

Degen is an expert in high-speed honing machines. We offer the fastest honing machines currently available on the world market and the corresponding tools.

We take precision, production speed and efficiency to the next level for our customers. We achieve this because we do things differently.

Better, |cause different.

**de**  
**gen**

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**de** Better 'cause different.  
**gen**

 **MADE IN GERMANY**

High-speed honing machines

**VISION ULTIMATE  
TOWER 4 | 6 | 8**



Excellence at a Glance

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## 04 Team and Mindset

At Degen, it’s not only state-of-the-art technology that defines us, but above all the expertise and passion of our family-owned company.

## 06 The Degen Technology

Our technology is not just faster, more precise, and more efficient fl it redefines honing.

## The Best in Their Class

VISION Ultimate

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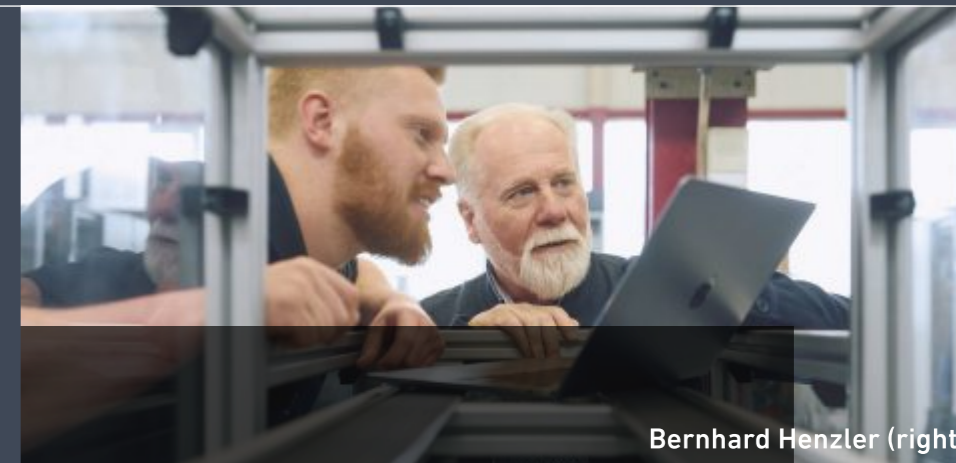
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Better, 'cause different.

## The benchmark in honing

We are proud to manage a family-run company that has stood for precision, innovation and the highest quality for generations.



Bernhard Henzler (right)



With our leading position in the field of high-speed honing, we set standards worldwide. What drives us is our passion for technology and progress fl discover with us the future of honing.

We have revolutionized honing by questioning the status quo and consistently breaking new ground. Where others reach their limits, we think ahead. Our technology is not only faster, more precise and more efficient fl it redefines honing. Because true innovation arises when you are not satisfied with the status quo, but exceeding it.

Our principle is as simple as it is effective: better 'cause different.

We owe this progress to our team of innovators, creative minds and highly specialized technical experts. They challenge standards, think outside the box and develop solutions that bring about real change. Together, we create technologies that make the difference fl today and in the future.

**Rainer Degen**, Managing Director  
**Holger Degen**, Technical Manager

01



MORE

- Up to 100 % more material removal per honing operation compared to competitors
- High reusability due to low conversion effort
- Impressive energy efficiency thanks to fewer honing devices and smaller moving masses

02



EASIER

- Blind hole honing sleeves for precise blind holes
- Stepped holes can be easily realized with stepped tools
- Operating and maintenance room with all-round overview
- Speedload option fl without robot unit for workpiece automation

04



FASTER

- Enormous cutting speeds shorten the processing time
- Short changeover times thanks to quick-change honing tool

03



LESS

- Reduces honing operations by around 50 %
- Reduces cutting forces and minimizes burr formation
- Low maintenance, low-maintenance linear motor
- Suitable for any production size thanks to small footprint
- No tool transportation and less capital tied up in tools because only honing sleeves are exchanged

05



MORE SUSTAINABLE

- Lower raw material and resource requirements for honing oil, hydraulic oil and air
- Reduced energy consumption in the honing process

**Better,**

—cause different.

