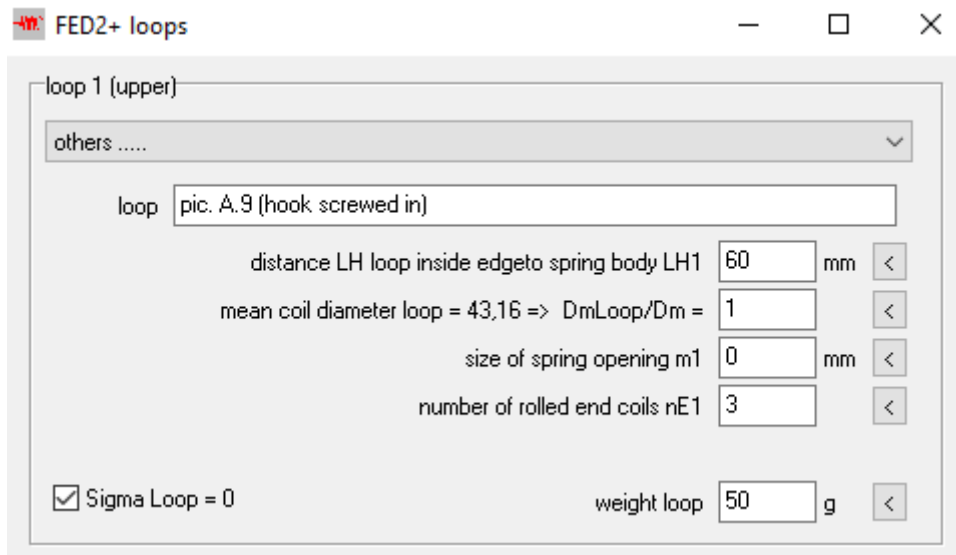


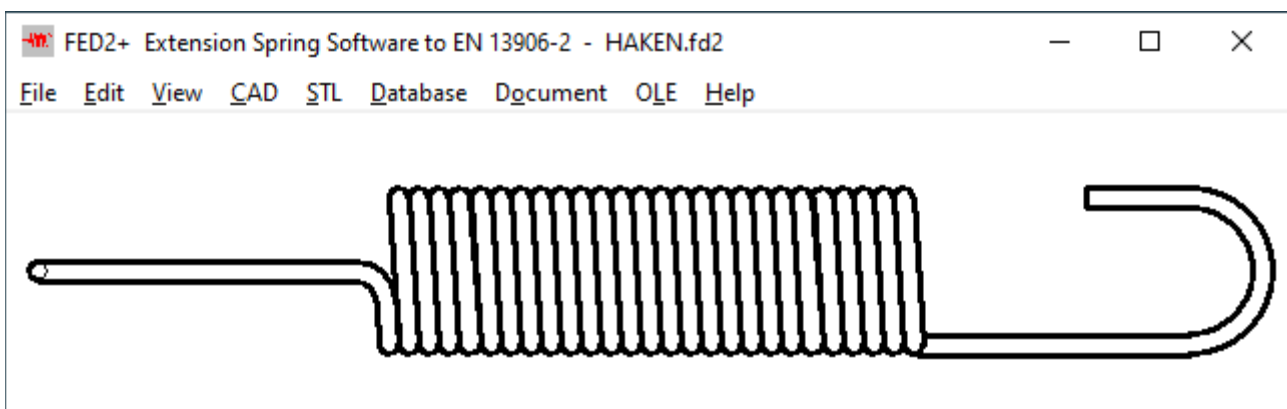
by Fritz Ruoss

FED2+: Self-defined loops w/o peek stress by loop



When choosing the loop you can choose “other ..” if no loop according to EN standard is used. So far, the bending stress and reference stress at the loop transition area had also been calculated. However, if the loops are rolled up or screwed in, the bending stress at the loop transition must not be taken into account. Now you can use “SigmaLoop = 0?” Mark with a cross. Also for suspended loops (e.g. HiSo spring from Hirsch-Federn) the loop stress is relatively lower than the torsional stress in the spring body due to the connected end of the loop (fix-loose bearing).

