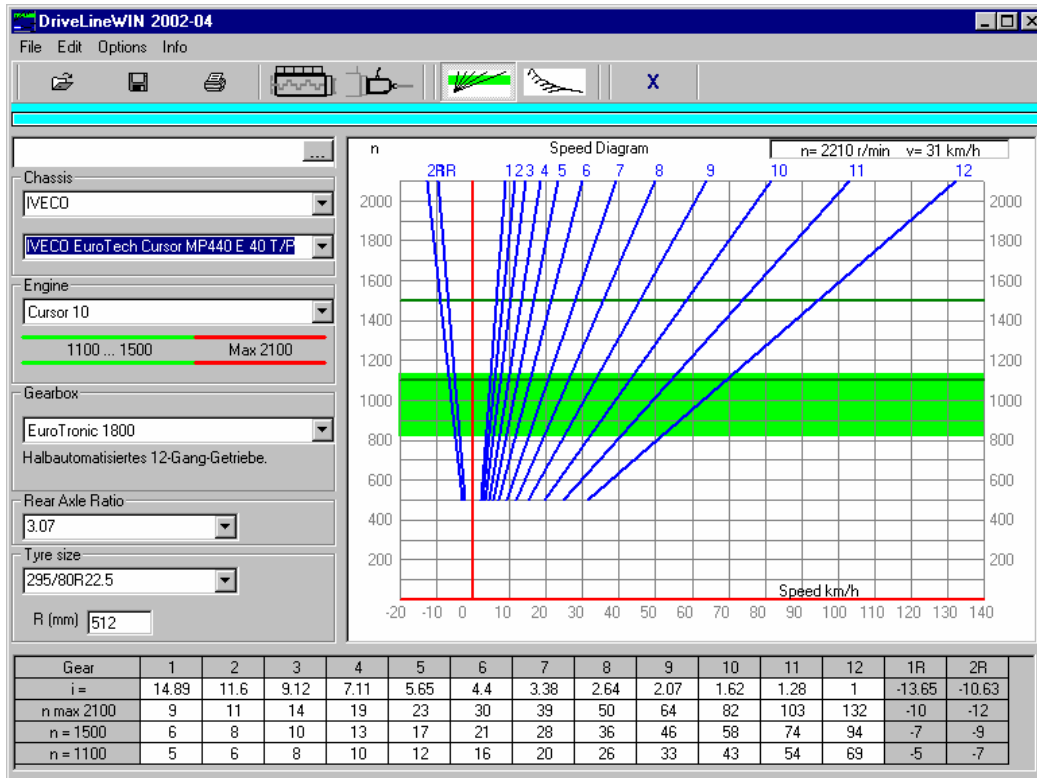BrakeWIN does the trailer brake calculations.

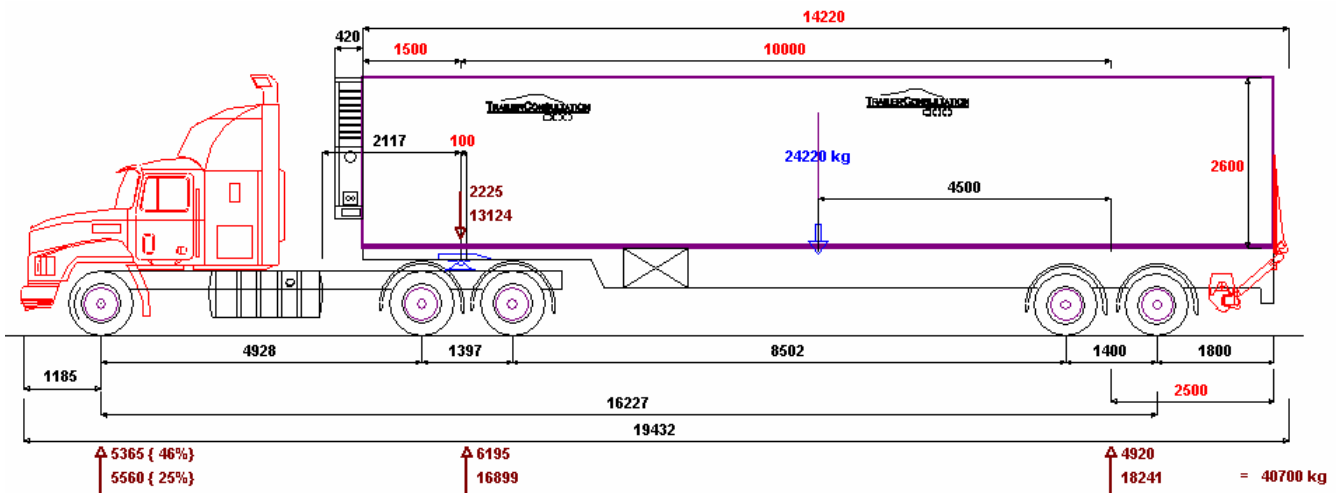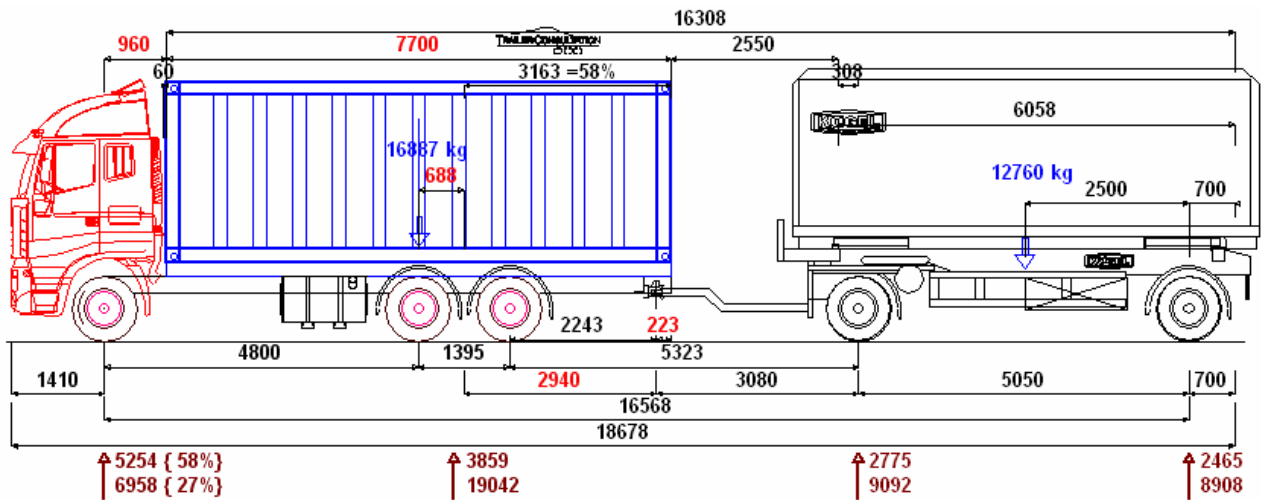User chooses from listboxes : axles, tyres, brake cylinders, levers, valves, etc.

BrakeWIN makes calculations for braking ratio, friction, brake forces, etc.

DrivelineWIN

A software for calculating the drive speeds and pulling force on tyres on all gears.

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In **IAA 2002** Commercial Vehicles exhibition in Hannover
Stand "Fahrzeugtechnik Klug" Halle 11, Stand G37