01



## WORKPIECE MOVEMENT

- During high-speed honing, the slide moves with the honing device and workpiece
- High honing speed with up to 40 double strokes per second
- No stroke movement of the tool and the cooling unit

02



## COOLING

- Internal cooling guides the coolant through the honing-tool to the honing stones
- Additional highly efficient ring cooling system

### More efficient on principle

Degen—s motto is: Better, 'cause different. We have done many things differently in recent years. Perhaps our most important step:

**We have turned the way honing machines work on its head.**

With Degen machines, the workpiece performs the typical honing stroke movement fl not the tool. We have also modified the cooling system and developed a new generation of honing tools.

All of this combined has led to an innovation that leaves other honing solutions far behind: High-speed honing.

You have already experienced the many advantages of this technology. They are no coincidence. They are the result of a principle:

**Better, —cause different.**

Better, 'cause different.

## For Series Production in the Smallest Space

For those who want to achieve maximum precision with a minimal footprint, the VISION Ultimate Compact is the perfect solution. This machine combines the strengths of high-speed honing with minimal energy and space requirements fl setting new benchmarks for efficiency and cost-effectiveness.

### Your Benefits

- \_\_\_ Maximum productivity through high-speed honing
- \_\_\_ Expandable with the Speed-Load workpiece handling system
- \_\_\_ Compact footprint fl ideal for corners and limited floor space
- \_\_\_ Innovative sleeve-based honing tools by Degen
- \_\_\_ Simple, intuitive operation for fast, precise results
- \_\_\_ Modern, future-proof Siemens control system

### Fields of Application

With machining diameters from 1 to 12 millimeters, the compact solution for:

- \_\_\_ Automotive: diesel and gasoline injection, transmission, braking systems, chassis
- \_\_\_ Hydraulics: vehicle and mobile hydraulics
- \_\_\_ Medical technology
- \_\_\_ Aerospace

### Technical Highlights

- \_\_\_ Optimized for workpieces up to 0.5 kg
- \_\_\_ Excellent precision for small and medium batch sizes
- \_\_\_ Also suitable for single parts and prototypes

### Small in Size fl Big in Performance

Whether in series production or individual projects fl with the VISION Ultimate Compact you secure top quality in the smallest space. Because manufacturing quality and processing speed are not a question of size, but of the right technology.

# VISION Ultimate Compact

The Compact High-Speed Honing Powerhouse



Better, 'cause different.

## The speed solution for almost all cases

The VISION Ultimate has already proven itself in many production facilities. Its high reliability and low maintenance requirements ensure that your series production runs smoothly day after day fl precisely, economically, and efficiently.

### Your Benefits

- \_\_\_ Fully automatic loading system
- \_\_\_ Flexible investment options with demand-oriented expansion stages
- \_\_\_ Modern SIEMENS PLC control S7-1500
- \_\_\_ User-friendly touch screen
- \_\_\_ Short delivery times
- \_\_\_ Maximum process reliability
- \_\_\_ Parts handling already integrated
- \_\_\_ Clear, stable process

### Fields of Application

- Bores to 20 mm in diameter, e.g. for these applications:
- \_\_\_ Automotive: diesel and gasoline injection, transmissions, braking systems, servo and chassis
  - \_\_\_ Hydraulics: vehicle hydraulics, mobile hydraulics
  - \_\_\_ Medical technology
  - \_\_\_ Aerospace

### Efficiency meets flexibility

The VISION Ultimate Standard impresses with short setup times and a flexible handling system that can also transfer workpieces between multiple machines. Even with interrupted cuts or demanding blind holes, it delivers precise, cylindrical results fl reliably and reproducibly.

### Precision in every series

Whether for small or medium-sized series, the VISION Ultimate Standard delivers the highest honing quality quickly, accurately, and with process stability. Simply start the honing process and the machine delivers ideal surfaces, consistent shape, and perfect dimensional accuracy from the very first workpiece.

# VISION Ultimate Standard

The Reliable Long-Distance Runner



Better, 'cause different.

## The High-Precision Heavy-Weight

More power, same commitment: the VISION Ultimate XL brings the strengths of the VISION series to larger workpieces (up to 5 kg). Whether as a stand-alone machine or integrated in production cells, it reduces the number of operations compared to conventional processes. Shorten process times, lower unit costs, and increase the stability of your honing operations.

