```
<?xml version="1.0" encoding="UTF-8"?>
<SCL xmlns="http://www.iec.ch/61850/2006/SCL" 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 when="20/10/2010" revision="2" version="1.2">
                                    Aqui empezé a realizar la instanciación de los DataTypeTemplates
                                    en mi IED del tanque principal
                           <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 lnClass, 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 when="01/11/2011" revision="3" version="1.0">
                                    Este es el SCL candidato para la versión final.
                           </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" 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"
rptID="Dyn" datSet="Fix" cbName="Fix"/>
                           <GSESettings appID="Fix" cbName="Fix" dataLabel="Dyn" datSet="Fix"/>
                           <GOOSE max="5"/>
                           <FileHandling/>
                           <ConfLNs fixLnInst="true" fixPrefix="false"/>
```

```
<SMVSettings smpRate="Conf">
                                    <SmpRate>256</SmpRate>
                                    <SmpRate>80</SmpRate>
                           </SMVSettings>
                  </Services>
                  <AccessPoint name="AP1">
                           <Server>
                                    <Authentication/>
                                    <LDevice inst="1" ldName="LD1pumpingUnit" desc="Pumping units (AC),</pre>
(AD) and (AE) with their removable suction filters">
                                             <LN0 lnType="LLN0 1" inst="" lnClass="LLN0"/>
                                             <LN lnType="KTNK 1" inst="1" lnClass="KTNK"
prefix="Act " desc="(1) Main sump tank containing the oil required for operation of the generation unit"/>
                                             <LN lnType="ZMOTa" inst="1" lnClass="ZMOT" prefix="Act_"</pre>
desc="(AC) Motor for the pump unit"/>
                                             <LN lnType="ZMOTa" inst="2" lnClass="ZMOT" prefix="Act "</pre>
desc="(AD) Motor for the pump unit"/>
                                             <LN lnType="ZMOTa" inst="3" lnClass="ZMOT" prefix="Act_"</pre>
desc="(AE) Motor for the pump unit"/>
                                             <LN lnType="KPMPa" inst="1" lnClass="KPMP" prefix="Act_"</pre>
desc="(AC) Pump unit"/>
                                             <LN lnType="KPMPa" inst="2" lnClass="KPMP" prefix="Act "</pre>
desc="(AD) Pump unit"/>
                                             <LN lnType="KPMPa" inst="3" lnClass="KPMP" prefix="Act_"</pre>
desc="(AE) Pump unit"/>
                                             <LN lnType="KFIL 29" inst="1" lnClass="KFIL" prefix="Act "</pre>
desc="(29) Pumping unit suction filter"/>
                                             <LN lnType="KFIL_29" inst="2" lnClass="KFIL" prefix="Act_"</pre>
desc="(29) Pumping unit suction filter"/>
                                             <LN lnType="KFIL 29" inst="3" lnClass="KFIL" prefix="Act "</pre>
desc="(29) Pumping unit suction filter"/>
                                    </LDevice>
                                    <LDevice inst="2" ldName="LD2idlerSystem" desc="The idler system</pre>
distributing valves (2), (3) and (4) with their pilot valve (5)">
                                             <LN0 lnType="LLN0 1" inst="" lnClass="LLN0"/>
                                             <LN lnType="KVLV_idler_system" inst="1" lnClass="KVLV"</pre>
prefix="Gv_" desc="(2) Idler system distributing valve"/>
                                             <LN lnType="KVLV_idler_system" inst="2" lnClass="KVLV"</pre>
prefix="Gv " desc="(3) Idler system distributing valve"/>
                                             <LN lnType="KVLV idler system" inst="3" lnClass="KVLV"</pre>
prefix="Gv " desc="(4) Idler system distributing valve"/>
                                             <LN lnType="KVLV piloted" inst="4" lnClass="KVLV"</pre>
prefix="Gv " desc="(5) idler system pilot valve"/>
                                    </LDevice>
                                    <LDevice inst="3" ldName="LD3oilCoolers" desc="The oil coolers (6) with</pre>
adjusting isolating valve (36) and (37) flow switch (LN)">
                                             <LN0 lnType="LLN0 1" inst="" lnClass="LLN0"/>
                                             <LN lnType="TTMP 6" inst="1" lnClass="TTMP"</pre>
prefix="Tmp   " desc="(6) Oil cooler temperature"/>
                                             <LN lnType="TTMP 6" inst="2" lnClass="TTMP"</pre>
prefix="Tmp " desc="(6) Oil cooler temperature"/>
                                             <LN lnType="STMP6" inst="1" lnClass="STMP" prefix="Tmp "</pre>
desc="(6) Oil cooler temperature supervision"/>
                                             <LN lnType="STMP6" inst="2" lnClass="STMP" prefix="Tmp"</pre>
desc="(6) Oil cooler temperature supervision"/>
                                             <LN lnType="KVLV adjusting isolating valve" inst="5"</pre>
