In 2006, the Hungarian company MULTILATERAL KFT. awarded TÜRKMÜNYAG BT. a contract to manufacture a polymer-based processing tank for mobile phone batteries – to be operated with 10\% hydrochloric acid at a temperature of 80°C.
SIMONA® PVDF – the intelligent choice for high demands in chemical tank construction

**Initial situation**
Planned construction of a PVDF circular tank for the purpose of processing mobile phone batteries. The technology, which is at the experimental stage, is to be implemented in the following steps:
1. Comminution of the batteries to pieces with a maximum size of 5 mm²
2. Decomposition of the ground material in 10% hydrochloric acid at 80 °C
3. Separation and recycling of the resulting metal salt solution

**Task**
TÜRK-MÜANYAG BT. was awarded a contract to design and construct a process tank. TÜRK was selected in view of the company’s considerable experience in making plastic tanks for the chemical and pharmaceutical industries. In terms of material selection the following criteria had to be considered:
- Excellent chemical resistance
- High resistance to corrosion and abrasion at 80 °C
- Long service life
- Excellent processing capability and weldability

**Solution**
Owing to the highly corrosive medium, the relatively high processing temperature and the abrasive properties of the ground material, PVDF was chosen in collaboration with the SIMONA AG Technical Service Centre and UMUNDUM BT. in order to be able to run the process at even higher temperatures if necessary. Structural analysis of the circular tank (diameter 1,600 mm, height 1,500 mm) with a conical roof was performed with the aid of a software application by the name of TankDesigner. Calculations indicated that the wall thickness of the tank would have to be at least 8 mm. To protect the walls against wear, high-molecular-weight polyethylene was used (SIMONA® PE-HML 500) in a thickness of 8 mm.
HERZ Hungária KFT. and Munsch Chemie-Pumpen GmbH assisted with the welding of the PVDF semi-finished products using the newly developed mini-extruder MM-Xtruder made by Munsch.

**Further information**
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