FED2+: Extension spring in horizontal view and hook loop drawing



The extension spring drawing is now available in vertical and horizontal view, with and without text. Since it was possible to enter a different coil diameter for the eyelets, tension springs with hook loops sometimes had been drawn too large. The error has been corrected.

FED7: Printout Sections

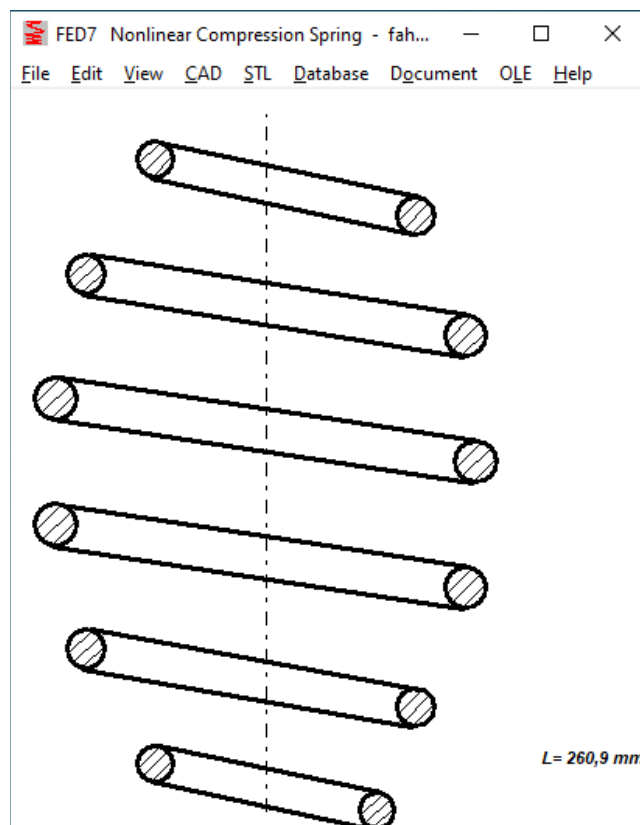
Just like in FED6, you can now also list the axial distance aW between 2 turns in FED7. The resolution can be entered as a fraction of a turn (e.g. 0.25 for 90 °).

The spring manufacturer needs the information to measure the finished spring. Please note if the coil diameter changes: aW is the height distance between 2 turns (component z).

n = 6 nt = 6 nE1 = 0 nE2 = 0 sections = 10

COILS

nx	nx+1	Nr.	Nr.+	Lx[mm]	Lx+[mm]	aW[mm]	Dmx	dx
0,00	1,00	E1	2	0,000	38,473	24,373	83,0	13,8
0,25	1,25	1	3	7,743	49,218	27,076	83,0	13,8
0,50	1,50	1	3	17,555	60,460	28,505	83,0	13,8
0,75	1,75	2	3	27,853	71,702	29,149	112,0	14,4
1,00	2,00	2	4	38,473	83,280	29,807	112,0	14,4
1,25	2,25	3	4	49,218	94,943	30,424	134,3	15,0
1,50	2,50	3	5	60,460	106,690	30,630	134,3	15,0
1,75	2,75	3	5	71,702	118,565	31,263	134,3	15,0
2,00	3,00	4	5	83,280	130,440	31,260	149,4	15,6
2,25	3,25	4	6	94,943	142,315	31,473	149,4	15,6
2,50	3,50	5	6	106,690	154,190	31,300	157,0	16,2
2,75	3,75	5	7	118,565	165,938	31,473	157,0	16,2
3,00	4,00	5	7	130,440	177,600	31,260	157,0	16,2
3,25	4,25	6	8	142,315	189,178	31,263	157,0	16,2
3,50	4,50	6	8	154,190	200,420	30,630	157,0	16,2
3,75	4,75	7	8	165,938	211,662	30,424	149,4	15,6
4,00	5,00	7	9	177,600	222,407	29,807	149,4	15,6
4,25	5,25	8	9	189,178	233,028	29,149	134,3	15,0
4,50	5,50	8	10	200,420	243,325	28,505	134,3	15,0
4,75	5,75	8	10	211,662	253,138	27,076	134,3	15,0
5,00	6,00	9	E2	222,407	260,880	24,373	112,0	14,4
5,25	-	9	-	233,028	-	-	112,0	14,4
5,50	-	10	-	243,325	-	-	83,0	13,8
5,75	-	10	-	253,138	-	-	83,0	13,8
6,00	-	E2	-	260,880	-	-	83,0	13,8