lnClass="KVLV"\ prefix="Tmp\_"\ desc="(36)\ Oil\ adjusting\ isolating\ valve"/>
                                             <LN lnType="KVLV adjusting isolating valve" inst="6"</pre>
<LN lnType="KVLV_switch" inst="7" lnClass="KVLV"</pre>
prefix="Flw_" desc="(LN) Oil coolers flow switch"/>
                                    </LDevice>
```

```
<LDevice inst="4" ldName="LD4control" desc="the control installation of the
wicket-gate servomotors">
                                            <LN0 lnType="LLN0 1" inst="" lnClass="LLN0"/>
                                            <LN lnType="KVLV piloted" inst="8" lnClass="KVLV"
prefix="Gv " desc="(7) Main pilot valve (distributing valve)"/>
                                            <LN lnType="TPOS_e" inst="1" lnClass="TPOS" prefix="Gv "
desc="(EB) Main pilot valve displacement sensor"/>
                                            <LN lnType="TPOS e" inst="2" lnClass="TPOS" prefix="Gv "</pre>
desc="(EA) Actuator EA controlling the distributing valve 7"/>
                                            <LN lnType="KVLV solenoid operated" inst="9"
lnClass="KVLV" prefix="Pos" desc="(BA) Safety solenoid-operated valve BA with position switches CI and CJ"/>
                                            <LN lnType="KVLV solenoid operated" inst="10"
lnClass="KVLV" prefix="Pos" desc="(BB) Safety solenoid-operated valve BB with position switches CK and CL"/>
                                            <LN lnType="TPOS_lvl_sw" inst="3" lnClass="TPOS"</pre>
prefix="Pos_" desc="(BA) Safety solenoid-operated valve BA with position switches CI and CJ"/>
                                            <LN lnType="TPOS lvl sw" inst="4" lnClass="TPOS"</pre>
prefix="Pos" desc="(BB) Safety solenoid-operated valve BB with position switches CK and CL"/>
                                            <LN lnType="KVLV_restrictor" inst="11" lnClass="KVLV"</pre>
prefix="Gv_" desc="(8) Adjustable restrictor valve enabling to obtain slackening during GvFLIM8"/>
                                            <LN lnType="FLIM_" inst="1" lnClass="FLIM" prefix="Gv_"</pre>
desc="(8) Wicket gate closure travel limit"/>
                                            prefix="Gv_" desc="(9) Piloted distributing valve"/>
                                   </LDevice>
                                   <LDevice inst="5" ldName="LD5filters" desc="Twit filter (10) for the supply</pre>
of the actuator (EA)">
                                            <LN0 lnType="LLN0 1" inst="" lnClass="LLN0"></LN0>
                                            <LN lnType="KFIL_actuator" inst="4" lnClass="KFIL"</pre>
prefix="Act_" desc="(10) Twin filter for the supply of actuator EA"/>
                                            <LN lnType="KFIL actuator" inst="5" lnClass="KFIL"</pre>
prefix="Act " desc="(10) Twin filter for the supply of actuator EA"/>
                                   </LDevice>
                                   <LDevice inst="6" ldName="LD6valves" desc="Solenoid-operated valve (BC)</pre>
controlling the oil pressure-tank isolating valve, with position switches (CM) and (CN)">
                                            <LN0 lnType="LLN0 1" inst="" lnClass="LLN0"></LN0>
                                            <LN lnType="KVLV_solenoid_operated" inst="13"</pre>
lnClass="KVLV" prefix="Pa_" desc="(BC) Solenoid-operated valve controlling the oil pressure-tank isolating
valve"/>
                                            <LN lnType="TPOS lvl sw" inst="5" lnClass="TPOS"</pre>
prefix="Pa" desc="(BC) PaKVLVbc position swiches CM and CN"/>
                                            <LN lnType="KVLV solenoid operated" inst="14"</pre>
lnClass="KVLV" prefix="Gv " desc="(BD) Solenoid-operated valve controlling the wicket gate lock"/>
                                            <LN lnType="TPOS_lvl_sw" inst="6" lnClass="TPOS"</pre>
prefix="Gv " desc="(BD) GvKVLVbd position swiches CO and CP"/>
                                   </LDevice>
                                   <LDevice inst="7" ldName="LD7accesories" desc="Accessories">
                                            <LN0 lnType="LLN0 1" inst="" lnClass="LLN0"></LN0>
                                            <LN lnType="TPOS_prs_sw" inst="7" lnClass="TPOS"</pre>
prefix="Pa " desc="(DA) Pressure switch"/>
                                            <LN lnType="TPOS prs sw" inst="8" lnClass="TPOS"</pre>
prefix="Pa " desc="(LO) Pressure switch"/>
                                            <LN lnType="TTMP thermostat" inst="3" lnClass="TTMP"</pre>
prefix="Tmp " desc="(LI) Thermostat temperature"/>
                                            <LN lnType="STMP thermostat" inst="3" lnClass="STMP"</pre>
<LN lnType="TPOS lvl sw" inst="9" lnClass="TPOS"</pre>
prefix="Lvl " desc="(LG) Level switch"/>
                                            <LN lnType="TPOS lvl sw" inst="10" lnClass="TPOS"</pre>
prefix="Lvl " desc="(LH) Level switch"/>
                                            <LN lnType="TPRS gauge" inst="2" lnClass="TPRS"</pre>
```

