```
<?xml version="1.0" encoding="UTF-8" ?>
- <SCL xmlns="http://www.iec.ch/61850/2006/SCL"</pre>
   xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
   xsi:schemaLocation="http://www.iec.ch/61850/2006/SCL SCL.xsd">
 - <Header id="1">
     <Text>DataTypeTemplate de la parte hidráulica del regulador de
      velocidad</Text>
   - <History>
       <Hitem when="19/10/2010" revision="1" version="1.1">Aquí terminé la
        definición del modelo de todos los nodos lógicos y sus data attributes
        que necesitará el proyecto de la parte hidráulica.</Hitem>
       <Hitem when="20/10/2010" revision="2" version="1.2">Aqui empezé a
        realizar la instanciación de los DataTypeTemplates en mi IED del
        tangue principal</Hitem>
       <Hitem when="21/10/2010" revision="3" version="1.2">Tardé mucho en
        escribir manualmente todos los elementos LNs del IED, por eso agarré
        el cvs del archivo excel donde había identificado los nodos lógicos,
        prefijos, descripciones, y otros detalles que necesita inicialmenente y
        preparé un script python que leia ese cvs y lo convertía al xml
        correspondiente para anexarlos al SCL de mi IED. Luego creé otro
        script que me listaba todos mis dataTypeTemplates ordenados por
        InClass, incluyendo id y desc, sin los DO. Allí hice la referencias
        cruzadas entre el id de los LNType y el type de los LN, y allí
        terminé.</Hitem>
       <Hitem when="21/10/2010" revision="2" version="1.0">TODO: Falta
        eliminar los DataTypeTemplates que no se usan aqui.</Hitem>
     </History>
   </Header>
 - <Communication>
   - <SubNetwork name="SN1">
     - <ConnectedAP iedName="IED_MAIN_TNK" apName="AP1">
      - <Address>
          <P type="IP">192.168.10.1</P>
          <P type="IP-SUBNET">0.0.0.0</P>
          <P type="IP-GATEWAY">0.0.0.0</P>
        </Address>
       </ConnectedAP>
     </SubNetwork>
   </Communication>
 - <IED name="IEDMainTnk" configVersion="1" desc="IED del tanque principal"</p>
     manufacturer="David">
   - <Services>
       <DynAssociation />
       <GetDataObjectDefinition />
       <DataObjectDirectory />
       <GetDataSetValue />
       <SetDataSetValue />
       <DataSetDirectory />
       <ConfDataSet max="50" maxAttributes="250" />
       <GetDirectory />
       <ReadWrite />
       <ConfReportControl max="7" />
       <GetCBValues />
```

```
<ReportSettings intgPd="Dyn" trgOps="Dyn" bufTime="Dyn" optFields="Dyn"</pre>
     rptID="Dyn" datSet="Fix" cbName="Fix" />
   <GSESettings appID="Fix" cbName="Fix" dataLabel="Dyn" datSet="Fix" />
   <GOOSE max="5" />
   <FileHandling />
   <ConfLNs fixLnInst="true" fixPrefix="true" />
  </Services>
- <AccessPoint name="AP1">
 - <Server>
     <Authentication />
   - <LDevice inst="1" IdName="LD1pumpingUnit" desc="Pumping units</p>
       (AC), (AD) and (AE) with their removable suction filters">
       <LN0 InType="LLN0_1" inst="" InClass="LLN0" />
       <LN InType="KTNK_1" inst="1" InClass="KTNK" prefix="Act_"</pre>
         desc="(1) Main sump tank containing the oil required for
         operation of the plant" />
       <LN InType="ZMOTa" inst="1" InClass="ZMOT" prefix="Act_"</pre>
         desc="(AC) Motor for the pump unit" />
       <LN InType="ZMOTa" inst="2" InClass="ZMOT" prefix="Act_"</pre>
         desc="(AD) Motor for the pump unit" />
       <LN InType="ZMOTa" inst="3" InClass="ZMOT" prefix="Act_"</pre>
         desc="(AE) Motor for the pump unit" />
       <LN InType="KPMPa" inst="1" InClass="KPMP" prefix="Act_"</pre>
         desc="(AC) Pump unit" />
       <LN InType="KPMPa" inst="2" InClass="KPMP" prefix="Act "</pre>
         desc="(AD) Pump unit" />
       <LN InType="KPMPa" inst="3" InClass="KPMP" prefix="Act_"</pre>
         desc="(AE) Pump unit" />
       <LN InType="KFIL_29" inst="1" InClass="KFIL" prefix="Act_"</pre>
         desc="(29) Pumping unit suction filter" />