LG2: Lubricant Database

OIL_NAME	TYPE	V40	V100	INDEX	POUR	FLASH	SOURCE
GLYG 220	0	220	38,1	225	-33	265	Mobil Glygoyl
GLYG 320	0	320	55,2	240	-33	265	Mobil Glygoyl
GLYG 460	0	460	77,2	250	-33	265	Mobil Glygoyl
GLYG 680	0	680	112,4	265	-33	265	Mobil Glygoyl
GLYG 1000	0	1000	165,8	285	-33	260	Mobil Glygoyl
BS 75W-90	0	101	15,4	161	-57	224	Aral
BS 75W-140	0	175	24,7	174	-54	228	Aral
SNA 80W-90	1	140	14,5	104	-36	208	Aral
EP+ 80W-90	1	140	14,2	100	-33	226	Aral
CLP 68	1	68	8,7	99	-27	236	Renolin
CLP 100	1	100	11,2	97	-27	238	Renolin
CLP 150	1	150	14,3	92	-24	240	Renolin
CLP 220	1	220	18,9	96	-18	230	Renolin
CLP 320	1	320	24,1	96	-15	230	Renolin
CLP 460	1	460	30,7	96	-12	248	Renolin
CLP 680	1	680	37,9	92	-12	214	Renolin
AERO 500	0	25	5,1	0	-54	256	AeroShell

Until now, the lubricant had to be selected between ISO VG2 and ISO VG 1500. Now you can also select a lubricant from the lubri.dbf database, or enter another lubricant by specifying the kinematic viscosity at 40 ° C and at 100 ° C.

With ISO VG lubricants, the viscosity for various temperatures is converted according to DIN 51563 for mineral oils.

For lubricants from the database or self-defined lubricant, enter the following: Kinematic viscosity at 40 ° C and 100 ° C, density at 15 ° C. From this, the program calculates the kinematic viscosity and the dynamic viscosity from 0 ° C to 100 ° C according to DIN 3996.

LG2 - lubricant supply

lubricant

- lubricant: ...
- density lubricant rho: 1076 kg/m³
- specific thermal capacity c: 2000 J/(kg K)
- kinematic viscosity nue 40: 460 mm²/s
- kinematic viscosity nue 100: 77.2 mm²/s
- lubricant: GLYG 460

forced lubrication (heat removal by lubricant)

heat emission by convection

- ambient temperature ta: 20 °C
- surface of bearing case A: 0,065 m²
- heat transfer coefficient k: 18 W/(m² K)

lubricant supply (forced lubrication)

- lubricant hole, 180° against direction of load
- lubrication hole diameter dH: 5 mm
- lubricating groove width bG: 0 mm
- width bore relief bp: 0 mm
- lubric.groove angle begin phi A: 0 °
- lubric.groove angle end phi E: 0 °
- lubricant inlet temperature t1: 40 °C
- lubricant inlet pressure pE: 0 MPa