### Your Benefits

- \_\_\_ Scalable investment: expandable in stages
- \_\_\_ Reusable, clearly standardized modules
- \_\_\_ Short delivery times
- \_\_\_ High machine availability thanks to robust design
- \_\_\_ Integrated parts handling
- \_\_\_ Excellent accessibility and easy operation
- \_\_\_ Simple, reliable process fl quick to master

### Fields of Application

For bores up to 75 mm, e.g. for:

- \_\_\_ Automotive: diesel/gasoline injection, transmission, servo, chassis
- \_\_\_ Hydraulics: vehicle and mobile hydraulics
- \_\_\_ Medical technology
- \_\_\_ Aerospace

### Capacity

- \_\_\_ Optimized for workpieces up to 5 kg
- \_\_\_ Designed for large bore diameters up to 75 mm

### Gigantic Power for the Highest Demands

Even when honing heavy components, you benefit from short cycle times and consistently high honing quality. The VISION Ultimate XL makes it possible fl with double processes, match honing, quick changeovers to other workpieces, and the optional automatic loading system.

Naturally, this also applies to high material removal rates and demanding geometries such as blind bores or interrupted cuts.

# VISION Ultimate XL

High-speed honing for large bores up to 75 mm



# The Degen Scale: Multiplying Performance

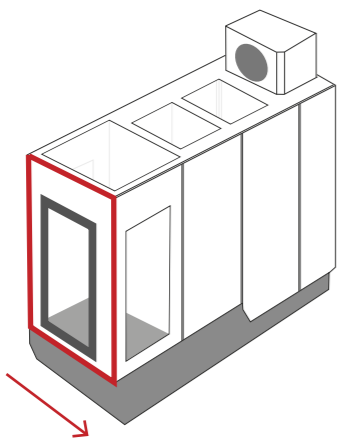
Everything about the VISION Ultimate machines is designed for maximum performance. Even as stand-alone units, they impress with stable throughput, reproducible precision, and high process speed. Their full potential unfolds in scalable combinations: by linking up to three machines, you create a production cell that seamlessly integrates workpiece handling, machining, and process monitoring.

The result: significantly shorter cycle times, higher output, and optimal utilization of resources fl delivering a clear productivity advantage over conventional solutions.

## Strong Solo

Your Entry into High-Speed Honing

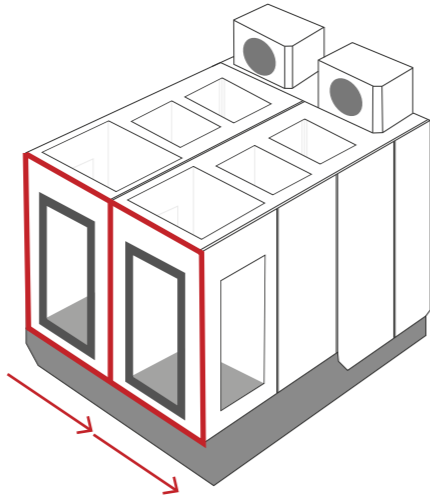
Immediately unlock the unique potential of high-speed honing.



## Powerful Duo

Expand Existing Capacity | Economically

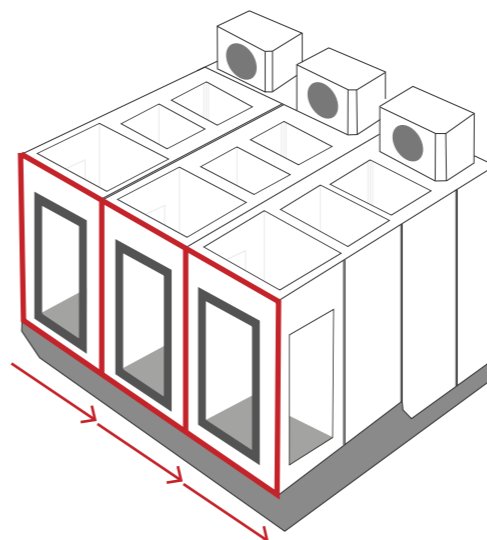
Hone reliably with increasing batch sizes and combine honing operations with ease.



## Dreamteam

Ready for Everything Ahead

You have the pathfinder for the big goals of your production.



## To the Future!

The future is unpredictable. With a VISION Ultimate from Degen, it becomes more manageable fl precise, flexible, and scalable. The only thing we know about the future is that it will come. How it develops remains open.

