Implementation of the Borets electric submersible progressive cavity pump (ESPCP) with a permanent magnet motor (PMM) in the wells with harsh operation conditions allowed the MTBF increase in more than 6.5 times and the produced oil volume in 3 times.

**Problem**

One of the wells was put back into operation at the beginning of the 2009. After the well workover the production was performed with the sucker-rod pumping system NN2B-44 with flow rate 9 m³/day. However MTBF of the sucker-rod pumping system reached only 160 days, so the Customer took decision about replacement of the sucker-rod pump with the Borets ESPCP-PMM as alternative efficient artificial lift solution.

**Borets solution**

Borets Application Engineering department matched Customer wells with compatible Borets equipment based their selection on well operating conditions.

The equipment included ESPCP: EOVNB5-35-2000, PMM: 9.2VEDBT35-117/1V5 and VFD: Borets VD-80. The ESPCP-PMM system was installed in July 2009, on the 1st of July 2012 the MTBF hit 1100 days.

**Comparative MTBF Data, Sucker-rod Pumping System and ESPCP, days**

- Sucker-rod pumping system: 160 days
- ESPCP: 1100 days

---

**CASE STUDY: ESPCP-PMM APPLICATION IN HARSH ENVIRONMENT AND LOW FLOW WELLS**
Results

Borets company managed to provide a significant MTBF increase with the ESPCP-PMM system in comparison with the sucker-rod pumping system. It was achieved not only due to the correct selection of the equipment for the certain well conditions but also the optimum parameters for the system operation.

The main well-pump system operation characteristics are the following:

- Pump rotation speed - 650-700 rpm;
- Motor current – 6.6 A;
- Pump intake pressure – 1217 psi;
- Motor load – 24%.

Data Comparison:

Comparative Well Flow Rate Data, Sucker-rod Pumping System and ESPCP, m³/day

<table>
<thead>
<tr>
<th></th>
<th>Sucker-rod Pumping System</th>
<th>ESPCP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Daily pump production</td>
<td>9</td>
<td>28</td>
</tr>
</tbody>
</table>

Daily pump production during the whole operation time was 28 m³/day, which is three times more compared to sucker-rod pumping system.

Apart from the technical and operation advantages of the Borets ESPCP-PMM implementation, the Customer also benefited:

- Power saving;
- Well servicing and workover costs reduce;
- Stable flow and the technogenic influence reduce on the well bottom.