

EXCELLENCE 

IN GRINDING

**SPRING ENDS
GRINDING**



YOUR CHALLENGE

EFFICIENT PROCESSES. CONSTANT PARAMETERS. CONSISTANT QUALITY.

The machining of spring ends poses complex challenges for a grinding tool – the quality requirements are high and there are numerous influencing factors. The following factors have a decisive influence on the grinding result and the process costs involved. The interplay of all factors ultimately guarantees the optimal and central functioning of the end product: exact axial compression on the best possible contact face. All the following parameters are taken into account in the conception and production of THELEICO abrasive wheels:

A sense of proportion (precision)

Adherence to size tolerances is extremely important. Incorrect machine parameters and the use of unsuitable abrasive wheels can lead to severe spring axis deviations or parallelism deviations.

Staying cool (grinding temperature)

Spring ends are dry-ground. This means that only the medium of air provides cooling of the process surface. A low grinding temperature is, however, decisive for the grinding result and the quality of the springs. An excessive thermal load can lead to deformation and thermic structural transformation.

Dressing less (dressing intervals)

In order for the aggressiveness, axial true run and radial runout to be retained, abrasive wheels must be dressed at particular intervals. However, each dressing process costs time and money. The aim is to prolong the dressing intervals and to keep the dressing material removal as slight as possible each time, and to also guarantee dimensional accuracy at the same time.

Grinding more quickly

(material removal per period)

You would like to grind cost-effectively! For an efficient grinding process, it is necessary to achieve the maximum material removal performance. An efficient grinding process is only possible if the hardness, binding and abrasive grain of the grinding tools are optimally adapted to the machine and material.



Scoring and burr-free grinding (surface)

After production, your springs should be installed without any problems and with a perfect fit. In order to guarantee this, it is important to keep the surface roughness as low as possible and to avoid burring. For this, the abrasive wheel must be optimally adapted to the material, dimensions and diameter of the spring.

Saving and ensuring quality (reproducibility)

The grinding behaviour of the grinding tool should be reproducible over its whole service life and the quality, even through different batches, should remain constant. This saves you from having to adjust the grinding parameters.





OUR SOLUTIONS

THELEICO is Europe's leading manufacturer of abrasive wheels for the spring industry. At the centre of the German wire industry, we have developed to become the market leader thanks to our know-how. As the market leader, we offer you our expertise... So that you not only perform your task well, but also economically.

Targeted advice – we take a good, close look

In order to guarantee the selection or development of an optimal product for your specific application, the precise evaluation of all decisive parameters in the grinding process is essential. Just as much emphasis is placed upon technical top performance here as upon cost-effectiveness and process reliability.

We gather your process data and help you to select the correct abrasive wheel for your application. Rely on our specialists and on more than 90 years of experience in the manufacturing of abrasive wheels.

Custom-made abrasive wheels for your special requirements

Whether it be a sintered corundum version with continuous self-sharpening effect for high circumferential speed or CBN. Ceramic-bonded, artificial-resin-bonded, with and without grinding-active additives, holed or unholed, screw-on or stuck to steel hubs.

Our extensive product portfolio also offers the solution for your applications.

Extensive range – short-notice custom production

In addition to the extensive THELEICO range, with a multitude of dimensions and specifications, we have at our disposal all the means to provide versatile and short-notice production of custom-made special products. We guarantee the best possible selection – with alternative suggestions!

For this, we use raw materials from renowned suppliers with whom we have cooperated and collaborated in product development for years and decades.

Quality throughout – from the raw material to the finished product to the on-site service

THELEICO stands for reliability and precision. This not only applies to our tools, but to all of our processes as well. High-quality raw materials, qualified and motivated employees and highly modern production and checking processes guarantee reliable reproducibility in the application. We will deliver your products to you flexibly and reliably – and we will of course be happy to collect the base plates again to replace them!



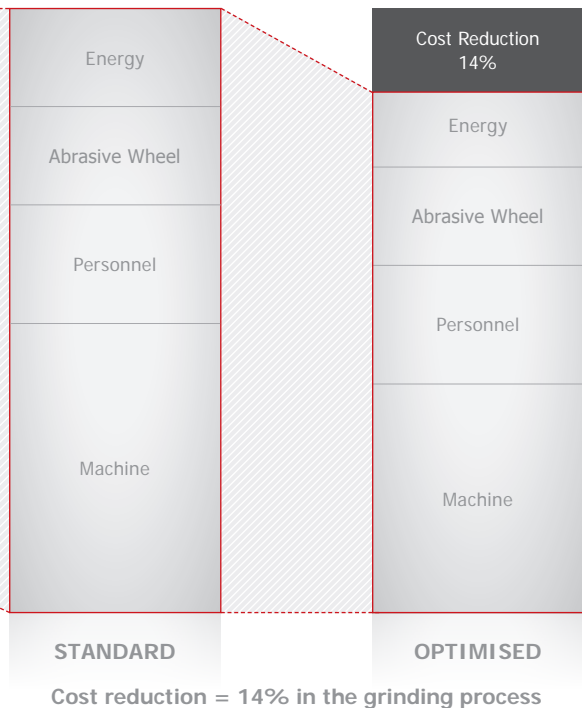
WHY PROCESS OPTIMISATION IS SO IMPORTANT

