Technical communication with users

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LANGUAGE PROCESSING IN GRUNDFOS

• Self service chatbots (internal/external)
• Virtual assistants
• Touchless document handling
• Knowledge extraction from historic documents
• Technical audits of systems
• Analysis of voice recordings

A FEW EXAMPLES
Supported maintenance, BioBooster aR chatbot
## BioBooster / Dosing Pump
### Talking to the manual:

#### 8.1 List of faults

#### 8.1.1 Faults with error message

<table>
<thead>
<tr>
<th>Display in the &quot;Alarm&quot; menu</th>
<th>Possible cause</th>
<th>Possible remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>▼ Empty (Alarm)</td>
<td>· Dosing medium tank empty</td>
<td>· Fill tank.</td>
</tr>
<tr>
<td></td>
<td>· Dosing medium tank almost empty</td>
<td>· Check contact setting (NO/NC).</td>
</tr>
<tr>
<td>▼ Low level (Warning)</td>
<td>· Discharge valve blocked</td>
<td>· Replace valve if necessary (see section 7.4 Perform service).</td>
</tr>
<tr>
<td></td>
<td>· Isolating valve in discharge line closed</td>
<td>· Check flow direction of valves (arrow) and correct if necessary.</td>
</tr>
<tr>
<td></td>
<td>· Pressure peaks due to high viscosity</td>
<td>· Open the isolating valve (on the discharge side).</td>
</tr>
<tr>
<td></td>
<td>· Max. pressure set too low (see section 6.8 Pressure monitoring)</td>
<td>· Enlarge diameter of discharge line.</td>
</tr>
<tr>
<td></td>
<td>· Faulty diaphragm</td>
<td>· Change pressure setting (see section 6.8 Pressure monitoring).</td>
</tr>
<tr>
<td></td>
<td>· Broken discharge line</td>
<td>· Change the diaphragm (see section 7.4 Perform service).</td>
</tr>
<tr>
<td></td>
<td>· Pressure differential between suction and discharge side too low</td>
<td>· Check discharge line and repair if necessary.</td>
</tr>
<tr>
<td></td>
<td>· Leakage in the pressure loading valve at Q &lt; 1 l/h</td>
<td>· Install additional spring-loaded valve (approx. 3 bar) on the discharge side.</td>
</tr>
<tr>
<td></td>
<td>· Deaeration valve open</td>
<td>· Close the deaeration valve.</td>
</tr>
</tbody>
</table>

The causes could be:
- Bolting/bolting section line.
- Strongly degassing medium.
- Tank dosing medium empty.

Would you like to see the prescribed remedy?

- Yes

Check section line and repair if necessary.
- Provide positive inlet pressure (place dosing medium tank above the pump).
- Enable "SlowMode" (see section 6.6 SlowMode).
- Fill tank.

Would you like to browse the manual?
Connect, monitor, and control your Grundfos system within 15 minutes

- **Connect and Early Insights**
- **Access and Monitor System using Chat Bot**
- **Get AI Guided Support when Problems Arise**
Hi, I'm Grundfos IoT Week Bot. How can I help you?

Connect my pump please

Sure thing. Let's create a digital twin of your pump by connecting it to the Grundfos cloud. We will use the iotDevices app to connect your pump and I'll send you there now.

Open url

Are you ready to continue?

"Yes"
# Loop through PDF files in directory
for i in files:
    if ".pdf" in i:
        pdfName = path + "\" + i
        pdfFile = open(pdfName)
        auth_set = auth_choice[0]
    
    # Convert
    converted = extract_text(pdfName)
    
    # Get tokenised words
    tokens = tokenizer.tokenize(converted)
    words = ' '.join(w.lower() for w in tokens)
    tagged_doc = [words, i]
    tagged_token = [tagged_doc, auth_set]
    corpus.append(tagged_token)

print(corpus)
## Pump type

<table>
<thead>
<tr>
<th>Pump type</th>
<th>Port-to-port length [mm]</th>
<th>Product number</th>
<th>Data sheet Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>ALPHA3 25-40*</td>
<td>180</td>
<td>99371970</td>
<td>16</td>
</tr>
<tr>
<td>ALPHA3 25-60*</td>
<td>180</td>
<td>99371971</td>
<td>18</td>
</tr>
<tr>
<td>ALPHA3 25-80*</td>
<td>180</td>
<td>99371972</td>
<td>20</td>
</tr>
<tr>
<td>ALPHA3 32-40</td>
<td>180</td>
<td>99371983</td>
<td>16</td>
</tr>
<tr>
<td>ALPHA3 32-60</td>
<td>180</td>
<td>99371985</td>
<td>18</td>
</tr>
<tr>
<td>ALPHA3 32-80</td>
<td>180</td>
<td>99371987</td>
<td>20</td>
</tr>
<tr>
<td>ALPHA3 32-60</td>
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</table>
Augmented Intelligence
in service visits

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