

# Press Release

**H1** Precise knurling on large rollers

**H2** **Remarkable impressions  
thanks to perfect profile**

**H3** **Highest level of precision and process reliability guaranteed**

1 **le** Karl Wenk GmbH has been  
2 producing a wide range of  
3 rollers for over 90 years. The  
4 company specialises in print-  
5 ing and embossing rollers  
6 and develops surface finish  
7 designs and engraved fin-  
8 ishes. When they needed an  
9 extremely smooth profile on  
10 a four-metre-long embossing  
11 roller for the glass industry,  
12 the experts from Lörrach-  
13 Brombach turned to Hom-  
14 mel+Keller Präzisions-  
15 werkzeuge GmbH, the global  
16 market leader in knurling  
17 technology based in Aldin-  
18 gen, and came away with a  
19 cut knurling tool perfect for  
20 the application that provides  
21 maximum precision right up  
22 to the profile points.

23 **te** Embossing rollers are used in  
24 many industries to transfer sur-  
25 face finishes to various materi-  
26 als including plastic, aluminium,  
27 paper, cardboard, leather or

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28 even glass and then process  
29 them. The strengths of Karl  
30 Wenk GmbH lie in their custom-  
31 ised solutions for the most var-  
32 ied of requirements. To meet  
33 the high demands of users and  
34 their own uncompromising qual-  
35 ity standards, the traditional  
36 company is based on a combi-  
37 nation of precise workmanship  
38 and cutting-edge production  
39 technologies. "We always want  
40 to offer our customers the best  
41 solutions – that is why we are  
42 always on the lookout for new  
43 technologies. At the recom-  
44 mendation of Hengst-Kessler  
45 GmbH, Mr. Reinhold Dreher  
46 from Hommel+Keller Präzi-  
47 sionswerkzeuge GmbH visited  
48 us to present the company's  
49 knurling technology. Both he  
50 and the technical possibilities  
51 made such a positive impres-  
52 sion that we immediately con-  
53 tacted the company for this  
54 project, which involves profiling  
55 an embossing roller measuring  
56 4,000 mm in length and with an  
57 outer diameter of 200 mm for a  
58 customer from the glass indus-  
59 try", says Peter Treichel, project  
60 and construction manager at  
61 Karl Wenk GmbH.

## 62 **Matching high requirements**

63 In addition to the dimensions of  
64 the roller, there were a variety  
65 of other specific characteristics  
66 that the knurling experts had to  
67 take into consideration for this  
68 project. The finished roller is  
69 intended to emboss the profile  
70 onto glass heated up to  
71 1,200°C. The roller is therefore  
72 made of particularly high-quality  
73 stainless steel to withstand  
74 these high temperatures. The

75 special centrifugal casting  
76 process used to produce the  
77 roller ensures a very clean and  
78 highly compressed structure –  
79 perfect for embossing but diffi-  
80 cult to machine. Another re-  
81 quirement was the highest level  
82 of precision. The cylindrical  
83 concentricity could have a  
84 maximum tolerance of only  
85 0.015 mm along the entire  
86 length of the roller. The knurling  
87 profile and the depth of the  
88 knurl also had to be uniform all  
89 over.

90 As Reinhold Dreher, application  
91 engineer at Hommel+Keller  
92 Präzisionswerkzeuge GmbH  
93 explains: "Owing to the high  
94 requirements for the profile,  
95 only a customised knurling tool  
96 was worth considering. The  
97 knurling process makes it pos-  
98 sible to achieve maximum pre-  
99 cision and outstanding surface  
100 qualities. The basis for this  
101 special variant was the zeus  
102 knurling tool 241, which we  
103 adjusted precisely to the appli-  
104 cation and the large machining  
105 diameter".