The “grinding” work process is the most cost-intensive and sometimes the most time-consuming work step in the process chain of spring manufacturing. It is therefore necessary to improve the added value potential by means of an abrasive wheel optimised for the application. This can cause the overall process costs to be substantially reduced:

Overall Process Costs Spring Manufacturing

61.5% Grinding Process
18.2% Setting
9.5% Winding
10.8% Annealing, Blasting, Greasing
Example: Material DH, d = 1.6 mm

Cost Comparison in Grinding Process



If, as a precondition, grinding results of consistent quality are being achieved, the grinding process can be optimised by shortening the machining time and/or processing time, reducing the set-up times and lengthening the dressing intervals. These three points interact with each other and cannot be considered separately. However, it can be achieved: by using optimised abrasive wheels, you increase the spring throughput per time unit. **This will enable you to reduce your process costs.**



A RANGE FOR SUCCESS

ABRASIVE QUALITIES, AREAS OF APPLICATION AND MODELS.

Wire ø mm	Abrasive Wheel Model/Type *				Product Example
	Grain Type and Size	Hardness	Structure	Bonding	Wheel Name

Steel qualities according to DIN EN 10270, part 1 and 2

Flow Grinding	< 1.2	CBN				CBN B 301
	< 1.5	Sintered corundum, 46–60	N–Q	4–5	Ceramic	224A 46-1 O 4 VM
	< 3.0	Sintered corundum, 30–46	N–Q	3–4	Ceramic	225A 30-9 O 3 VM
Placement Grinding	< 2.5	Sintered corundum, 30–46	O	12	Artificial resin	225A 30-9 O 12 B/BE
	< 6.0	Sintered corundum, 24–30	O	12–13	Artificial resin	225A 24-9 O 12 B/BE
	> 6.0	Sintered corundum, 24–30	P	12	Artificial resin	225A 24-9 P 12 B/BE
	> 20.0	Sintered corundum, 20–24	O–P	13	Artificial resin	225A 20-9 O 13 B

Steel qualities according to DIN EN 10270, part 3 and other corrosion-resistant steels

Flow Grinding	< 1.2	CBN				CBN B 251
	< 1.5	Sintered corundum, 46–60	N	4–5	Ceramic	225A 46-1 N 4 VM
	< 3.0	Sintered corundum, 30–46	N–O	12	Artificial resin	225A 30-9 N 12 B/BE
Placement Grinding	< 3.0	Sintered corundum, 30–46	N–O	12	Artificial resin	225A 24-9 N 12 B/BE
	> 3.0	Sintered corundum, 24–30	N–O	12–13	Artificial resin	225A 24-9 N 13 B/BE

One-sided grinding with clamping in V-block on single-spindle grinding machines

Wet	> 6.0	Semi-friable corundum, 20–24	N–O	0–2	Magnesite	34A 20-9 N 1 Mg
	> 10.0	Sintered corundum, 24–30	N–O	12–13	Artificial resin	225A 24-9 N 12 B
Dry	> 10.0	Sintered corundum, 24–30	H–J	10–11	Ceramic	25A 24-9 H 11 VM

*Explanations of the abrasive wheel models can be found on the website at www.theleico.de/en



THELEICO EXCELLENCE

As a specialist for grinding technology, THELEICO stands for safety, expertise and reliability. Our daily actions and our services are shaped by our promise to customers: "EXCELLENCE IN GRINDING".

EXCELLENT SAFETY

EXCELLENT COMPETENCE

EXCELLENT PROCESS

Excellent safety – for greater safety while fulfilling the highest requirements

To meet the highest requirements in your grinding processes, we guarantee you product safety and consistent quality in the use of our products and services.

Excellent competence – for custom-made solutions to fulfil your grinding requirements

Every day we make use of our great experience in grinding technology to develop innovative solutions for today, with the latest technology, and to develop and manufacture adapted products for your application.

Excellent process – for the greatest reliability, to ensure reproducible product quality

We guarantee detailed acceptance of your grinding process data to develop a custom-made grinding tool, in order to thus optimise your processing with our individual solutions and to reduce your process costs.

Benefit from our excellence!





THELEICO Schleiftechnik GmbH & Co. KG

Lagerstrasse 3-5
59872 Meschede
Germany

P.O. Box 1554
59855 Meschede
Germany

☎ +49 (0) 291/99 01-0
📠 +49 (0) 291/99 01-28

info@theleico.de
www.theleico.de