

Press Release

H1 Reliable knurling of small diameters

H2 **Precision down to the smallest detail**

H3 **Häni chooses custom-made zeus knurling tools**

1 **le** It is a feature of their industry
2 that manufacturers of medi-
3 cal and dental technology
4 impose exacting require-
5 ments on their products, and
6 these requirements are
7 passed on to their suppliers.
8 Consequently, only high-
9 quality materials such as
10 stainless steel are used,
11 while high-precision work is
12 an absolute must, particularly
13 for small parts. Häni + Co. AG
14 is a Swiss manufacturer of
15 precision turned parts for the
16 medical technology and
17 automotive industries. Their
18 demands on the tools used in
19 the production process are
20 correspondingly rigorous.
21 For a profile on a small
22 turned part with a diameter of
23 1 mm (part of a dental in-
24 strument), the company
25 found the right solution in the
26 form of a zeus knurling tool
27 specially configured for the
28 application.

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29 Häni + Co. AG, based in Arch,
30 Switzerland, has made a name
31 for itself as a manufacturer of
32 high-quality precision turned
33 tools thanks to its uncompromising
34 quality standards in
35 fields such as medical and dental
36 technology, the automotive
37 industry and electrical engineering.
38 The company specialises in
39 turned parts made from steel,
40 non-ferrous metals, aluminium,
41 titanium and plastic, with diameters
42 ranging from 1 mm to
43 42 mm.

44 For the manufacture of a turned
45 part made from stainless steel
46 (INOX 1.4104) in small-scale
47 series production of 1,000 to
48 5,000 units per year, Häni
49 sought a partner for a small but
50 important detail – the turned
51 part is used in an instrument for
52 dental hygiene. A knurl was to
53 be applied to the upper end of
54 the turned part, with a small
55 grinding wheel attached to it.
56 The knurling profile was to act
57 as an additional anchor point
58 alongside the adhesive to attach
59 the grinding wheel firmly
60 and securely to the turned part.
61 This represented something of
62 a first for Häni. The company
63 normally works with knurls on
64 minimum diameters of 1.5 mm.
65 On this occasion, however, the
66 knurl had to be applied to a
67 diameter of just 1 mm.

68 Philipp Grosjean, project manager
69 at Häni + Co. AG: "As a commercial
70 partner to Hommel+Keller Präzisionswerkzeuge
71 GmbH, we consider Vargus to be the
72 knurling expert in Switzerland,
73 and so they were our first port of
74 call on the
75

76 search for a suitable tool for this
77 job." Vargus Werkzeugtechnik
78 snel AG, based in Cham in
79 Switzerland, has operated for
80 more than 50 years as a manu-
81 facturer of high-quality thread-
82 turning and thread-milling tools,
83 as well as cutting, grooving and
84 deburring tools for the metal
85 and plastics industries. In addi-
86 tion, the Swiss company is a
87 sales partner to prominent tool
88 manufacturers, including Hom-
89 mel+Keller Präzisionswerk-
90 zeuge GmbH.

91 **Careful machining**
92 **with zeus 391 knurling tool**

93 Applying a knurling profile to a
94 small diameter calls for special-
95 ist expertise. As a global market
96 leader in knurling technology,
97 Hommel+Keller Präzisions-
98 werkzeuge GmbH is a highly
99 skilled point of contact in this
100 field. This, coupled with the
101 company's collaboration with
102 Vargus and its years of experi-
103 ence in micromachining, was
104 the perfect starting point for
105 Háni. "When we were address-
106 ing the issue of knurling the
107 small diameter of the turned
108 part precisely and reliably, it
109 quickly became clear that a
110 standard tool was out of the
111 question", agree Philippe
112 Bachmann, product manager at
113 Vargus, and Reinhold Dreher,
114 application expert and technical
115 sales representative at Hom-
116 mel+Keller Präzisionswerk-
117 zeuge GmbH.

118 With the zeus 391 special tool
119 for form knurling, they found
120 just the right solution for the

121 application, because the spe-
122 cial tool design facilitates ex-
123 tremely careful machining of
124 small and pressure-sensitive
125 workpieces. This is because the
126 three knurling wheels mean
127 that only minor lateral pressure
128 is generated, resulting in mini-
129 mal stress on the workpiece.

130 The knurling tool can be used
131 on a diverse array of machinery
132 including conventional and
133 CNC lathes, automatic long-
134 and short-turning lathes, turn-
135 ing/milling centres, multi-spindle
136 machines, rotary transfer ma-
137 chines, indexing table ma-
138 chines and transfer machines.
139 Another benefit is that the tool
140 is extremely easy to use be-
141 cause the knurling wheels can
142 be replaced quickly in just a few
143 steps.

144 **Knurling wheels tailor-made** 145 **for the workpiece**

146 Ensuring that the knurling
147 wheels are perfectly suited to
148 the workpiece to be machined
149 is crucial to achieving out-
150 standing results. The turned
151 part from Häni has a knurling
152 profile of RGE 30°. Two knurl-
153 ing wheels at BL 30° and one
154 knurling wheel at BR 30°, each
155 with a diameter of 5 mm, are
156 used for the application. The
157 experts from Hommel+Keller
158 Präzisionswerkzeuge GmbH
159 adjusted the number of teeth
160 precisely to the circumference
161 of the workpiece. Reinhold
162 Dreher: "The less favourable
163 the spacing, the more the knurl-
164 ing result deteriorates and the
165 shorter the tool life of the knurl-

166 ing wheels becomes. In ex-
167 treme cases, this can lead to
168 profile deformation or even
169 double-track knurling."