106 **An ingenious tool**  
107 **for the perfect profile**

108 The tool ensures the highest  
109 level of process reliability. The  
110 toothed serration between the  
111 32 x 32 mm tool holder and the  
112 knurling head reduces vibra-  
113 tions to a minimum, thus guar-  
114 anteeing maximum stability and  
115 extreme precision. The knurling  
116 head can be precisely posi-  
117 tioned using setting gearing.  
118 This simplifies the process for  
119 setting up the equipment con-

120 siderably and enables repeat-  
121 able processes. The stable  
122 construction also ensures opti-  
123 mal tool positioning on the work  
124 piece. To achieve a perfectly  
125 formed profile and a uniform  
126 knurling depth, the user can  
127 finely adjust the knurling head  
128 quickly and easily using an ad-  
129 justing spindle.

130 "The production of the high-  
131 quality RGE profile swivelled at  
132 30° entails two AA knurling  
133 wheels, both with a diameter of  
134 42 mm and a knurling width of  
135 13 mm. We have precisely ad-  
136 justed the knurling wheels to  
137 the diameter of the roller to  
138 achieve a perfect profile. A  
139 special surface hardening  
140 method reduces the wear on  
141 the knurling wheels", says  
142 Reinhold Dreher. The highest  
143 level of precision and process  
144 reliability during tool changes is  
145 guaranteed thanks to the cus-  
146 tomised and precise positioning  
147 of the knurling wheel and the  
148 wheel mounting unit.

149 **Quality control passed**  
150 **with flying colours**

151 At Wenk, the perfect implemen-  
152 tation of a project and absolute  
153 customer satisfaction is a top  
154 priority. This is why quality con-  
155 trol plays a significant role in  
156 the processes. This includes  
157 inspecting the embossing using  
158 a sample from the roller, deter-  
159 mining the profile depth using  
160 state-of-the-art technology and  
161 checking the roller for concen-  
162 tricity and an intact surface.  
163 The roller with the customised  
164 zeus knurling tool received a

165 glowing report. "We have ac-  
166 quired a reliable, high precision  
167 tool that is also easy to use.  
168 Furthermore, the professional  
169 support we received from  
170 Hommel+Keller Präzisions-  
171 werkzeuge GmbH was excel-  
172 lent and the project went with-  
173 out a hitch. These are all good  
174 foundations for further coopera-  
175 tion on other projects in the  
176 future," says Peter Treichel.

177 **Further information:**

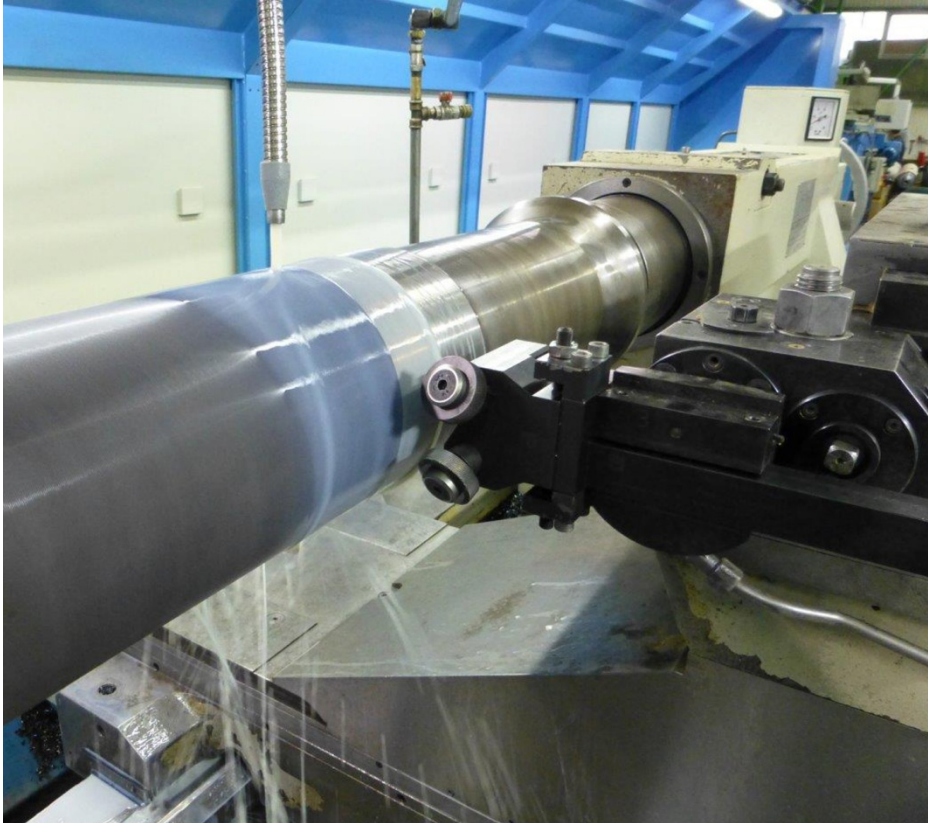
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194