       <LN InType="KFIL_29" inst="2" InClass="KFIL" prefix="Act_"</pre>
         desc="(29) Pumping unit suction filter" />
       <LN InType="KFIL_29" inst="3" InClass="KFIL" prefix="Act_"</pre>
         desc="(29) Pumping unit suction filter" />
     </LDevice>
   - <LDevice inst="2" ldName="LD2idlerSystem" desc="The idler system</p>
       distributing valves (2), (3) and (4) with their pilot valve (5)">
       <LN0 InType="LLN0_1" inst="" InClass="LLN0" />
       <LN InType="KVLV_idler_system" inst="1" InClass="KVLV"</pre>
         prefix="Gv " desc="(2) Idler system distributing valve" />
       <LN InType="KVLV_idler_system" inst="2" InClass="KVLV"</pre>
         prefix="Gv_" desc="(3) Idler system distributing valve" />
       <LN InType="KVLV_idler_system" inst="3" InClass="KVLV"</pre>
         prefix="Gv_" desc="(4) Idler system distributing valve" />
       <LN InType="KVLV_piloted" inst="4" InClass="KVLV" prefix="Gv_"
         desc="(5) idler system pilot valve" />
     </LDevice>
   - <LDevice inst="3" IdName="LD3oilCoolers" desc="The oil coolers (6)</p>
       with adjusting isolating valve (36) and (37) flow switch (LN)">
       <LN0 InType="LLN0 1" inst="" InClass="LLN0" />
       <LN InType="TTMP_6" inst="1" InClass="TTMP" prefix="Tmp_"</pre>
         desc="(6) Oil cooler temperature" />
       <LN InType="TTMP_6" inst="2" InClass="TTMP" prefix="Tmp_"</pre>
```

```
desc="(6) Oil cooler temperature" />
   <LN InType="STMP6" inst="1" InClass="STMP" prefix="Tmp "</pre>
     desc="(6) Oil cooler temperature supervision" />
   <LN InType="STMP6" inst="2" InClass="STMP" prefix="Tmp_"</pre>
     desc="(6) Oil cooler temperature supervision" />
   <LN InType="KVLV_adjusting_isolating_valve" inst="5"</pre>
     InClass="KVLV" prefix="Tmp_" desc="(36) Oil adjusting isolating
     valve" />
   <LN InType="KVLV_adjusting_isolating_valve" inst="6"</pre>
     InClass="KVLV" prefix="Tmp_" desc="(37) Water adjusting
     isolating valve" />
   <LN InType="KVLV_switch" inst="7" InClass="KVLV" prefix="Flw_"</pre>
     desc="(LN) Oil coolers flow switch" />
  </LDevice>
- <LDevice inst="4" |dName="LD4control" desc="the control installation
   of the wicket-gate servomotors">
   <LN0 InType="LLN0_1" inst="" InClass="LLN0" />
   <LN InType="KVLV piloted" inst="8" InClass="KVLV" prefix="Gv "
     desc="(7) Main pilot valve (distributing valve)" />
   <LN InType="TPOS_e" inst="1" InClass="TPOS" prefix="Gv_"</pre>
     desc="(EB) Main pilot valve displacement sensor" />
   <LN InType="TPOS_e" inst="2" InClass="TPOS" prefix="Gv_"</pre>
     desc="(EA) Actuator EA controlling the distributing valve 7" />
   <LN InType="KVLV_solenoid_operated" inst="9" InClass="KVLV"</pre>
     prefix="Pos_" desc="(BA) Safety solenoid-operated valve BA
     with position switches CI and CJ" />
   <LN InType="KVLV_solenoid_operated" inst="10" InClass="KVLV"</pre>
     prefix="Pos " desc="(BB) Safety solenoid-operated valve BB
     with position switches CK and CL" />
   <LN InType="TPOS_IvI_sw" inst="3" InClass="TPOS" prefix="Pos_"</pre>
     desc="(BA) Safety solenoid-operated valve BA with position
     switches CI and CJ" />
   <LN InType="TPOS_IvI_sw" inst="4" InClass="TPOS" prefix="Pos_"</pre>
     desc="(BB) Safety solenoid-operated valve BB with position
     switches CK and CL" />
   <LN InType="KVLV_restrictor" inst="11" InClass="KVLV"</pre>
     prefix="Gv_" desc="(8) Adjustable restrictor valve enabling to
     obtain slackening during GvFLIM8" />
   <LN InType="FLIM_" inst="1" InClass="FLIM" prefix="Gv_" desc="(8)</pre>
     Wicket gate closure travel limit" />
   <LN InType="KVLV_piloted" inst="12" InClass="KVLV" prefix="Gv_"</pre>
     desc="(9) Piloted distributing valve" />
  </LDevice>
- <LDevice inst="5" IdName="LD5filters" desc="Twit filter (10) for the</p>
   supply of the actuator (EA)">
   <LN0 InType="LLN0 1" inst="" InClass="LLN0" />
   <LN InType="KFIL_actuator" inst="4" InClass="KFIL" prefix="Act_"</pre>