- To remain competitive in the long run, production environments need an infrastructure that grows with them. That’s why we designed the VISION Ultimate platform for scalability:
- \_\_\_ Start with a single base machine
  - \_\_\_ Expand to up to three networked machining stations
  - \_\_\_ Seamless integration of workpiece handling, measuring technology, and automation

This modular concept allows you to invest step by step and adapt production capacity to increasing demands. Siemens control technology and standardized interface architecture ensure that every expansion can be integrated smoothly.

The result: a high-performance center for precise honing operations, combining maximum process reliability with minimal setup effort. We are convinced: with VISION Ultimate, you are setting up your production not only for today but also for tomorrow fl securing decisive technological advantages.



Technical Data  
VISION Ultimate Standard | Compact | XL

	Standard	Compact	XL
Machining parameters			
Bore diameter	max. 20 mm	max. 15 mm	max. 20 mm
Bore length	max. 60 mm	max. 50 mm	max. 60 mm
Workpiece weight	max. 1 kg	max. 0,5 kg	max. 1 kg
Blind holes	yes	yes	yes
Number of Stations			
Honing stations	max. 1	max. 1	max. 3
Gaging stations	max. 1	max. 1	max. 3
Brushing stations	max. 1	max. 1	max. 2
Loading/unloading stations	max. 1	max. 1	max. 2
Honing spindle			
Speed	12000 min <sup>-1</sup>	12000 min <sup>-1</sup>	6000 min <sup>-1</sup>
Concentricity	< 3 μ	< 3 μ	< 3 μ
Drive	20 mm	20 mm	32 mm
Clamping diameter	servo motor	servo motor	servo motor
Drive power	12 kW	7,5 kW	12 kW
Internal coolant supply	ja	ja	ja
High-speed stroke			
Stroke speed	40 double strokes/s	40 double strokes/s	40 double strokes/s
Stroke length	120 mm	80 mm	90 mm
High speed	150 mm	100 mm	150 mm
Drive	linear motor	linear motor	linear motor

Better, 'cause different.	
	Excellent in terms of quality, cycle time and costs per piece

The VISION Ultimate TOWER 4| 6| 8 series is the perfect solution for any production facility where the following requirements are central:

- \_\_\_ Large production volume
- \_\_\_ Optimum efficiency in terms of time and costs
- \_\_\_ Outstanding workpiece quality
- \_\_\_ High flexibility with the workpieces to be processed

### The new benchmark for performance

All VISION Ultimate TOWER are equipped with stations for honing, measuring and brushing. The machines are extremely fast, the concept is modular and highly flexible. We can install up to three honing spindles and a total of eight stations in your tower.

### Ready for more efficiency

Double processes, match- honing, rapid change over for other workpieces, optional automatic workpiece loading system, high material removal fl with the high-speed towers you can efficiently reduce cycle times and cost per piece.

### XL fl for workpieces up to 5 kilograms

If you produce small workpieces weighing up to 1 kilogram, the VISION Ultimate TOWER 4| 6| 8 series is perfect. We offer XL versions for larger workpieces weighing up to 5 kg.

### High quantities in a small space

With every VISION Ultimate TOWER 4| 6| 8, you can successfully implement demanding large-scale production and medium batch sizes on a small footprint. With Degen, you use space and resources with maximum efficiency.

# VISION Ultimate TOWER 4|6|8

Speed: groundbreaking. Results: unprecedented.



# The fastest towers in the world

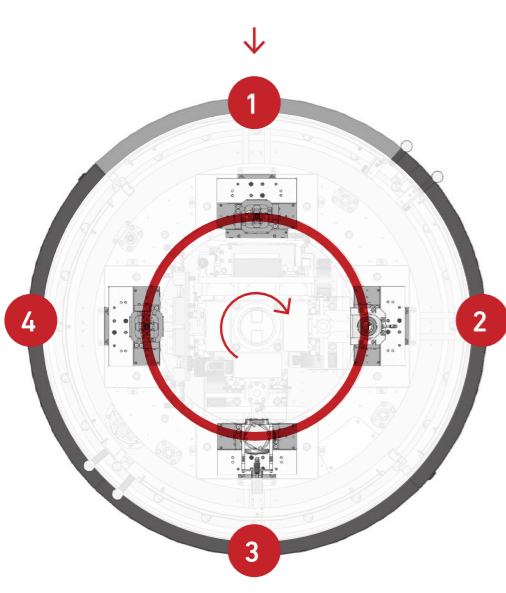
With three modular models, the VISION Ultimate TOWER 4| 6| 8 offers broad access to high-speed honing. Use our sample configurations below to decide which accent you want to set in your production.

