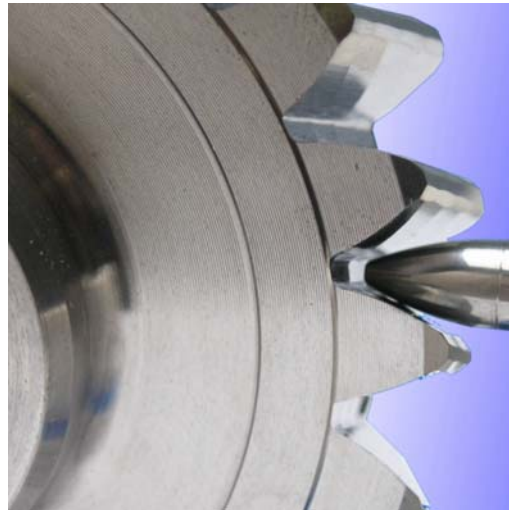
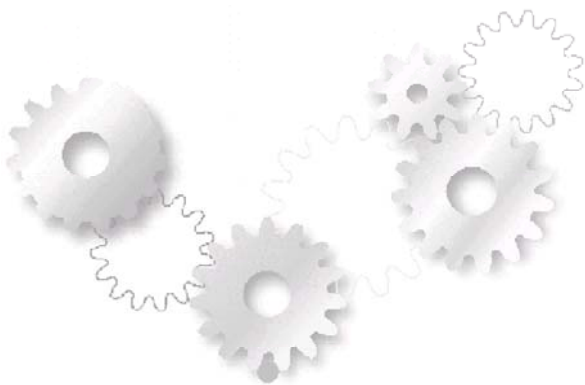




Rollscan



*Measurement of
total gear geometry*



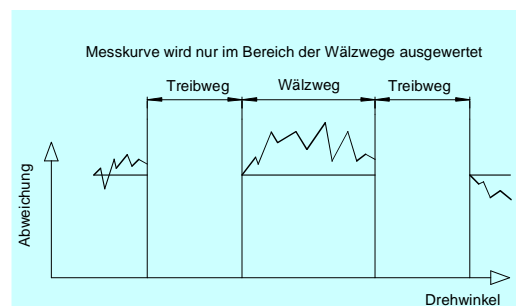
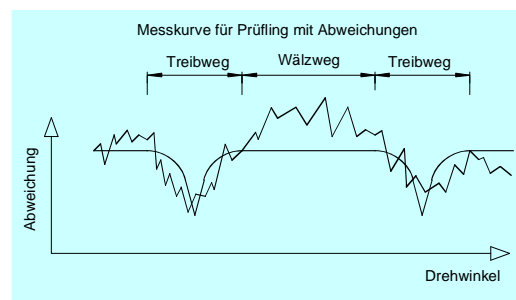
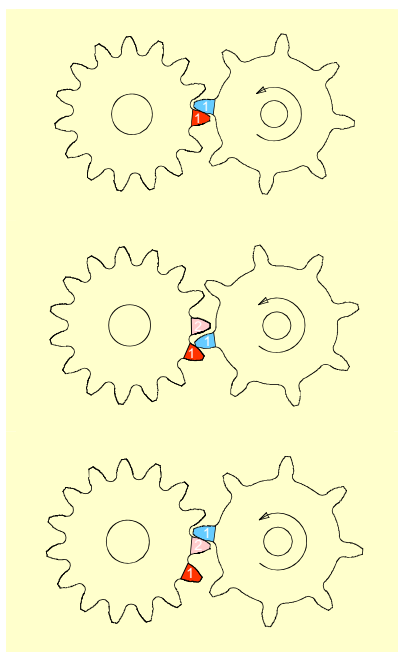
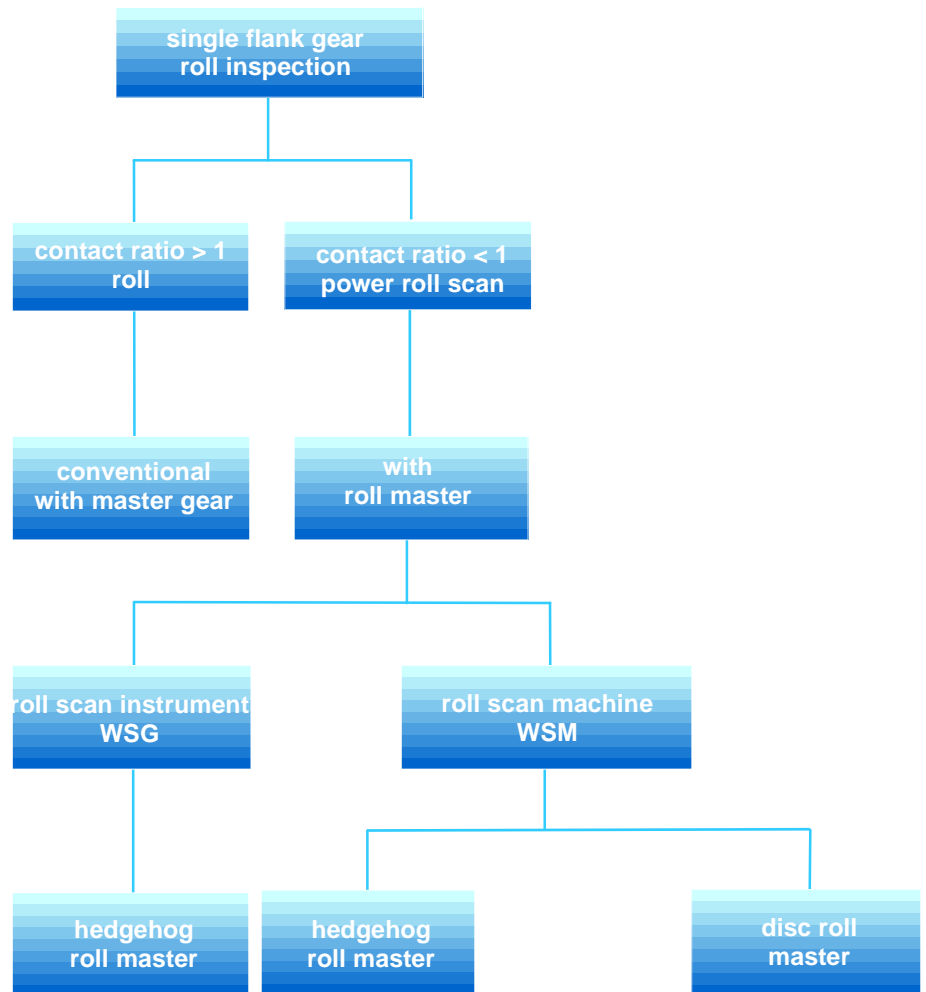
pure
perfection