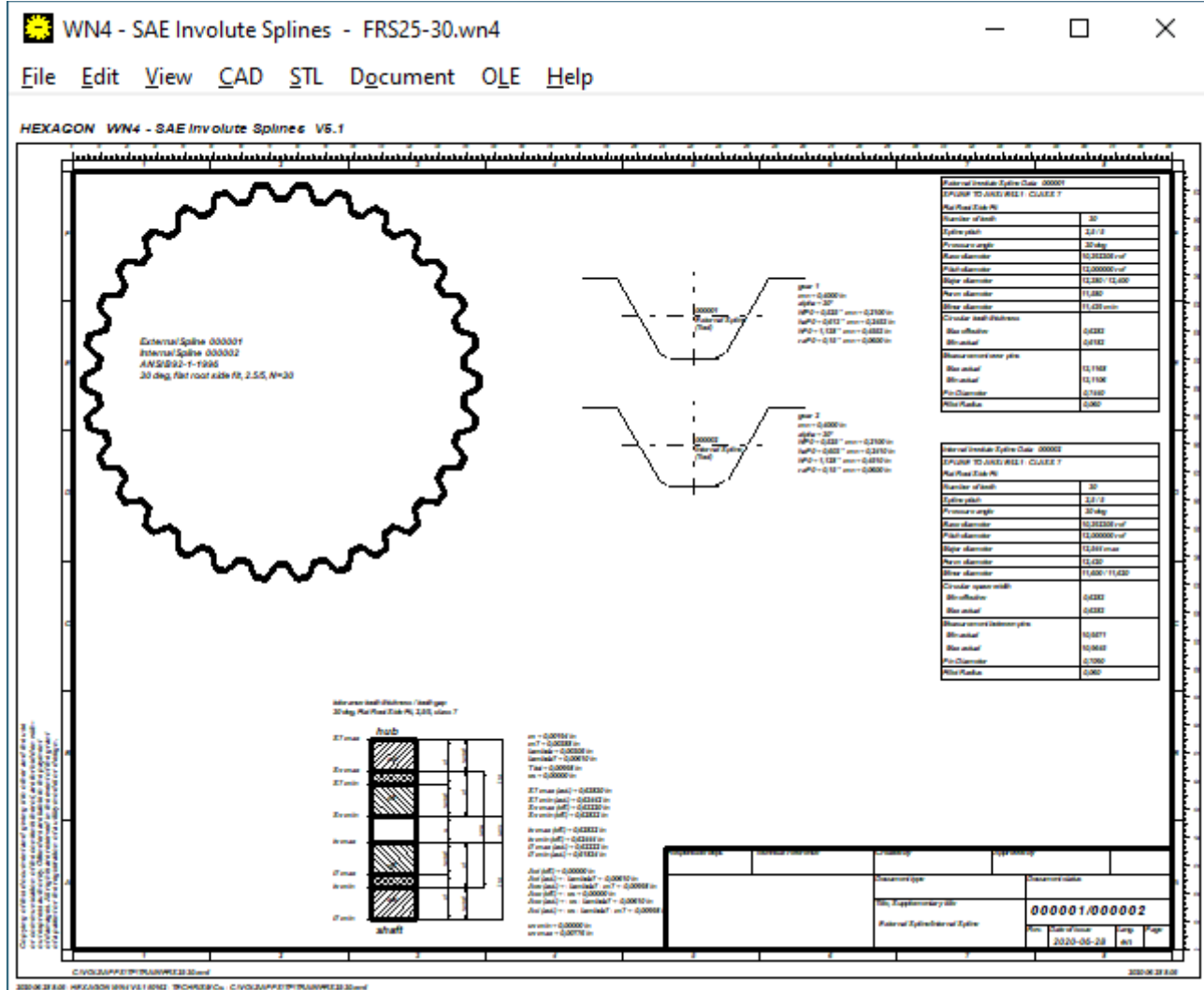
Buttons: OK, Cancel, Help Text, Aux. Image, mm <-> inch, Calc

WN1: Quick1,2,3,4

Text heights and table sizes have been optimized in Quick View1,2,3,4 of WN1.

WN4,WN5: Quick4 View

New Quick4 View shows drawings and tables in an A3 drawing head.