With four stations, the TOWER 4 already offers all functions, including a interface station for automation. With the TOWER 6, you can divide the honing process into two steps. Pre-honing plus finish honing. You can achieve maximum output with the TOWER 8, which demonstrates its high-speed quality on up to three honing spindles and hones in double cycle or different workpieces as required.

## TOWER 4

The basis with all the advantages of high-speed honing

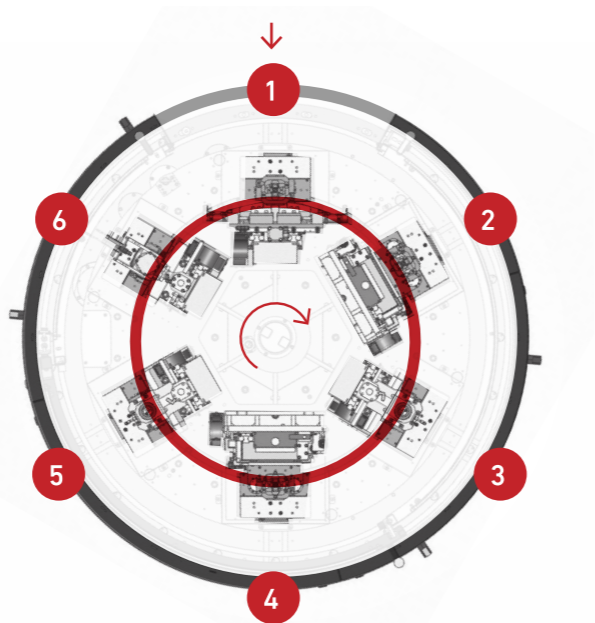
- 1. Loading and unloading
- 2. Honing
- 3. Gaging
- 4. Brushing



## TOWER 6

Two-step honing processes with precision and speed

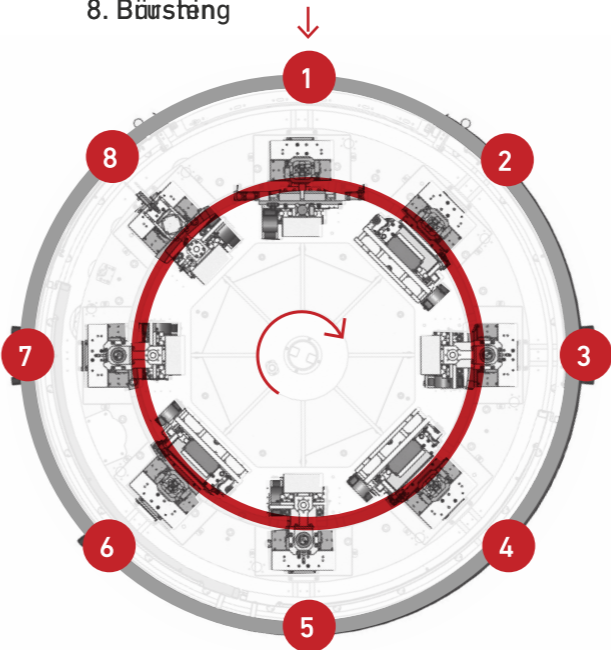
- 1. Loading and unloading
- 2. Honing I (e.g. pre-honing)
- 3. Gaging
- 4. Honing II (e.g. finish honing)
- 5. Gaging
- 6. Brushing



## TOWER 8

The Powertower with parallel production lines

- 1. Loading and unloading
- 2. Honing I
- 3. Gaging
- 4. Honing II
- 5. Gaging
- 6. Honing III
- 7. Gaging
- 8. Brushing



### Future-proof right from the start

Production conditions are changing. Cost pressure is increasing, quality requirements are growing and rapid technological progress is demanding more flexibility from suppliers than ever before.

The VISION Ultimate 4| 6| 8 machine series is the right answer to these changes. It is the fastest, most efficient and most economical solution on the market. In addition, it offers many options at comparatively low cost for change-over or workpiece automation.