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Roll scan

The measurement with a disc roll master is only reasonable, if a measuring machine having a longitudinal axis is used. The locations of measurement are defined after several rotations.

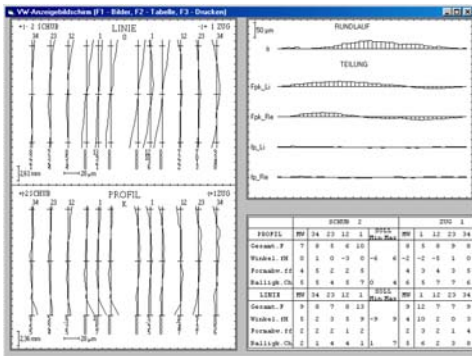
The measurement takes place during the rolling process. The way of transportation is irrelevant for the measurement. After one rotation tooth 1 of the master measures tooth 2 of the specimen.



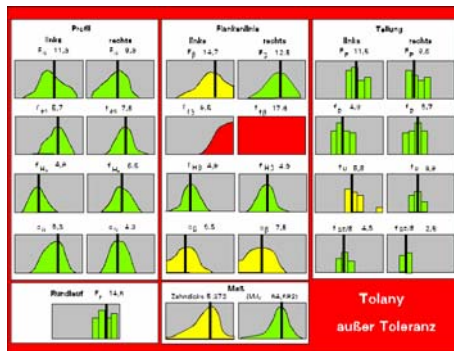
Methods of evaluation

	Profile	Helix angle	Index, runout, size
Still today it is standard to measure randomizely			
necessary would be to have more complete measurements			
Grade of completeness with the roll scan method			