ZAR3+: Backlash

The backlash of the worm gear is calculated and printed out if tolerances have been entered or tolerance zones have been selected under "Edit \ Quality" ("wheel 1" is the worm and "wheel 2" is the worm wheel).

min.torsional backlash	jtmin	mm	0,075	
max.torsional backlash	jtmax	mm	0,316	
torsional backlash min.ang.	jtmin	°	0,342°	0,0524°
torsional backlash max.ang.	jtmax	°	1,442°	0,221°

ZAR1+, ZAR5 Multistage: Backlash Calculation

The angular backlash in degrees is calculated from the backlash and the center distance tolerance. Example of a gear stage with $dw1 = 100\text{mm}$, $dw2 = 400\text{mm}$, $jt = 0.1\text{mm}$, $a\text{ tol} = 0$ (center distance tolerance neglected).

$$jt1 \text{ deg} = jt / (dw1 / 2) * 180^\circ / \pi = 0.11^\circ$$

$$jt2 \text{ deg} = jt / (dw2 / 2) * 180^\circ / \pi = 0.028^\circ$$

The backlash of gear 2 can also be calculated from the backlash of gear 1 and the gear ratio:

$$jt2 \text{ deg} = jt1 \text{ deg} / u$$

In multi-stage gearboxes, the backlash of the individual stages is multiplied by the gear ratio up to the input stage. Example: 3-stage gear $u = 4$, $u_{tot} = 64$, $jt1 \text{ deg} = 0.1^\circ$ for all stages.

$$jt2 \text{ deg} = jt1 \text{ deg} / u = 0.025^\circ$$

Backlash of the input shaft with the output shaft locked:

$$jt1_{tot} = jt1i1 + jt1i2 * u + jt1i3 * u^2 = 0.1^\circ + 0.1^\circ * 4 + 0.1^\circ * 16 = 2.1^\circ$$

Backlash of the output shaft with the input shaft locked:

$$jt2_{tot} = jt2i3 + jt2i2 / u + jt2i1 / u^2 = 0.025^\circ + 0.025^\circ / 4 + 0.025^\circ / 16 = 0.0328^\circ$$

Or also: $jt2_{tot} = jt1_{tot} / u_{tot}$

In ZAR1+, the calculation of the entire backlash of multi-stage gearboxes is included in the calculation and printed out. However, the calculation of multi-stage transmissions in ZAR1+ is only a prerequisite. The selected tooth thickness dimensions (e.g. e25) and center distance tolerances (e.g. js7) apply to all gear stages. If you deviate from this and calculate each gear stage individually with different tolerance classes for an optimized gear, an exact recalculation can be useful. For multi-stage planetary gears in ZAR5, the calculation is similar if you first calculate the gear ratio and backlash of the input and output shaft in degrees.

Printout from ZAR5 with 4-stage planetary gear ($u_{tot} = 1000$)