**VISION Ultimate 4 | 6 | 8 |**  
into the future with top technology.

Everything at a glance

Technical data  
VISION Ultimate TOWER 4 | 6 | 8

	Tower 4	Tower 6	Tower 8
Machining parameters			
Bore diameter	max. 20 mm	max. 20 mm	max. 20 mm
Bore length	max. 60 mm	max. 60 mm	max. 60 mm
Workpiece weight	max. 1 kg	max. 1 kg	max. 1 kg
Blind holes	yes	yes	yes
Number of Stations			
Honing stations	max. 1	max. 2	max. 3
Gaging stations	max. 1	max. 2	max. 3
Brushing stations	max. 1	max. 1	max. 2
Loading/unloading stations	max. 1	max. 1	max. 2
Honing spindle			
Speed	12000 min <sup>-1</sup>	12000 min <sup>-1</sup>	12000 min <sup>-1</sup>
Concentricity	< 3 μ	< 3 μ	< 3 μ
Drive	20 mm	20 mm	20 mm
Clamping diameter	servo motor	servo motor	servo motor
Drive power	12 kW	12 kW	12 kW
Internal coolant supply	yes	yes	yes
High-speed stroke			
Stroke speed	40 double strokes/s	40 double strokes/s	40 double strokes/s
Stroke length	120 mm	90 mm	90 mm
High speed	150 mm	150 mm	150 mm
Drive	linear motor	linear motor	linear motor

VISION Ultimate TOWER 4 **XL** | 6 **XL** | 8 **XL**

	Tower 4 XL	Tower 6 XL	Tower 8 XL
Machining parameters			
Bore diameter	max. 60 mm	max. 60 mm	max. 60 mm
Bore length	max. 80 mm	max. 80 mm	max. 80 mm
Workpiece weight	max. 5 kg	max. 5 kg	max. 5 kg
Blind holes	yes	yes	yes
Number of Stations			
Honing stations	max. 1	max. 2	max. 3
Gaging stations	max. 1	max. 2	max. 3
Brushing stations	max. 1	max. 1	max. 1
Loading/unloading stations	max. 1	max. 1	max. 1
Honing spindle			
Speed	4.000 min <sup>-1</sup>	4.000 min <sup>-2</sup>	4.000 min <sup>-3</sup>
Concentricity	< 3μ	< 3μ	< 3μ
Drive	32 mm	32 mm	32 mm
Clamping diameter	servo motor	servo motor	servo motor
Drive power	18 kw	18 kw	18 kw
Internal coolant supply	yes	yes	yes
High-speed stroke			
Stroke speed	30 double strokes/s	30 double strokes/s	30 double strokes/s
Stroke length	150 mm	150 mm	150 mm
High speed	200 mm	200 mm	200 mm
Drive	linear motor	linear motor	linear motor

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## VISION Ulitimate Portfolio

### VISION Ultimate

Tower 4 | 6 | 8

Tower 4 **XL** | 6 **XL** | 8 **XL**



### VISION Ultimate

Compact

Standard

XL





Success Factor: Automation

# Speed-Load – The Time Saver

## **Start. Hone. Done.**

Speed-Load is the optional, fully automatic pick-and-place system for all VISION Ultimate machines. It takes over the workpiece handling between stations inside the machine and reliably transports workpieces to and from pallets or keyhole positions.

This way, you automate your workpiece handling seamlessly fl while simultaneously connecting your VISION Ultimate machine to external automation solutions.

## **Three Workpieces, One Move**

With three internal grippers, Speed-Load can pick three workpieces in parallel, with diameters from 1 to 75 mm. A horizontal linear axis and a high-precision vertical torque shaft place the workpieces exactly at their target positions. Optionally, Speed-Load can also be equipped with parallel grippers.

## **Operation and Programming | Simple and Safe**

Because Speed-Load works without robotic technology, operation via the PLC control is quick to learn. With integrated NIO (Not in Order) and SPC (Statistical Process Control) functions, you can also use the automation for quality assurance.

Speed-Load fl your time advantage from the very first honing process.