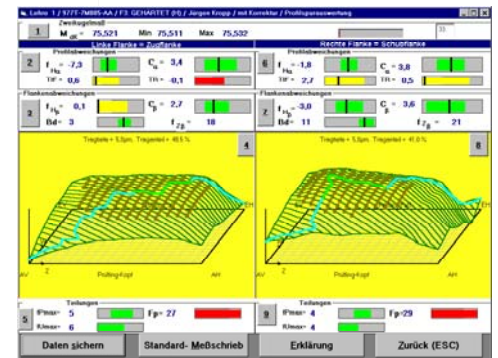
conventional evaluation



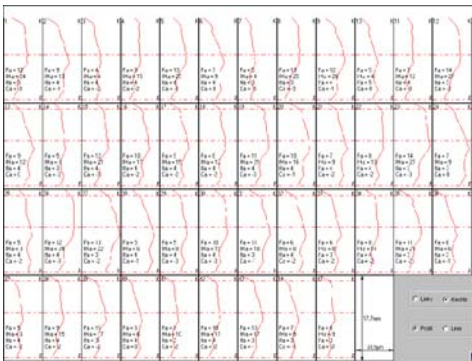
Tolany



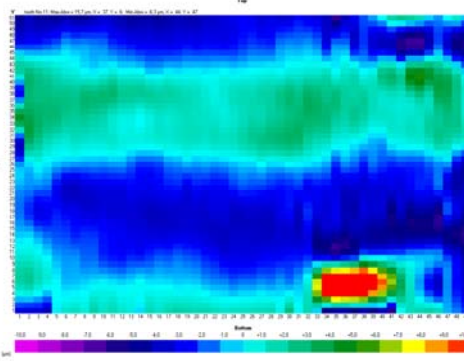
topographical evaluation



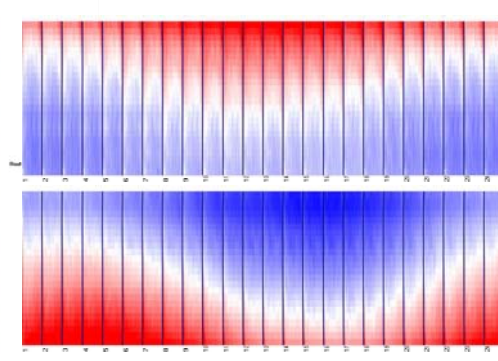
evaluation of all teeth



topological evaluation

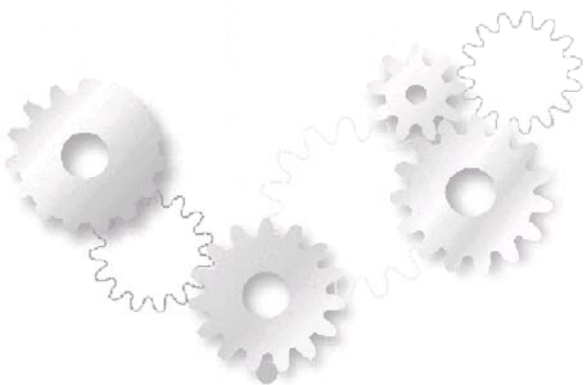
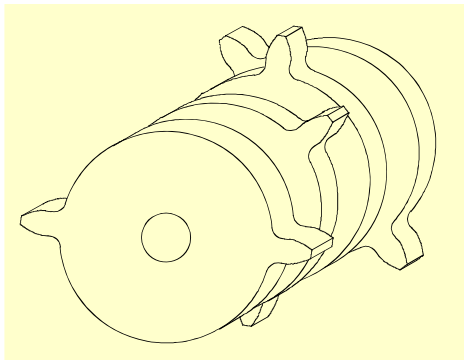


Reany



Roll scan instrument

Roll scan measuring instruments are always adjusted to the specimen to be inspected. So they are single purpose measuring instruments for one single specimen. A conversion of the instrument for other specimen within one series is basically possible, but has to be checked as the case arises. Hedgehog roll masters are exactly adjusted to the gear of the specimen and as the master gear only suitable for one type of specimen.



Measuring results and cycle times of different technologies

method	roll master	details	result	endurance
double flank gear roll insp.	master gear	1 rotation	summary error F_i'' runout	5 sec
one flank gear roll inspection	contact ration >1	rotation left rotation right	summary error F_i' left flank right flank runout	12 sec
rollscan	disc rollscan master	2 axis rotation left + right 10 levels		4 min
rollscan	disc rollscan master	2 axis rotation left+right about 10 levels	all, helix in about 10 levels	4 min
rollscan	hedgehog master	3 axis rotation simultaneous about 10 levels	all, helix in about 10 levels	2 min
measuring machine	ball probe	profile and helix of 4 teeth index and runout in 1 level	all of some few teeth and in selected levels	20 min
measuring machine	ball probe	measuring all teeth topological	all	about 4 h

