```
<?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>
        <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>
        <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>
      </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 />
```

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    <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="true" />
  </Services>
- <AccessPoint name="AP1">
  - <Server>
      <Authentication />
    - <LDevice inst="1" ldName="LD1pumpingUnit" desc="Pumping units
        (AC), (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 plant" />
        <LN lnType="ZMOTa" inst="1" lnClass="ZMOT" prefix="Act_"
          desc="(AC) Motor for the pump unit" />
        <LN lnType="ZMOTa" inst="2" lnClass="ZMOT" prefix="Act_"
          desc="(AD) Motor for the pump unit" />
        <LN lnType="ZMOTa" inst="3" lnClass="ZMOT" prefix="Act_"
          desc="(AE) Motor for the pump unit" />
        <LN lnType="KPMPa" inst="1" lnClass="KPMP" prefix="Act_"
          desc="(AC) Pump unit" />
        <LN lnType="KPMPa" inst="2" lnClass="KPMP" prefix="Act_"
          desc="(AD) Pump unit" />
        <LN lnType="KPMPa" inst="3" lnClass="KPMP" prefix="Act_"
          desc="(AE) Pump unit" />
        <LN lnType="KFIL_29" inst="1" lnClass="KFIL" prefix="Act_"
          desc="(29) Pumping unit suction filter" />
        <LN lnType="KFIL_29" inst="2" lnClass="KFIL" prefix="Act_"
          desc="(29) Pumping unit suction filter" />
        <LN lnType="KFIL_29" inst="3" lnClass="KFIL" prefix="Act_"
          desc="(29) Pumping unit suction filter" />
      </LDevice>
    - <LDevice inst="2" ldName="LD2idlerSystem" desc="The idler system
        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"
          prefix="Gv_" desc="(2) Idler system distributing valve" />
        <LN lnType="KVLV_idler_system" inst="2" lnClass="KVLV"
          prefix="Gv_" desc="(3) Idler system distributing valve" />
        <LN lnType="KVLV_idler_system" inst="3" lnClass="KVLV"
          prefix="Gv_" desc="(4) Idler system distributing valve" />
        <LN lnType="KVLV_piloted" inst="4" lnClass="KVLV" prefix="Gv_"
          desc="(5) idler system pilot valve" />
      </LDevice>
    - <LDevice inst="3" ldName="LD3oilCoolers" desc="The oil coolers (6)
        with adjusting isolating valve (36) and (37) flow switch (LN)">
        <LN0 lnType="LLN0_1" inst="" lnClass="LLN0" />
        <LN lnType="TTMP_6" inst="1" lnClass="TTMP" prefix="Tmp_"
          desc="(6) Oil cooler temperature" />
        <LN lnType="TTMP_6" inst="2" lnClass="TTMP" prefix="Tmp_"
```

```
    desc="(6) Oil cooler temperature" />
      <LN lnType="STMP6" inst="1" lnClass="STMP" prefix="Tmp_"
        desc="(6) Oil cooler temperature supervision" />
      <LN lnType="STMP6" inst="2" lnClass="STMP" prefix="Tmp_"
        desc="(6) Oil cooler temperature supervision" />
      <LN lnType="KVLV_adjusting_isolating_valve" inst="5"
        lnClass="KVLV" prefix="Tmp_" desc="(36) Oil adjusting isolating
        valve" />
      <LN lnType="KVLV_adjusting_isolating_valve" inst="6"
        lnClass="KVLV" prefix="Tmp_" desc="(37) Water adjusting
        isolating valve" />
      <LN lnType="KVLV_switch" inst="7" lnClass="KVLV" 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_"
        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" prefix="Pos_"
        desc="(BA) Safety solenoid-operated valve BA with position
        switches CI and CJ" />
      <LN lnType="TPOS_lvl_sw" inst="4" lnClass="TPOS" prefix="Pos_"
        desc="(BB) Safety solenoid-operated valve BB with position
        switches CK and CL" />
      <LN lnType="KVLV_restrictor" inst="11" lnClass="KVLV"
        prefix="Gv_" desc="(8) Adjustable restrictor valve enabling to
        obtain slackening during GvFLIM8" />
      <LN lnType="FLIM_" inst="1" lnClass="FLIM" prefix="Gv_" desc="(8)
        Wicket gate closure travel limit" />
      <LN lnType="KVLV_piloted" inst="12" lnClass="KVLV" prefix="Gv_"
        desc="(9) Piloted distributing valve" />
    </LDevice>
  - <LDevice inst="5" ldName="LD5filters" desc="Twit filter (10) for the
      supply of the actuator (EA)">
      <LN0 lnType="LLN0_1" inst="" lnClass="LLN0" />
      <LN lnType="KFIL_actuator" inst="4" lnClass="KFIL" prefix="Act_"
        desc="(10) Twin filter for the supply of actuator EA" />
      <LN lnType="KFIL_actuator" inst="5" lnClass="KFIL" prefix="Act_"
        desc="(10) Twin filter for the supply of actuator EA" />
    </LDevice>
  - <LDevice inst="6" ldName="LD6valves" desc="Solenoid-operated valve
      (BC) controlling the oil pressure-tank isolating valve, with position
      switches (CM) and (CN)">
```