     desc="(10) Twin filter for the supply of actuator EA" />
   <LN InType="KFIL_actuator" inst="5" InClass="KFIL" prefix="Act_"</pre>
     desc="(10) Twin filter for the supply of actuator EA" />
  </LDevice>
- <LDevice inst="6" IdName="LD6valves" desc="Solenoid-operated valve</p>
   (BC) controlling the oil pressure-tank isolating valve, with position
   switches (CM) and (CN)">
```

```
<LN0 InType="LLN0 1" inst="" InClass="LLN0" />
         <LN InType="KVLV solenoid operated" inst="13" InClass="KVLV"</pre>
          prefix="Pa_" desc="(BC) Solenoid-operated valve controlling the
          oil pressure-tank isolating valve" />
         <LN InType="TPOS_IvI_sw" inst="5" InClass="TPOS" prefix="Pa "</pre>
           desc="(BC) PaKVLVbc position swiches CM and CN" />
         <LN InType="KVLV_solenoid_operated" inst="14" InClass="KVLV"</pre>
           prefix="Gv_" desc="(BD) Solenoid-operated valve controlling
          the wicket gate lock" />
         <LN InType="TPOS_IvI_sw" inst="6" InClass="TPOS" prefix="Gv_"</pre>
           desc="(BD) GvKVLVbd position swiches CO and CP" />
       </LDevice>
     - <LDevice inst="7" IdName="LD7accesories" desc="Accessories">
         <LN0 InType="LLN0_1" inst="" InClass="LLN0" />
         <LN InType="TPOS_prs_sw" inst="7" InClass="TPOS" prefix="Pa_"</pre>
           desc="(DA) Pressure switch" />
         <LN InType="TPOS_prs_sw" inst="8" InClass="TPOS" prefix="Pa_"</pre>
          desc="(LO) Pressure switch" />
         <LN InType="TTMP_thermostat" inst="3" InClass="TTMP"</pre>
           prefix="Tmp_" desc="(LI) Thermostat temperature" />
         <LN InType="STMP_thermostat" inst="3" InClass="STMP"</pre>
           prefix="Tmp_" desc="(LI) Thermostat temperature
          controller" />
         <LN InType="TPOS_IvI_sw" inst="9" InClass="TPOS" prefix="LvI_"</pre>
           desc="(LG) Level switch" />
         <LN InType="TPOS_IvI_sw" inst="10" InClass="TPOS" prefix="LvI_"
          desc="(LH) Level switch" />
         <LN InType="TPRS_gauge" inst="2" InClass="TPRS" prefix="Pa_"</pre>
          desc="(11) Pressure-gauge" />
         <LN InType="TPRS_gauge" inst="3" InClass="TPRS" prefix="Pa_"</pre>
           desc="(12) Pressure-gauge" />
         <LN InType="TTMP_6" inst="4" InClass="TTMP" prefix="Tmp_"</pre>
          desc="(13) Temperature" />
         <LN InType="STMP_thermostat" inst="4" InClass="STMP"</pre>
           prefix="Tmp_" desc="(13) Temperature controller" />
         <LN InType="TLEV_gauge" inst="1" InClass="TLEV" prefix="LvI_"</pre>
          desc="(14) Level gauge" />
         <LN InType="FXUT_1" inst="1" InClass="FXUT" prefix="LvI_"</pre>
          desc="(14) Level at under threshold" />
         <LN InType="FXOT_1" inst="1" InClass="FXOT" prefix="LvI_"</pre>
           desc="(14) Level at over threshold" />
       </LDevice>
     </Server>
   </AccessPoint>
  </IED>
- <DataTypeTemplates>
 - <LNodeType id="LLN0_1" InClass="LLN0">
     <!-- Common logical node information -->
     <DO name="Mod" type="Mod_1" />
     <DO name="Beh" type="Beh_1" />
     <DO name="Health" type="Health_1" />
     <DO name="NamPlt" type="NamPlt_1" />
   </LNodeType>
```

```
- <LNodeType id="FLIM_" InClass="FLIM" desc="Wicket gate closure travel</p>
   limit">
   <!-- Common logical node information -->
   <DO name="Mod" type="Mod_1" />
   <DO name="Beh" type="Beh_1" />
   <DO name="Health" type="Health_1" />
   <DO name="NamPlt" type="NamPlt_1" />
   <!-- Status information -->
   <DO name="HiLim" type="xLim_1" desc="High Limit reached" />
   <DO name="LoLim" type="xLim_1" desc="Low Limit reached" />
   <!-- Measured values
   <DO name="Out" type="Out 1" desc="Output signal" />
   <DO name="HiLimSpt" type="xLimSpt_1" desc="High Limit setpoint" />
   <DO name="LoLimSpt" type="xLimSpt 1" desc="Low Limit setpoint" />
   <DO name="Blk" type="Blk_1" desc="Block operation" />
 </LNodeType>
-<!--
                    <LNodeType id="FSPT for flim" lnClass="FSPT"</pre>
