

GINOP-2.1.2-8-1-4-16-2017-00014 PROJECT SUMMARY

HILTI SZERSZÁM KFT.

Kecskemét



HILTI

- Established in 1941 in Schaan, Liechtenstein
- Leader in Construction Industry in Fastening and Demolition Technologies
- 6.4B CHF Sales revenue in 2024
- 34 000 Employees in more than 120 countries
- Direct Sales Method
- 100% Family-owned (Martin Hilti Family Trust)





HILTI IN KECSKEMÉT

Plant I



- Established in 1989
- 11 000 sqm Area
- Production: Anchors, Drill and Chisel products
 - Main Technologies: Die- forging, Friction welding, Turning, Milling
- Test and Development



- Opened in April, 2024
- 16 000 sqm Area
- Production: Diamond Wall Saw blades and Drill-bit products
 - Main Technologies: Laser welding, UV coating
- Assembly of Small and Medium-sized Combihammers



OUR KEY MILESTONES





MANUFACTURED PRODUCTS





OUR COMPETENCE





TEST



- Production of PT&A, DIA and ANC Products, Machine Tool Assembly
- Full product portfolio > 4 000 Products



- TTM Engineering Team
- Projects (PT&A, DIA & Anchor)



- Test (PT&A, DIA, DX)
- Complete Machine and Tool Test



TECHNOLOGY



Cold tipforming .

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- **555**5 HEAT TREATMENT
- Vacuum hardening
- Induction heat-



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	JOINING
Friction weldir	ng
Hardmetal brazing	
Flame brazino	1

Laser welding

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- Shot blasting •
- Painting •
- Oiling •
- Engraving •
- Assembly •





OUR SUSTAINABILITY PRIORITIES



- Recycling of waste heat from compressors and process cooling
- Heat recovery ventilation system
- LED lighting with motion sensors
- Electric car charging
- Biodiversity
- "Design for All" Barrier-free building



- Photovoltaic System
 - Plant I: 1.12 MW
 - Plant II: 1.16 MW

Technology



- Optimization of our production technology (energy and waste reduction)
- Investing in advanced technologies (e.g. cold forming)



WE MAINLY USE ELECTRICITY TO OPERATE OUR MACHINES AND FACILITIES



We covered 12% of our electricity demand from our own production in 2024.



OUR PHOTOVOLTAIC SYSTEM





HILTI PLANT II – FIRST INDUSTRIAL BUILDING TO BE GRANTED DGNB CERTIFICATION IN HUNGARY

- DGNB is a non-profit, German building sustainability certification organization
- **Four grades** (Platinum, Gold, Silver, Bronze) that buildings are awarded depending on how well they meet the criteria of the DGNB.
- HILTI expects to meet the gold level for a new building





Category	DGNB Rating
Environmental Quality	81,6%
Economic Quality	86,4%
Socio-cultural and Functional Quality	85,3%
Technical Quality	84,7%
Process Quality	73,3%
Plot Quality	65,7%
Total Performance Index	82,1% → Platinum



APPLIED SOLUTIONS







DIA R&D SUMMARY

Kecskemét P18

Advanced EQD offers new development dimensions





Manufacturing of "Layered Diamond Segments" offers high differentiation potential for next generations

Motivation

Achievements

Alternative process chains

Increase product design freedom

Differentiation

Differentiating complex design with functionalities (e.g. cooling channels, friction reduction)



Diamond types, diamond arrangement freedom (no alignment with pressing tool punches needed), PCD integration for hybrid diamond segments



Production costs

• 5 - 15 % production cost savings

Independency from suppliers

 Exclusivity & property rights (diamond segment design & key processes) for Hilti

3D stencil printing

- Layered printing of diamond segment using metallic paste
- Diamond placement by stencil



Printed part with complex shape (IFAM Dresden) Printed diamond segment (micrograph computer tomography analysis)

- 3D metal printing through binder jetting
- Layered binder jetting into metal powder for green body manufacturing
- Tool-free process
- Diamond placement by stencil or EQD@Hilti



Green diamond segment (no diamonds considered)

3D binder jetting (ExOne GmbH)

TP MLZ (Mfg. of Layered Dia. Segments)

Challenges for next steps

- Specify manufacturing concept
- Manufacturing of diamond segment and ring prototypes
- Demonstrate technological maturity and economical feasibility for various product groups
- Secure property rights/exclusiveness

Key topics

- Layered build-up of segments or rings by 3D printing of powder
- Diamond handling: through stencil or EQD@Hilti or other
- Consolidation using present sintering technologies

Timeline

TP3 09/2016 - TP4 12/2016



LC-Line - ambitious performance targets and strong differentiation features + achieving COGS reductions

Overall project targets

Main targets

- Increase universality (concrete/tools)
- Drilling performance on rebar +30%
- COGS -5%

Strong differentiation features

- New change module 2
- Equidist technology
- Segments: transfer EQD technology (whilst reducing HK's!)
- Encapsulation technology:
- Ring core bits: offering superior performance
- 'Green' segments (Co/Ni-free)
- Business impact
- ~200 Tpcs P-Line 2nd core bits sold in 2015 which generated 34 MCHF of NS (Rings account for 11 MCHF of NS)
- High margin product SPM 73%, VGM 81%

Project timeline TTM LC-Line

Timeline

- G1 LC-Line 03/2015
- G4/5 LC-Line 10/2016



COGS



Differentiation

TP's to ensure high differentiation

- TP Free Sintering
- TP EQD Rings
- TP Encapsulation

Performance targets

- +30% increase in average drilling speed vs. best global competitor
- High universality on base materials
- High universality on drilling tools



Segments/Rings

- Strong differentiation through EQD technology in combination with innovative segment geometry
- · Very easy hole starting/smooth drilling



Diamond inserts is a ~200 MCHF Business with 63% SPM, fast renewal of portfolio on track





New proprietary Equidist machine is key for differentiation in Diamond Inserts





A strong competence-based project roadmap underpins our innovation push in diamond inserts









- Segment aligned to the inner wall of the tube
 - No gap inside → Possible solution to eliminate jamming
 - Increased gap on the outer side \rightarrow Slurry transport
 - Segment could be thinner







• Internal channels:

- Water transport when no side clearance inside
- Direct cooling of the segments \rightarrow horizontal







- Spiral on the outer wall
 - Improved slurry transport → less water, higher speed







• Structured endplate:

- Reduced weight of large diameters
- Feeding the water channels







OUR VISION: CORE REMOVAL SYSTEM

- Diameter range: Dm. 12-47 mm
- Heavy and light product line (H-line & L-line)
- 2 possible development directions:
 - Core removal through connection end (see DD-C)
 - Development started in TP LC-line project
 - Compatible with the actual adapters and drill machines (M41)
 - Alternative material and manufacturing technology to achieve competitive price level (e.g. plastic)
 - Acceptance of the market
 - Core removal through the segment side (see X-CM)
 - Diamond ring segment might be modified
 - Issues with water transport will be actual
 - Less differentiation potential, but possibly cheaper that the other solution



We aim to be our customers' best partner, not only with the solutions we offer, but also for how we operate.

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