195 ***Photo 1: For a perfect profile***  
196 ***Hommel+Keller Präzisions-***  
197 ***werkzeuge GmbH precisely***  
198 ***adjusted the tool to the appli-***  
199 ***cation and use on the CNC***  
200 ***lathe of PBR (turning length***  
201 ***10 m, turning diameter over***  
202 ***slide 850 mm, Capto holder***  
203 ***with driven tools, work***  
204 ***pieces up to 13 t, control***  
205 ***Fagor 855B-TC).***



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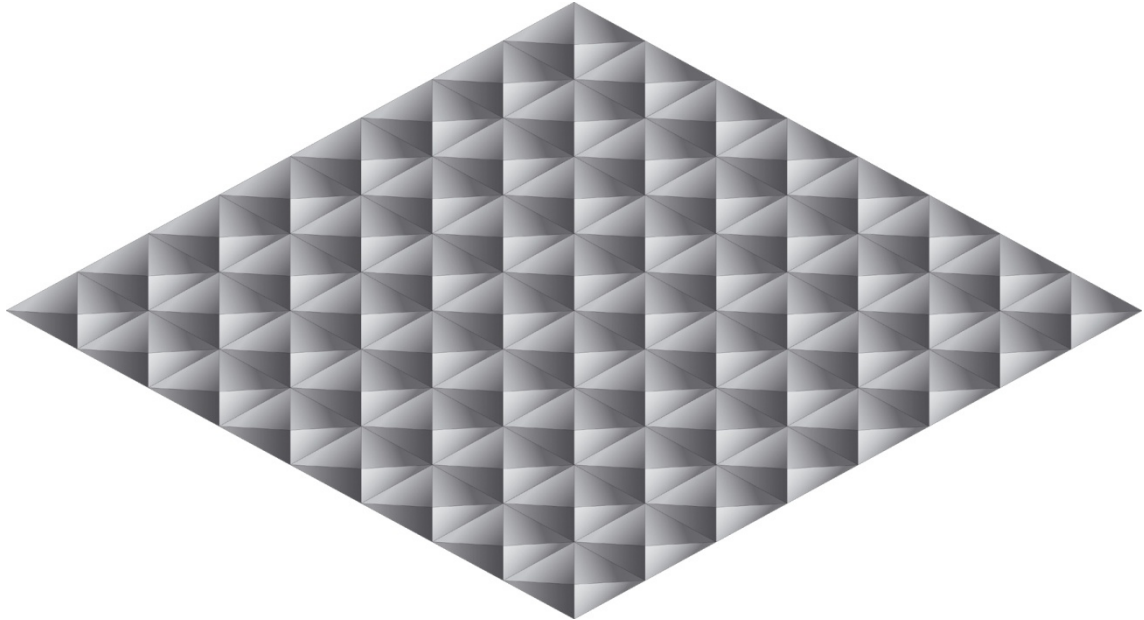
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***Photo 2: The special variant of the zeus knurling tool 241 machined the roller measuring 4,000 mm in length and with a diameter of 200 mm from special stainless steel using maximum precision.***



214

215 ***Photo 3: Hommel+Keller***  
216 ***Präzisionswerkzeuge GmbH***  
217 ***used two precisely adjusted***  
218 ***AA knurling wheels to pro-***  
219 ***duce the high-quality, 30° left***  
220 ***hand/right hand knurl with***  
221 ***raised points.***

222 *Photos: Hommel+Keller*  
223 *Präzisionswerkzeuge GmbH*