tolerance zone		DIN 3967	S-P-H	e 25	e 25	e 25		

torsional backlash I/O (Input S, Output C)				jtmin/jtmax°				

i	n1 /min	mn	u	jImin	jImax	jOmin	jOmax	

1	1450,0	2,50	5,625	0,408	0,984	0,073	0,175	

2	257,8	5,00	5,625	0,285	0,640	0,051	0,114	

3	45,8	8,00	5,625	0,207	0,470	0,037	0,084	

4	8,1	16,00	5,625	0,132	0,289	0,024	0,051	

torsional backlash I/O min				jtmin °		32,1		0,03

torsional backlash I/O max				jtmax °		70,8		0,07

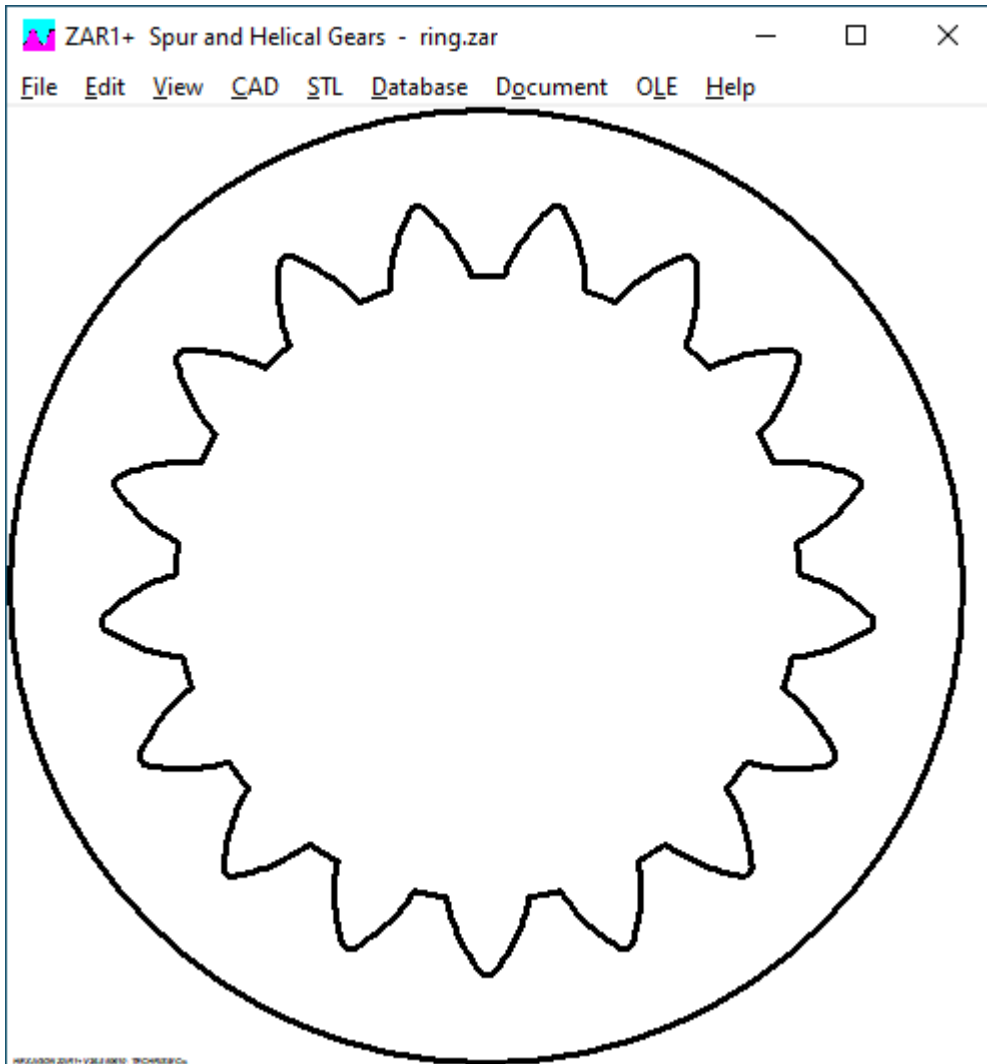
4 planetary gear stages with driving sun gear, output carrier, ring gear fixed.

Angular backlash of the input shaft with the output shaft locked: 32.1° to 70.8°

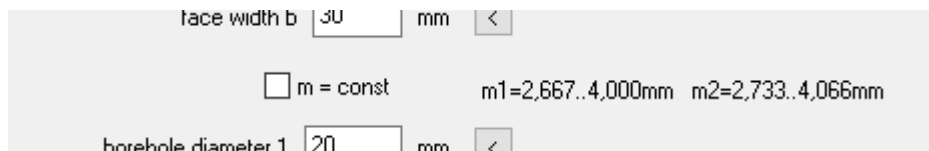
Angular backlash of the output shaft with the input shaft locked: 0.03° to 0.07°

ZAR1+,5,7,8,ZAR1W,ZARXP,WN2,4,5,WNXE: drawing border = ring diameter

If an outer diameter was entered (for ring gears this is the negative bore diameter), then the drawing limit on the screen is now the ring diameter (no longer the outer diameter of the toothing).



ZAR4: variable normal module



In the case of non-circular gears, one can calculate either with a variable module ($m = 2 * r / z$) or with a constant module. With a variable module, the min and max value of the gear pair is now displayed in the input window. If the m1,m2 printout disappears due to changed input: Click on “Calc” for recalculation.

Modification index in ISO 7200 drawing header

Created by fr		Approved by ee	
Document type		Document status	
Title, Supplementary title Druckfeder		123456789012345	
Rev. A	Date of issue 2020-06-28	Lang. en	Page
2	3	4	

2020-06-28 8:20

Previously, if the ISO 7200 title block was configured, “Rev.” field shows the next modification index (version number Rev. according to ISO 7200). If there was no modification, it always shows “A”. However, because it is not clear whether “A” may appear in the field if there has not yet been a modification, you can now configure (File \ Settings \ Drawing) that the field remains empty if there was no change, and shows “A” if there was one modification.