    desc="Wicket gate closure travel limit set-point">
 <!-- Common logical node information -->
- <!--
                            <DO name="Mod" type="Mod_1"/>
                            <DO name="Beh" type="Beh 1"/>
                            <DO name="Health" type="Health 1"/>
                            <DO name="NamPlt" type="NamPlt_1"/>
 -->
 <!-- Measured values -->
- <!--
                            <DO type="SptMem_1" name="SptMem"</pre>
    desc="Setpoint in memory"/>
                    </LNodeType>
- <LNodeType id="FXOT_1" InClass="FXOT" desc="Level at over threshold">
   <!-- Common logical node information
   <DO name="Mod" type="Mod_1" />
   <DO name="Beh" type="Beh_1" />
   <DO name="Health" type="Health_1" />
   <DO name="NamPit" type="NamPit 1" />
   <!-- Status information -->
   <DO type="Op_1" name="Op" />
 </LNodeType>
- <LNodeType id="FXUT_1" InClass="FXUT" desc="Level at under threshold">
   <!-- Common logical node information -->
   <DO name="Mod" type="Mod 1" />
   <DO name="Beh" type="Beh_1" />
   <DO name="Health" type="Health 1" />
   <DO name="NamPlt" type="NamPlt_1" />
   <!-- Status information -->
   <DO type="Op_1" name="Op" />
 </LNodeType>
```

```
- <LNodeType id="KFIL_29" InClass="KFIL" desc="Pumping unit suction filter">
   <!-- Common logical node information
   <DO name="Mod" type="Mod_1" />
   <DO name="Beh" type="Beh_1" />
   <DO name="Health" type="Health_1" />
   <DO name="NamPlt" type="NamPlt_1" />
   <!-- Status information -->
   <DO type="ACAIm_1" name="ACAIm" />
   <DO type="MotPro_1" name="MotPro" />
   <DO type="FilAlm_1" name="FilAlm" />
 </LNodeType>
- <LNodeType id="KFIL_actuator" InClass="KFIL" desc="Filter for the supply of</p>
   the actuator">
   <!-- Common logical node information -->
   <DO name="Mod" type="Mod_1" />
   <DO name="Beh" type="Beh 1" />
   <DO name="Health" type="Health_1" />
   <DO name="NamPlt" type="NamPlt_1" />
   <!-- Status information -->
   <DO type="ACAIm_1" name="ACAIm" />
   <DO type="MotPro_1" name="MotPro" />
   <DO type="FilAlm_1" name="FilAlm" />
 </LNodeType>
- <LNodeType id="KPMPa" InClass="KPMP" desc="Pump unit">
   <!-- Common logical node information -->
   <DO name="Mod" type="Mod 1" />
   <DO name="Beh" type="Beh_1" />
   <DO name="Health" type="Health_1" />
   <DO name="NamPlt" type="NamPlt_1" />
   <!-- Status information -->
   <DO name="ACAIm" type="ACAIm 2" />
   <DO name="BlkSt" type="BlkSt_2" />
   <!-- Controls -->
   <DO name="Operate" type="Operate_1" />
 </LNodeType>
- <LNodeType id="KTNK_1" InClass="KTNK" desc="Main sump tank">
   <!-- Common logical node information -->
   <DO name="Mod" type="Mod_1" />
   <DO name="Beh" type="Beh_1" />
   <DO name="Health" type="Health_1" />
   <DO name="NamPlt" type="NamPlt_1" />
   <!-- Status information -->
   <DO name="TnkTyp" type="TnkTyp_1" />
   <!-- Settings -->
   <DO name="VImCap" type="VImCap_1" />
   <!-- Measured values -->
   <DO name="Pres" type="Pres_1" />
   <DO name="LevPc" type="LevPc_1" />
   <DO name="Vlm" type="Vlm_1" />
   <DO name="Tmp" type="Tmp_1" />
 </LNodeType>
- <!--
```

```
<LNodeType id="KTNK_air_oil" lnClass="KTNK" desc="Air-oil pressure</pre>
    tank">
 -->
 <!-- Common logical node information -->
-<!--
                            <DO name="Mod" type="Mod_1"/>
                            <DO name="Beh" type="Beh_1"/>
                            <DO name="Health" type="Health_1"/>
                            <DO name="NamPlt" type="NamPlt_1"/>
 -->
 <!-- Status information -->
-<!--
                            <DO name="TnkTyp" type="TnkTyp_1"/>
 -->
 <!-- Settings -->
_ < !--
                            <DO name="VlmCap" type="VlmCap_1"/>
 -->
 <!-- Measured values -->
- <!--
                            <DO name="Pres" type="Pres_1"/>
                            <DO name="LevPc" type="LevPc_1"/>
                            <DO name="Vlm" type="Vlm_1"/>