```
        <LN0 lnType="LLN0_1" inst="" lnClass="LLN0" />
        <LN lnType="KVLV_solenoid_operated" inst="13" 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" prefix="Pa_"
          desc="(BC) PaKVLVbc position swiches CM and CN" />
        <LN lnType="KVLV_solenoid_operated" inst="14" lnClass="KVLV"
          prefix="Gv_" desc="(BD) Solenoid-operated valve controlling
          the wicket gate lock" />
        <LN lnType="TPOS_lvl_sw" inst="6" lnClass="TPOS" 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" />
        <LN lnType="TPOS_prs_sw" inst="7" lnClass="TPOS" prefix="Pa_"
          desc="(DA) Pressure switch" />
        <LN lnType="TPOS_prs_sw" inst="8" lnClass="TPOS" prefix="Pa_"
          desc="(LO) Pressure switch" />
        <LN lnType="TTMP_thermostat" inst="3" lnClass="TTMP"
          prefix="Tmp_" desc="(LI) Thermostat temperature" />
        <LN lnType="STMP_thermostat" inst="3" lnClass="STMP"
          prefix="Tmp_" desc="(LI) Thermostat temperature
          controller" />
        <LN lnType="TPOS_lvl_sw" inst="9" lnClass="TPOS" prefix="Lvl_"
          desc="(LG) Level switch" />
        <LN lnType="TPOS_lvl_sw" inst="10" lnClass="TPOS" prefix="Lvl_"
          desc="(LH) Level switch" />
        <LN lnType="TPRS_gauge" inst="2" lnClass="TPRS" prefix="Pa_"
          desc="(11) Pressure-gauge" />
        <LN lnType="TPRS_gauge" inst="3" lnClass="TPRS" prefix="Pa_"
          desc="(12) Pressure-gauge" />
        <LN lnType="TTMP_6" inst="4" lnClass="TTMP" prefix="Tmp_"
          desc="(13) Temperature" />
        <LN lnType="STMP_thermostat" inst="4" lnClass="STMP"
          prefix="Tmp_" desc="(13) Temperature controller" />
        <LN lnType="TLEV_gauge" inst="1" lnClass="TLEV" prefix="Lvl_"
          desc="(14) Level gauge" />
        <LN lnType="FXUT_1" inst="1" lnClass="FXUT" prefix="Lvl_"
          desc="(14) Level at under threshold" />
        <LN lnType="FXOT_1" inst="1" lnClass="FXOT" prefix="Lvl_"
          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>
```

```
- <LNodeType id="FLIM_" lnClass="FLIM" desc="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-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 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 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" />
    <!-- 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" 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" />
    <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 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" />
    <!-- Measured values -->
    <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
  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
  range" />
<DOType cdc="ING" id="SmpRteRng_2" desc="Available sampling rate
  range" />
<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" />
<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_1" desc="AC supply failure (fuse or other
      problem)" />
    <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 (cannot move from
      present position)" />
  </DataTypeTemplates>
</SCL>
```