170 To improve the forming process
171 at the corners and to prevent
172 tooth tips from breaking out, the
173 form knurling wheels have a
174 45° chamfer. Moreover, special
175 surface hardening increases
176 wear resistance.

177 **Successful partnership**

178 "We are using zeus knurling
179 tools for the first time on this
180 project and are very satisfied.
181 The tool performs outstand-
182 ingly, boasts a long tool life and
183 ensures first-class results. Not
184 only that, but our partnership
185 with Vargus and Hom-
186 mel+Keller Präzisionswerk-
187 zeuge GmbH was superb. We
188 will certainly call upon their
189 support again for future pro-
190 jects", adds Philipp Grosjean.

191 **Further information:**

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Photo 1: Knurling on 1 mm diameter – Häni, manufacturer of precision turned parts, uses a high-quality zeus special tool for this task.

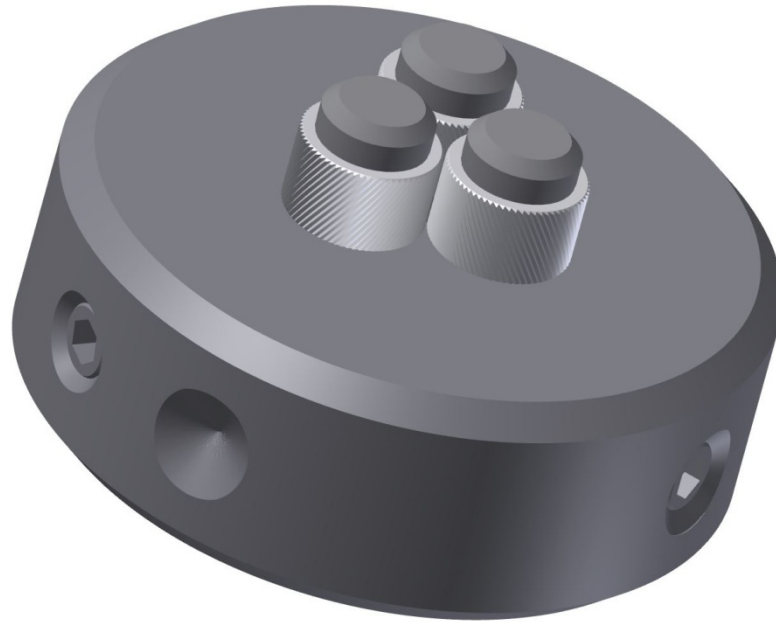
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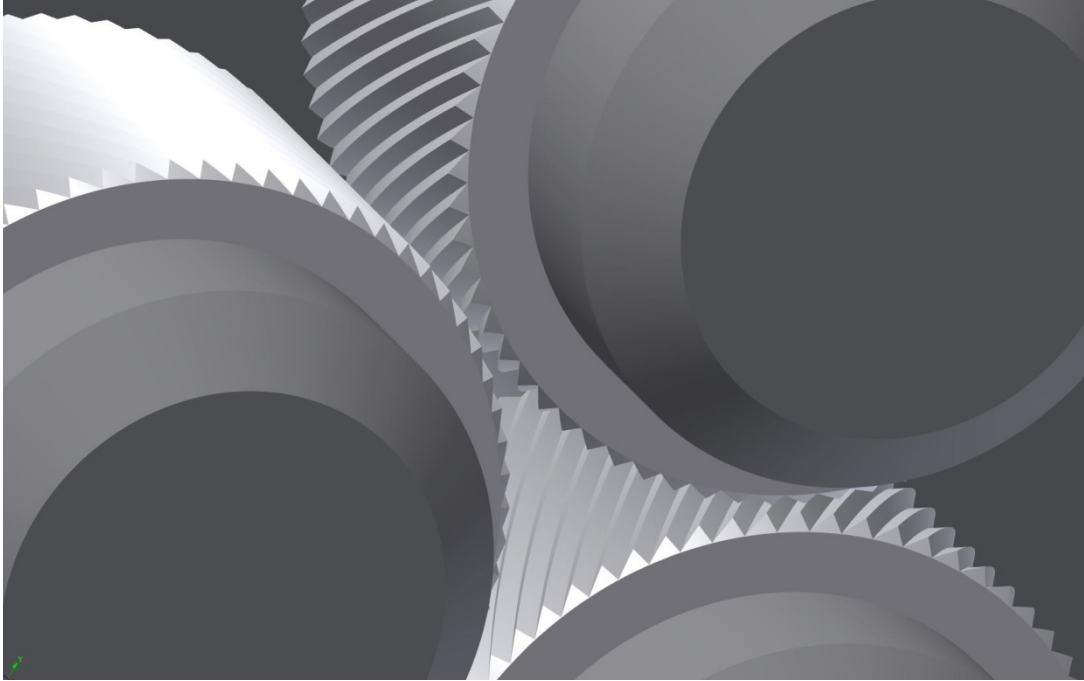
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Photo 2: For high process reliability and precision, the knurling experts precisely configured the 391 special tool to suit the Hāni AG turned part.



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Photo 3: The spacing of the three knurling wheels is specially designed for a turned part diameter of 1 mm. ...



227

228 ***Photo 4: ... And that's how to***
229 ***create a perfect knurling pro-***
230 ***file.***

231 ***Photos: Hommel+Keller Prä-***
232 ***zisionswerkzeuge GmbH***

233 *Photos: Hommel+Keller*
234 *Präzisionswerkzeuge GmbH*