                            <DO name="Tmp" type="Tmp_1"/>
                    </LNodeType>
 -->
- <LNodeType id="KVLV_idler_system" InClass="KVLV" desc="Idler system"</p>
   distributing valve">
   <!-- Common logical node information -->
   <DO name="Mod" type="Mod_1" />
   <DO name="Beh" type="Beh_1" />
   <DO name="Health" type="Health_1" />
   <DO name="NamPlt" type="NamPlt_1" />
   <DO name="OpCnt" type="OpCnt_1" />
   <DO name="Loc" type="Loc_1" />
   <!-- Status information -->
   <DO name="ClsPos" type="ClsPos_1" />
   <DO name="OpnPos" type="OpnPos_1" />
   <DO name="Mov" type="Mov_1" />
   <!-- Controls
   <DO name="Opn" type="Opn_1" />
   <DO name="Cls" type="Cls 1" />
   <DO name="BlkOpn" type="BlkOpn_1" />
   <DO name="BlkCls" type="BlkCls_1" />
  </LNodeType>
- <LNodeType id="KVLV_adjusting_isolating_valve" InClass="KVLV" desc="Oil</p>
   adjusting isolating valve">
   <!-- Common logical node information -->
   <DO name="Mod" type="Mod_1" />
   <DO name="Beh" type="Beh 1" />
```

```
<DO name="Health" type="Health 1" />
   <DO name="NamPlt" type="NamPlt 1" />
   <!-- Status information -->
   <DO name="ClsPos" type="ClsPos_1" />
   <DO name="OpnPos" type="OpnPos_1" />
   <DO name="Mov" type="Mov_1" />
   <!-- Controls -->
   <DO name="Opn" type="Opn_1" />
   <DO name="Cls" type="Cls_1" />
   <DO name="BlkOpn" type="BlkOpn_1" />
   <DO name="BlkCls" type="BlkCls_1" />
  </LNodeType>
- <LNodeType id="KVLV_piloted" InClass="KVLV" desc="Piloted distributing</p>
   valve">
   <!-- Common logical node information -->
   <DO name="Mod" type="Mod 1" />
   <DO name="Beh" type="Beh_1" />
   <DO name="Health" type="Health_1" />
   <DO name="NamPlt" type="NamPlt_1" />
   <!-- Status information -->
   <DO name="ClsPos" type="ClsPos 1" />
   <DO name="OpnPos" type="OpnPos_1" />
   <DO name="Mov" type="Mov_1" />
   <!-- Controls
   <DO name="Opn" type="Opn_1" />
   <DO name="Cls" type="Cls_1" />
 </LNodeType>
- <LNodeType id="KVLV_solenoid_operated" InClass="KVLV" desc="Solenoid</p>
   operated valve">
   <!-- Common logical node information -->
   <DO name="Mod" type="Mod_1" />
   <DO name="Beh" type="Beh 1" />
   <DO name="Health" type="Health_1" />
   <DO name="NamPlt" type="NamPlt_1" />
   <DO name="Stuck" type="Stuck_1" />
   <!-- Status information -->
   <DO name="ClsPos" type="ClsPos_1" />
   <DO name="OpnPos" type="OpnPos_1" />
   <DO name="Mov" type="Mov_1" />
   <!-- Controls
   <DO name="Opn" type="Opn_1" />
   <DO name="Cls" type="Cls_1" />
   <DO name="BlkOpn" type="BlkOpn_1" />
   <DO name="BlkCls" type="BlkCls_1" />
  </LNodeType>
- <LNodeType id="KVLV_restrictor" InClass="KVLV" desc="Adjustable restrictor</p>
   valve">
   <!-- Common logical node information -->
   <DO name="Mod" type="Mod 1" />
   <DO name="Beh" type="Beh_1" />
   <DO name="Health" type="Health_1" />
   <DO name="NamPlt" type="NamPlt_1" />
```

```
<!-- Status information -->
   <DO name="ClsPos" type="ClsPos 1" />
   <DO name="OpnPos" type="OpnPos_1" />
   <DO name="Mov" type="Mov_1" />
   <!-- Controls -->
   <DO name="Opn" type="Opn_1" />
   <DO name="Cls" type="Cls_1" />
   <DO name="BlkOpn" type="BlkOpn_1" />
   <DO name="BlkCls" type="BlkCls_1" />
 </LNodeType>
- <!--
    <LNodeType id="KVLV_relief" lnClass="KVLV" desc="Relief pressure</pre>
    valve">
 -->
 <!-- Common logical node information -->
- <!--
                            <DO name="Mod" type="Mod_1"/>
                            <DO name="Beh" type="Beh_1"/>
                            <DO name="Health" type="Health_1"/>
                            <DO name="NamPlt" type="NamPlt_1"/>
 -->
 <!-- Status information -->
-<!--
                            <DO name="ClsPos" type="ClsPos_1"/>
                            <DO name="OpnPos" type="OpnPos 1"/>
                            <DO name="Mov" type="Mov_1"/>
 -->
 <!-- Controls -->
-<!--
                            <DO name="Opn" type="Opn_1"/>
                            <DO name="Cls" type="Cls 1"/>