ABCD-1234 Border line
 mm Scale Border line
 Show modifications ?
 ISO 7200 Rev. 0ABC <> ABCD

Size coeff. Dimensioning <

Network option “copy dbf->temp” prevents database modifications

Directories Graphics CAD Colour Printer Printout Settings external Drawing

Directories

copy DBF -> TEMP User: Fritz

As only now found at the customer, databases can no longer be changed if this option is set (error message: No Write Access to dbf directory - temporary directory used”). If you want to change databases, you must first switch this option off. Basically, we do not recommend changing databases yourself. At least one should not change existing data records, better add new record, copy the data record to be changed and change the data in the copied record. And then make sure with later software updates that the modified dbf file is not overwritten.

VAT reduction

Quite unexpectedly, the German federal government decided in June to lower VAT from 19% to 16% for 6 months, which should already apply on July 1st, 2020. For our customers in Germany, our products become about 2.5% cheaper (a 100-euro product for originally 119 euros then costs 116 euros). Commercial customers who are entitled to deduct input tax ultimately do not really benefit from this.

Coronavirus - constructive solutions for buses and trains

Local public transport is also avoided after the corona pandemic has died down. From the fear of being infected with viruses. And the others find it annoying to wear a mask for hours.

The bus and train designers should come up with something that you can travel on public transport without risk of infection and without a mask. For example, a bus or train wagon with 15 instead of 2 doors and as many mini compartments with only one seat group and similarly little space as on the plane. Without passage to the front or back, 15 or 20 separate compartments with only one door: to the platform. The door is unlocked with a bank card, and travel expenses are debited when you get out. The question remains whether and how the mini compartments are disinfected in pandemic times? Just like on a plane, quote from "Mask requirement and social distancing at Eurowings": "When you get on, we will hand over a disinfectant wipe". That means: you have to clean your place yourself.

And in post-Corona times, the railway wagons and buses can be used as a first-class compartment: first-class travel also by bus and subway.

Coronavirus - area calculation

What is the difference between a Tönnies canteen and a Lufthansa cabin? Answer: The passengers in the Lufthansa plane sit closer together than in the Tönnies canteen. Lufthansa has ordered that the middle seat should also be occupied. According to Lufthansa, this is not a problem because of the good ventilation (with air circulation!) and the mouth and nose protection of the passengers (brought from home). Profit before security. An Airbus A319 has 25 rows of seats, each with 2 times 3 seats. Fully occupied 150 passengers. The passenger compartment is 18m long and 3.5m wide, which makes 0.42m² per passenger. There are more than 2 passengers on one square meter.

Corona virus - learn from China

There were 83,000 coronavirus infections and 4,634 deaths in China. That is only 6 infections and less than 1 death per 100,000 inhabitants. For comparison Germany: 240 infections and 11 deaths. What did China do right and the world wrong? On January 23, 2020, China isolated the city of Wuhan and the province of Hubei: flights, trains, ferries, long-distance buses stopped. Had you done the same thing as China a day later and stopped all flights, trains, ships, travelers from China worldwide and refused entry, the rest of the world would have been spared a lot of suffering.

Coronavirus vaccine victims

Some power-obsessed German politicians (for example, the Swabian Minister of Culture Eisenmann, who would like to replace the Baden-Wuerttemberg "grandfather") demand that everyone be vaccinated. The rulers want to determine that 80 million "fellow citizens" a drug is injected into the bloodstream. In contrast, the belief in the pharmaceutical industry is unlimited. Vaccination without risks and side effects? If only every five thousandth of the 80 million people cannot tolerate vaccination and die or suffer permanent damage, the number of vaccine victims in Germany is higher than the number of corona deaths.

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Update prices	EUR
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Key Code

After installation, software has to be released by key code. Key codes will be sent after receipt of payment.

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