<LN lnType="TPRS\_gauge" inst="3" lnClass="TPRS"</pre>

prefix="Pa\_" desc="(11) Pressure-gauge"/>

prefix="Pa " desc="(12) Pressure-gauge"/>

```
<LN lnType="TTMP_6" inst="4" lnClass="TTMP"</pre>
prefix="Tmp " desc="(13) Temperature"/>
                                            <LN lnType="STMP thermostat" inst="4" lnClass="STMP"</pre>
prefix="Tmp " desc="(13) Temperature controller"/>
                                            <LN lnType="TLEV_gauge" inst="1" lnClass="TLEV"</pre>
prefix="Lvl " desc="(14) Level gauge "/>
                                            <LN lnType="FXUT 1" inst="1" lnClass="FXUT" prefix="Lvl "</pre>
desc="(14) Level at under threshold"/>
                                            <LN lnType="FXOT 1" inst="1" lnClass="FXOT" prefix="Lvl "</pre>
desc="(14) Level at over threshold"/>
                                   </LDevice>
                          </Server>
                  </AccessPoint>
         </IED>
         <DataTypeTemplates>
                 <LNodeType id="LLN0 1" lnClass="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>
                  <\!\!\text{LNodeType id} = \!\!\text{"FLIM}\_\text{" lnClass} = \!\!\text{"FLIM" desc} = \!\!\text{"Wicket gate closure travel 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" desc="Wicket gate closure travel limit set-</pre>
<!--
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" desc="Setpoint in memory"/>
                 </LNodeType>
-->
                 <LNodeType id="FXOT 1" lnClass="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="NamPlt" type="NamPlt 1"/>
                          <!--Status information-->
                          <DO type="Op_1" name="Op"/>
                 </LNodeType>
                 <LNodeType id="FXUT 1" lnClass="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" lnClass="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="ACAlm 1" name="ACAlm"/>
        <DO type="MotPro 1" name="MotPro"/>
        <DO type="FilAlm 1" name="FilAlm"/>
</LNodeType>
<LNodeType id="KFIL _actuator" lnClass="KFIL" desc="Filter for the supply of 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="ACAlm_1" name="ACAlm"/>
        <DO type="MotPro_1" name="MotPro"/>
        <DO type="FilAlm_1" name="FilAlm"/>
</LNodeType>
<LNodeType id="KPMPa" lnClass="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="ACAlm" type="ACAlm_2"/>
        <DO name="BlkSt" type="BlkSt_2"/>
        <!-- Controls -->
        <DO name="Operate" type="Operate_1"/>
</LNodeType>
<LNodeType id="KTNK_1" lnClass="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="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="KTNK" air oil" lnClass="KTNK" desc="Air-oil pressure 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" lnClass="KVLV" desc="Idler system distributing</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"/>
                         <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" lnClass="KVLV" desc="Oil adjusting</p>
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" lnClass="KVLV" desc="Piloted 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"/>
                         <!-- 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" lnClass="KVLV" desc="Solenoid 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"/>
```

```
<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" lnClass="KVLV" desc="Adjustable restrictor 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 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 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" lnClass="KVLV" desc="Switch">
                         <!--Flow switches such as LN-->
                         <!-- Common logical node information -->
                         <DO name="Mod" type="Mod 1"/>
```

<!-- Status information -->

```
<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" lnClass="STMP" desc="Oil cooler temperature 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" lnClass="STMP" desc="Thermostat temperature</pre>
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" lnClass="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" lnClass="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 lvl sw" lnClass="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" lnClass="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 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" lnClass="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="NamPlt" type="NamPlt_1"/>
        <DO name="SmpRteRng" type="SmpRteRng 4"/>
```

```
<DO name="Pres" type="Pres 3"/>
                         <!-- Settings -->
                         <DO name="SmpRte" type="SmpRte_4"/>
                 </LNodeType>
                 <LNodeType id="TTMP 6" lnClass="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" lnClass="TTMP" desc="Thermostat 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="VlmCap 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 can not move
further)"/>
                 <DOType cdc="DPC" id="OpnPos 1" desc="Open end position reached (valve can not move
further)"/>
                 <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 range"/>
                 <DOType cdc="ING" id="SmpRteRng_2" desc="Available sampling rate range"/>
                 <br/> <DOType cdc="ING" id="SmpRteRng_3" desc="Available sampling rate 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"/>
```

<!-- Measured values -->

```
<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 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="ACAlm_2" desc="AC supply failure (fuse or other 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 (can not move from present</p>
position)"/>
        </DataTypeTemplates>
</SCL>
```