                            <DO name="BlkOpn" type="BlkOpn_1"/>
                            <DO name="BlkCls" type="BlkCls_1"/>
                    </LNodeType>
 -->
-<!--
    <LNodeType id="KVLV_aut_contr" lnClass="KVLV" desc="Automatic</pre>
    controlled isolating valve">
 -->
 <!-- Common logical node information -->
-<!--
                            <DO name="Mod" type="Mod_1"/>
                            <DO name="Beh" type="Beh_1"/>
                            <DO name="Health" type="Health_1"/>
                            <DO name="NamPlt" type="NamPlt_1"/>
 -->
 <!-- Status information -->
- <!--
                            <DO name="ClsPos" type="ClsPos_1"/>
                            <DO name="OpnPos" type="OpnPos_1"/>
                            <DO name="Mov" type="Mov_1"/>
```

```
-->
 <!-- Controls -->
- <!--
                            <DO name="Opn" type="Opn_1"/>
                            <DO name="Cls" type="Cls_1"/>
                            <DO name="BlkOpn" type="BlkOpn_1"/>
                            <DO name="BlkCls" type="BlkCls_1"/>
                    </LNodeType>
 -->
- <LNodeType id="KVLV_switch" InClass="KVLV" desc="Switch">
   <!-- Flow switches such as LN -->
   <!-- Common logical node information -->
   <DO name="Mod" type="Mod_1" />
   <DO name="Beh" type="Beh_1" />
   <DO name="Health" type="Health_1" />
   <DO name="NamPlt" type="NamPlt_1" />
   <!-- Status information -->
   <DO name="ClsPos" type="ClsPos_1" />
   <DO name="OpnPos" type="OpnPos_1" />
   <DO name="Mov" type="Mov 1" />
   <!-- Controls -->
   <DO name="Opn" type="Opn 1" />
   <DO name="Cls" type="Cls_1" />
   <DO name="BlkOpn" type="BlkOpn_1" />
   <DO name="BlkCls" type="BlkCls_1" />
 </LNodeType>
- <LNodeType id="STMP6" InClass="STMP" desc="Oil cooler temperature</p>
   supervision">
   <!-- Common logical node information -->
   <DO name="Mod" type="Mod_1" />
   <DO name="Beh" type="Beh_1" />
   <DO name="Health" type="Health 1" />
   <DO name="NamPlt" type="NamPlt 1" />
   <DO name="Loc" type="Loc_1" />
   <!-- Status information -->
   <DO name="Alm" type="Alm_1" />
   <DO name="Trip" type="Trip_1" />
   <!-- Settings
   <DO name="TmpAlmSpt" type="TmpAlmSpt_1" />
   <DO name="TmpTrSpt" type="TmpTrSpt_1" />
  </LNodeType>
- <LNodeType id="STMP_thermostat" InClass="STMP" desc="Thermostat</p>
   temperature controller">
   <!-- Common logical node information -->
   <DO name="Mod" type="Mod 1" />
   <DO name="Beh" type="Beh_1" />
   <DO name="Health" type="Health_1" />
   <DO name="NamPlt" type="NamPlt_1" />
   <!-- Status information -->
   <DO name="Alm" type="Alm 1" />
   <DO name="Trip" type="Trip_1" />
   <!-- Settings -->
```

```
<DO name="TmpAlmSpt" type="TmpAlmSpt_1" />
   <DO name="TmpTrSpt" type="TmpTrSpt_1" />
 </LNodeType>
- <LNodeType id="TLEV_gauge" InClass="TLEV" desc="Level gauge">
   <!-- Common logical node information -->
   <DO name="Mod" type="Mod_1" />
   <DO name="Beh" type="Beh_1" />
   <DO name="Health" type="Health_1" />
   <DO name="NamPlt" type="NamPlt_1" />
   <!-- Measured values -->
   <DO name="LevPc" type="LevPc_2" />
   <DO name="SmpRteSet" type="SmpRteSet_1" />
 </LNodeType>
- <!--
    <LNodeType id="TLEV_float" lnClass="TLEV" desc="Float level gauge">
 -->
 <!-- Common logical node information -->
-<!--
                            <DO name="Mod" type="Mod_1"/>
                            <DO name="Beh" type="Beh_1"/>
                            <DO name="Health" type="Health_1"/>
                            <DO name="NamPlt" type="NamPlt_1"/>
 -->
 <!-- Measured values -->
- <!--
                            <DO name="LevPc" type="LevPc_2"/>
                            <DO name="SmpRteSet" type="SmpRteSet_1"/>
                    </LNodeType>
 -->
- <LNodeType id="TPOS_e" InClass="TPOS" desc="valve displacement sensor">
   <!-- Common logical node information -->
   <DO name="Mod" type="Mod_1" />
   <DO name="Beh" type="Beh_1" />