hedgehog roll master
with teeth



hedgehog roll master
with evolventoids



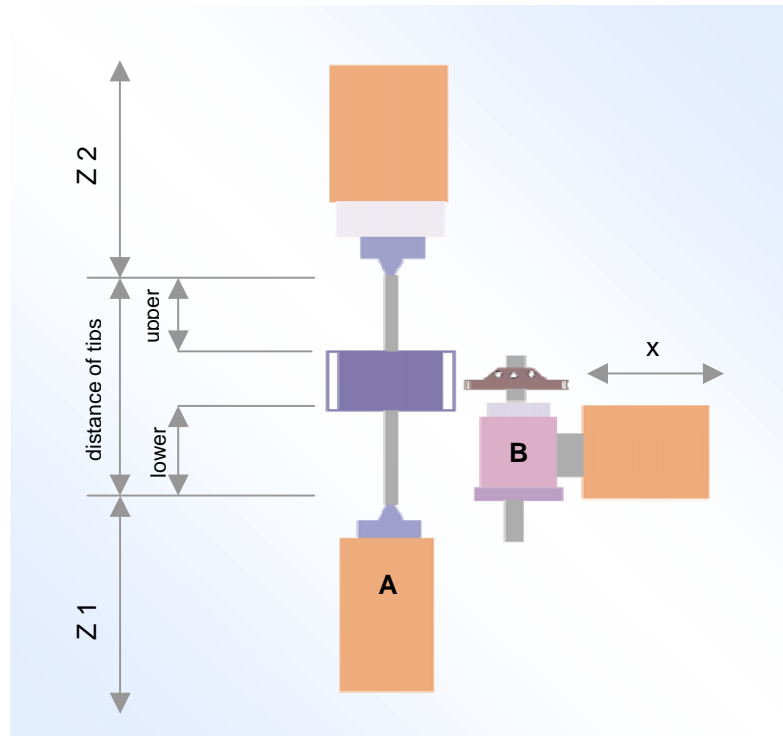
Roll scan machine

The disc rollscan bases on the principle of the one flank gear roll inspection, which normally requires a roll master fitting to the work piece. In consequence it is necessary to have for every specimen an other master. Due to the adjustable distance of axis and the flexible distance of tips, the disc rollscan master is suitable for several specimens.

The specimen can be moved along the Z-axis. That enables a complete measurement.

The numbers of levels to be measured and thus the complexity of the measurement can be selected.

Depending on the specimen the measurement in 10 levels takes about 4 minutes.



- A = axis of rotation of the specimen
- B = axis of rotation of the rollscan master
- Z1 = upper center position
- Z2 = lower center position
- X = distance of axis

disc roll scan master



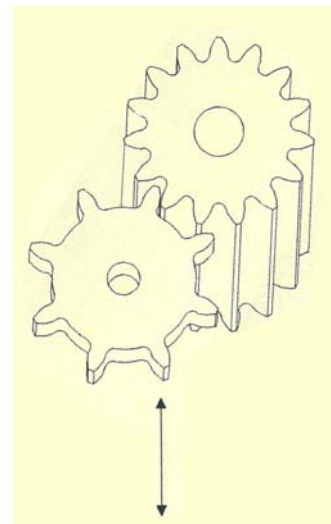
measurement of splines



measurement of gears



max. way Z1	300 mm
max. way Z2	300 mm
smallest distance of tips	0 mm
biggest distance of tips	600 mm
biggest specimen- \varnothing	240 mm
max. way X	130 mm
biggest distance of axis	195 mm
smallest distance of axis	65 mm
max. weight of specimen	40 kg
resolution of drives	0,0005°
measuring force	0 –0,5 Nm
weight of machine	450 kg



FRENCO Product Lines



Gear and spline high precision

Spline Gages
Master Gears, master wheels
Artefacts, masters
Profiled tools
Clamping systems
Gear and spline manufacturing



Instruments for size inspection Series V

Ball inserts and pins VRK
Instruments for rocking VA
Instruments with face stop VP
Indicating Gages VM
Variable 3-Disc Gages VD
Customized solutions VS



Rotation Measuring Systems

URM - K with balls and pins
URM - R with master wheels
EWP Single flank gear rolling
ZWP Double flank gear rolling
WS Gear Rollscan



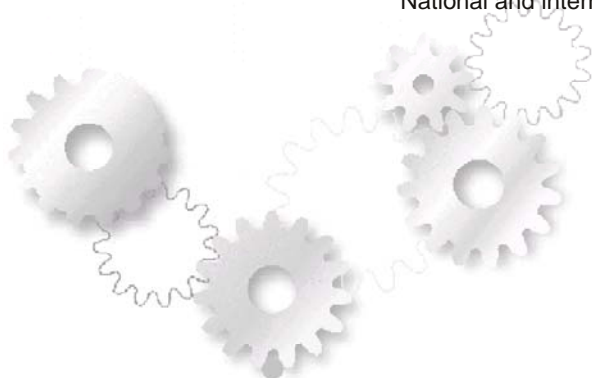
Gear and spline inspection

DKD gear calibration
Gage wear inspection
Part inspections
Deviation analysis



Know-how transfer

Software for gear and spline calculating
Training, seminars and workshops
Consulting and calculations
Literature and documents
National and international standards



pure
perfection

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