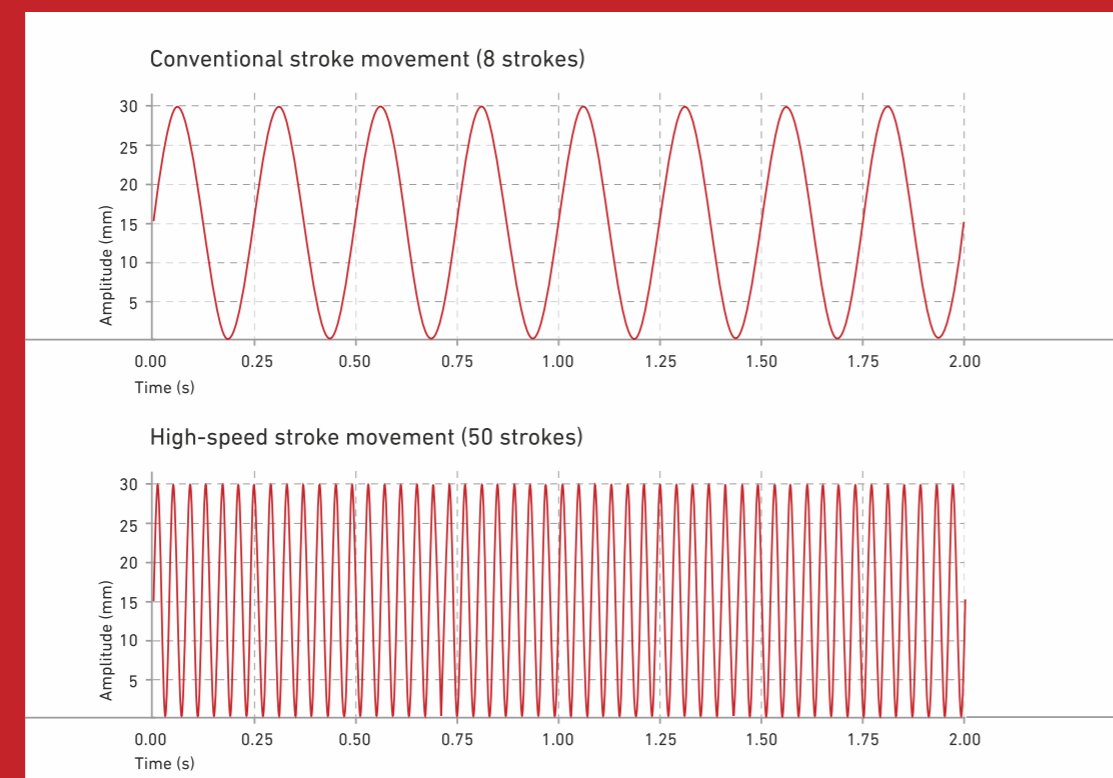
# Factor 6

High-speed honing maximizes the working speed because we have eliminated the limiting factors of conventional technologies.

VISION Ultimate TOWER 4| 6| 8 increases the lifting frequency by more than six times compared to conventional machines with the same amplitude. The lifting speed climbs to up to 120 m/s and the speed reaches up to 12,000 rpm.

With high-speed honing from Degen, tools, machines and their interaction are precisely coordinated. Harmonious top performance with superb workpiece quality.