   <DO name="Health" type="Health_1" />
   <DO name="NamPlt" type="NamPlt_1" />
   <!-- Measured values -->
   <DO name="PosPc" type="PosPc_1" />
   <!-- Settings -->
   <DO name="SmpRte" type="SmpRte_1" />
 </LNodeType>
- <LNodeType id="TPOS_IvI_sw" InClass="TPOS" desc="Level switch">
   <!-- Common logical node information -->
   <DO name="Mod" type="Mod_1" />
   <DO name="Beh" type="Beh 1" />
   <DO name="Health" type="Health_1" />
   <DO name="NamPlt" type="NamPlt 1" />
   <!-- Measured values -->
   <DO name="PosPc" type="PosPc_1" />
   <!-- Settings -->
   <DO name="SmpRte" type="SmpRte_1" />
 </LNodeType>
```

```
- <LNodeType id="TPOS_prs_sw" InClass="TPOS" desc="Pressure switch">
   <!-- Common logical node information -->
   <DO name="Mod" type="Mod_1" />
   <DO name="Beh" type="Beh_1" />
   <DO name="Health" type="Health_1" />
   <DO name="NamPlt" type="NamPlt_1" />
   <DO name="SmpRteRng" type="SmpRteRng_1" />
   <!-- Measured values -->
   <DO name="PosPc" type="PosPc_1" />
   <!-- Settings -->
   <DO name="SmpRte" type="SmpRte_1" />
 </LNodeType>
-<!--
    <LNodeType id="TPRS5" lnClass="TPRS" desc="REVISAR!">
 <!-- Common logical node information -->
-<!--
                            <DO name="Mod" type="Mod 1"/>
                            <DO name="Beh" type="Beh_1"/>
                            <DO name="Health" type="Health_1"/>
                            <DO name="NamPlt" type="NamPlt_1"/>
                            <DO name="SmpRteRng" type="SmpRteRng_2"/>
 -->
 <!-- Measured values -->
-<!--
                            <DO name="Pres" type="Pres_2"/>
 -->
 <!-- Settings -->
- <!--
                            <DO name="SmpRte" type="SmpRte_2"/>
                    </LNodeType>
 -->
-<!--
    <LNodeType id="TPRS_trans" lnClass="TPRS" desc="Pressure</pre>
    transmitter">
 <!-- Common logical node information -->
-<!--
                            <DO name="Mod" type="Mod_1"/>
                            <DO name="Beh" type="Beh_1"/>
                            <DO name="Health" type="Health_1"/>
                            <DO name="NamPlt" type="NamPlt_1"/>
                            <DO name="SmpRteRng" type="SmpRteRng_2"/>
 -->
 <!-- Measured values -->
- <!--
                            <DO name="Pres" type="Pres_2"/>
 -->
 <!-- Settings -->
```

```
- <!--
                           <DO name="SmpRte" type="SmpRte_2"/>
                    </LNodeType>
 -->
- <LNodeType id="TPRS_gauge" InClass="TPRS" desc="Pressure-gauge">
   <!-- Common logical node information -->
   <DO name="Mod" type="Mod_1" />
   <DO name="Beh" type="Beh_1" />
   <DO name="Health" type="Health_1" />
   <DO name="NamPit" type="NamPit_1" />
   <DO name="SmpRteRng" type="SmpRteRng_4" />
   <!-- Measured values -->
   <DO name="Pres" type="Pres_3" />
   <!-- Settings -->
   <DO name="SmpRte" type="SmpRte_4" />
 </LNodeType>
- <LNodeType id="TTMP_6" InClass="TTMP" desc="Oil cooler temperature">
   <!-- Common logical node information -->
   <DO name="Mod" type="Mod_1" />
   <DO name="Beh" type="Beh_1" />
   <DO name="Health" type="Health_1" />
   <DO name="NamPlt" type="NamPlt_1" />
   <DO name="SmpRteRng" type="SmpRteRng_3" />
   <!-- Measured values -->
   <DO name="Tmp" type="Tmp_2" />
   <!-- Settings -->
   <DO name="SmpRte" type="SmpRte_3" />
 </LNodeType>
- <LNodeType id="TTMP_thermostat" InClass="TTMP" desc="Thermostat"</p>
   temperature">
   <!-- Common logical node information -->
   <DO name="Mod" type="Mod_1" />
   <DO name="Beh" type="Beh_1" />
   <DO name="Health" type="Health_1" />
   <DO name="NamPlt" type="NamPlt_1" />
   <DO name="SmpRteRng" type="SmpRteRng_3" />
   <!-- Measured values -->
   <DO name="Tmp" type="Tmp_2" />
   <!-- Settings -->
   <DO name="SmpRte" type="SmpRte_3" />
 </LNodeType>
- <LNodeType id="ZMOTa" lnClass="ZMOT" desc="Motor for the pump unit">
   <!-- Common logical node information -->
   <DO name="Mod" type="Mod_1" />
   <DO name="Beh" type="Beh_1" />
   <DO name="Health" type="Health_1" />
   <DO name="NamPlt" type="NamPlt 1" />
   <DO name="OpTmh" type="OpTmh_1" />
   <!-- Controls -->
   <DO name="DExt" type="DExt_1" />
 </LNodeType>
 <!-- Data Objects - IEC 61850-7-3 -->
```

```
<DOType cdc="ASG" id="VImCap_1" desc="Total Volume capacity" />
<DOType cdc="ASG" id="xLimSpt 1" desc="Hight limit set point" />
<DOType cdc="ASG" id="TmpAlmSpt_1" desc="Temperature alarm level
 reached" />
<DOType cdc="ASG" id="TmpTrSpt_1" desc="Temperature trip level
 reached" />
<DOType cdc="DPC" id="Operate_1" desc="Operate pump" />
<DOType cdc="DPC" id="ClsPos 1" desc="Closed end position reached (valve
 cannot move futher)" />
<DOType cdc="DPC" id="OpnPos_1" desc="Open end position reached (valve
 cannot move futher)" />
<DOType cdc="DPC" id="Opn_1" desc="Valve to full open position" />
<DOType cdc="DPC" id="Cls_1" desc="Valve to full closed position" />
<DOType cdc="ING" id="SmpRteSet_1" desc="Sampling rate setting" />
<DOType cdc="ING" id="SmpRte_1" desc="Sampling rate setting" />
<DOType cdc="ING" id="SmpRte_2" desc="Sampling rate setting" />
<DOType cdc="ING" id="SmpRte_3" desc="Sampling rate setting" />
<DOType cdc="ING" id="SmpRte_4" desc="Sampling rate setting" />
<DOType cdc="ING" id="SmpRteRng_1" desc="Available sampling rate</pre>
 range" />
<DOType cdc="ING" id="SmpRteRng_2" desc="Available sampling rate
<DOType cdc="ING" id="SmpRteRng_3" desc="Available sampling rate</pre>
 range" />
<DOType cdc="ING" id="SmpRteRng_4" desc="Available sampling rate
 range" />
<DOType cdc="INC" id="Mod 1" desc="Mode" />
<DOType cdc="INS" id="Beh_1" desc="Behaviour" />
<DOType cdc="INS" id="Health_1" desc="Health" />
<DOType cdc="INS" id="TnkTyp_1" desc="Type of tank (pressure only, level
 only, both pressure and level)" />
<DOType cdc="INS" id="OpCnt_1" desc="Operation counter" />
<DOType cdc="INS" id="OpTmh_1" desc="Operation time" />
<DOType cdc="LPL" id="NamPlt_1" desc="Name plate" />
<DOType cdc="MV" id="Pres 1" desc="Pressure in the tank" />
<DOType cdc="MV" id="LevPc 1" desc="Level in the tank (as percentage of
 full tank level)" />
<DOType cdc="MV" id="Out 1" desc="Output signal" />
<DOType cdc="MV" id="SptMem_1" desc="Set point in memory" />
<DOType cdc="MV" id="Vlm_1" desc="Volume of media in tank" />
<DOType cdc="MV" id="Tmp_1" desc="Temperature of the media in the
 tank" />
<DOType cdc="MV" id="Tmp_2" desc="Temperature (C)" />
<DOType cdc="SAV" id="LevPc_2" desc="Level (percentage)" />
<DOType cdc="SAV" id="PosPc_1" desc="Position given as percentage of full
 movement" />
<DOType cdc="SAV" id="Pres_2" desc="Pressure of media [Pa]" />
<DOType cdc="SAV" id="Pres_3" desc="Pressure of media [Pa]" />
<DOType cdc="SPC" id="Blk_1" desc="Block operation" />
<DOType cdc="SPC" id="BlkOpn_1" desc="Block opening of the valve" />
<DOType cdc="SPC" id="BlkCls_1" desc="Block closing of the valve" />
<DOType cdc="SPC" id="DExt_1" desc="De-excitation" />
<DOType cdc="SPS" id="BlkSt_2" desc="The pump is blocked from</pre>
```

```
operation" />
   <DOType cdc="SPS" id="xLim_1" desc="Limit reached" />
   <DOType cdc="SPS" id="Op_1" desc="Level of action reached" />
   <DOType cdc="SPS" id="ACAIm_1" desc="AC supply failure (fuse or other</pre>
     problem)"/>
   <DOType cdc="SPS" id="ACAIm_2" desc="AC supply failure (fuse or other</pre>
     problem)"/>
   <DOType cdc="SPS" id="Alm_1" desc="Temperature alarm level reached" />
   <DOType cdc="SPS" id="Trip_1" desc="Temperature trip level reached" />
   <DOType cdc="SPS" id="MotPro_1" desc="Motor protection tripped" />
   <DOType cdc="SPS" id="MotPro_2" desc="Motor protection tripped" />
   <DOType cdc="SPS" id="FilAlm_1" desc="Filter alarm" />
   <DOType cdc="SPS" id="Loc_1" desc="Local operation selected" />
   <DOType cdc="SPS" id="Mov_1" desc="Valve is moving" />
   <DOType cdc="SPS" id="Stuck_1" desc="Valve is blocked (cannot move from
     present position)"/>
 </DataTypeTemplates>
</SCL>
```