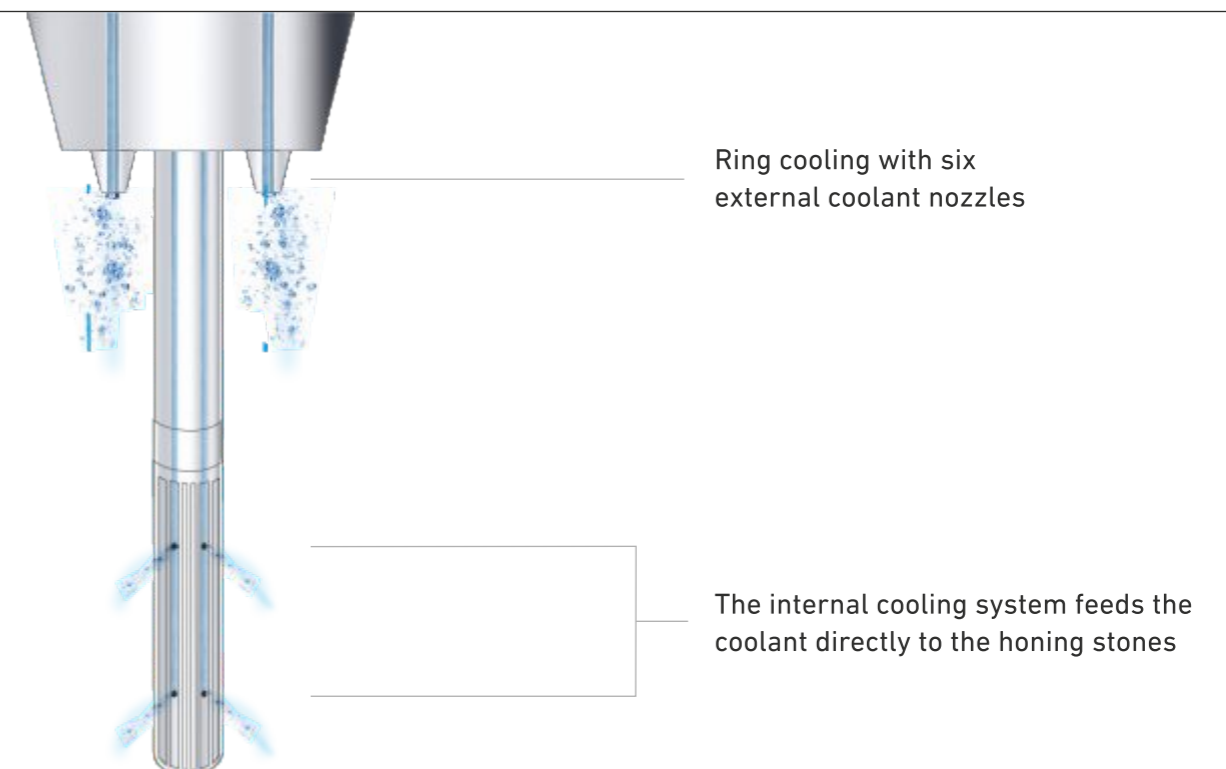
Comparison of oscillations between a traditional honing system and the Degen technology over a process time of 2 seconds.



# From the inside and outside

A special feature of the Degen technology is the cooling system. It combines external ring cooling with internal cooling, in which the coolant exits directly at the honing stones. You benefit from four key advantages:

- **High heat dissipation**  
Prevents thermal stress on the workpiece.  
The processing conditions remain constant and reproducible.
- **Increased tool- life**  
Wear is significantly reduced and honing efficiency is optimized.  
The quality of the surface structure is also improved.
- **Improved chip removal**  
Chips are flushed away immediately and processing is very uniform.  
You always produce premium quality surfaces.
- **Outstanding process efficiency**  
Consistently high cutting speeds, maximum short cycle times  
and significantly more material removal per honing process.



# Top quality – sleeve honing tools from Degen

Better, 'cause different.



Stepped sleeve honing tool  
equipped with honing stones



Sleeve honing tool equipped with  
honing stones in standard version



Sleeve honing tool equipped with  
honing stones for XL machines



Honing sleeve fitted with honing stones

## Even more performance

Our innovative sleeve honing tools further enhance the special strengths of high-speed honing. More advantages in terms of precision, tool life, process reliability and tool management fl we also increase performance with our tooling.

## Reduced tool inventory

Degen honing tools always remain in your production. Once the maximum tool life has been reached, simply replace the honing sleeves. There is no need to transport tools for reconditioning, you can reduce the minimum stock of tools and thus reduce the high capital commitment in the tool store.

## Only one interface left

Each VISION Ultimate TOWER 4| 6| 8 uses an integrated hydraulic chuck as a tool interface. They always work with the same system. All VISION Ultimate honing machines have a high-precision honing spindle with integrated hydraulic expansion chuck.

## Everything for high speed

The precision, process reliability and stability of the tools are outstanding because they are optimally designed for the high cycles of high-speed honing:

- Extremely precise concentricity of 3  $\mu\text{m}$
- Long service life
- Minimal dimensional tolerance
- Best surface finishes
- Precise centric and cylindrical tool expansion and internal coolant supply as part of the high-speed process

Practice as success factor

# Broad Expertise, Leading Customers

Our customers– results prove on a daily basis how superior Degen–s high-speed honing machines are in terms of precision, process reliability, efficiency and parts throughput. The components processed on our machines used in hydraulic systems, injection and servo pumps, gearboxes, drives and valves, and many other high demand applications.

Thanks to our innovative technology, we´ve repeatedly enabled honing processes that conventional machines simply can´t achieve. Talk to our experts if your machines reach their limits. Get the state-of-the-art- high-speed-honing technology for your production.



## Our customers

- \_\_ Automotive industry
- \_\_ Hydraulics industry
- \_\_ Medical technology
- \_\_ Aerospace

