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Making a positive difference for energy consumers

Long Term Development Statement (LTDS)
Appendix 4: LTDS Layered Profiles

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This document outlines the LTDS deviation and extended profiles used for the data exchanges of the proposed LTDS Common Information Model (CIM) revision.

Contents

1 LTDS Deviation and Extended Profiles

This section contains a subsection on each LTDS deviation and extended profile.

In the LTDS deviation profile subsections, diagrams detail the LTDS modifications to the underlying CGMES v3.0 profiles. Modifications are of two types:

- Changes to attribute cardinality and definition for LTDS (indicated by pink classes)
- Removal of classes not defined for LTDS (indicated by grey classes).

Attribute modifications in the LTDS deviation profiles are indicated as follows:

- Attributes optional in LTDS but required in CGMES are indicated with [0..1].
- Attributes required for LTDS but optional in CGMES are indicated by the absence of any cardinality specification.
- Attributes, either required or optional in CGMES, which are not defined in LTDS are indicated with an <<LTDSnotDefined>> stereotype.

In each subsection, the diagrams are followed by a table summarising the LTDS modifications to the CGMES profile definitions. Detailed class, attribute and association information for the underlying CGMES v3.0 profiles can be found in IEC 61970-600-2:2021[1].

In the LTDS extended profile sections, diagrams illustrate the LTDS profile augmentations to CGMES profiles. They show the classes, attributes, and associations defined for LTDS which are not defined in CGMES profiles. Note that the complete underlying information model - including base CIM, European extensions, Network Code extensions and Great Britain extensions - is available for use in defining LTDS Extended profiles. The presence of a class, attribute or association in an LTDS extended profile says nothing about what portion of the underlying information model is being used, it simply says that the class, attribute or association wasn't defined in CGMES.

In each subsection, the diagrams are followed by a set of machine generated documentation which provides descriptions of each extended class, attribute or association. It is important to note that the descriptions simply reflect the structure of the information model – they do not reflect required usage. (For example, the PowerElectronicsUnit class has 2 inherited associations documented for it: Equipment.EquipmentContainer and PowerSystemResource.PSRType. Neither are intended to be used by PowerElectronicsUnit objects.) The *LTDS Grid Modelling Guidelines* document contains usage guidance and population requirements.

[1] IEC 61970-600-2:2021 | IEC Webstore

1.1 LTDS Deviation Equipment profile

1.1.1 General

The LTDS Deviation Equipment profile defines deviations from the CGMES Equipment profile.

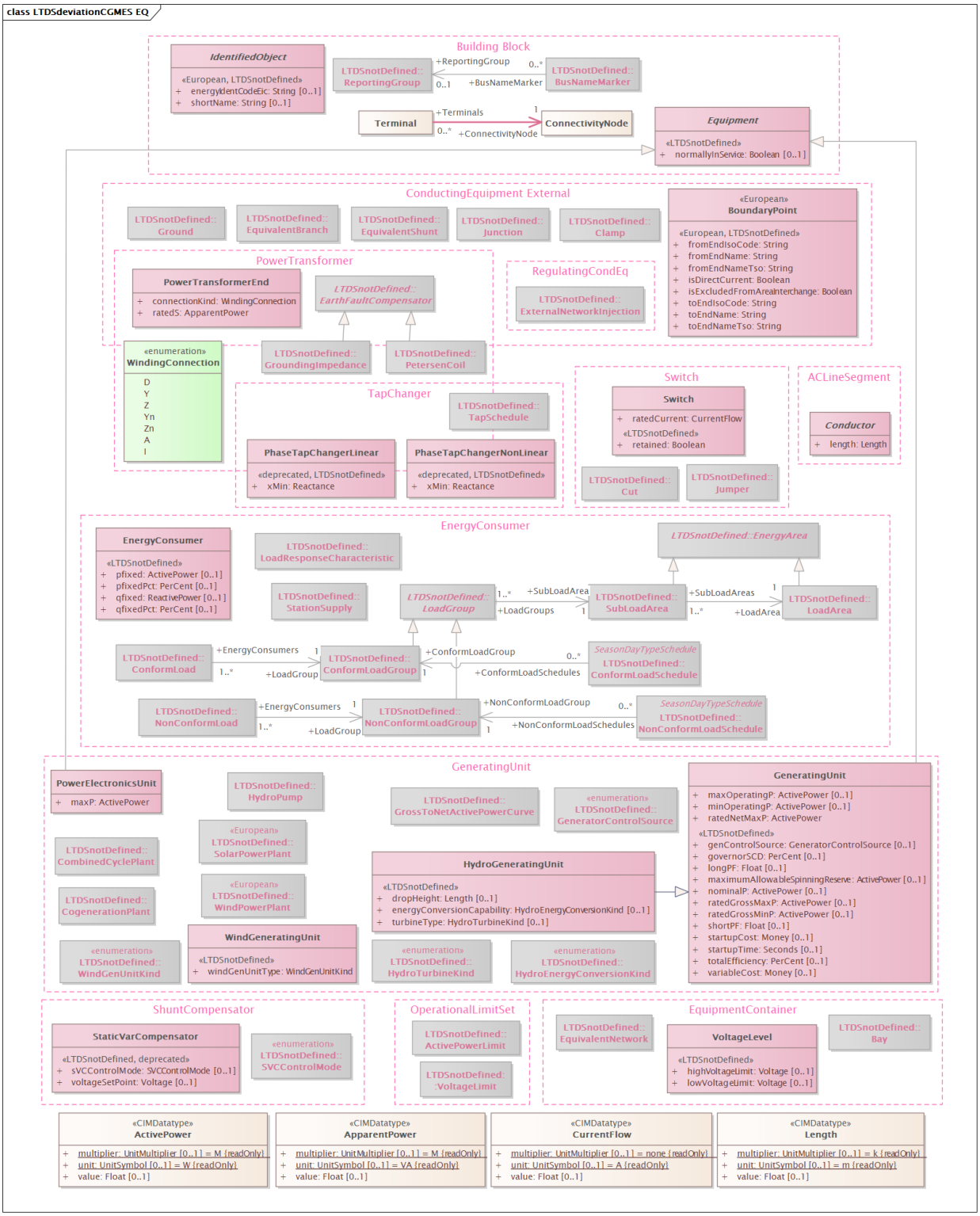

Figure 1 – Class diagram LTDSdeviationCGMESEquipmentProfile::LTDSdeviationCGMES EQ

Figure 1: This diagram shows the LTDS modifications to portions of the CGMES Equipment profile which are in scope for LTDS. Both the LTDS attribute-related modifications to the CGMES Equipment profile and the classes of the CGMES Equipment profile which are not

defined for LTDS appear on this diagram. Classes appearing on this diagram are also shown on the indicated layered profile diagram.

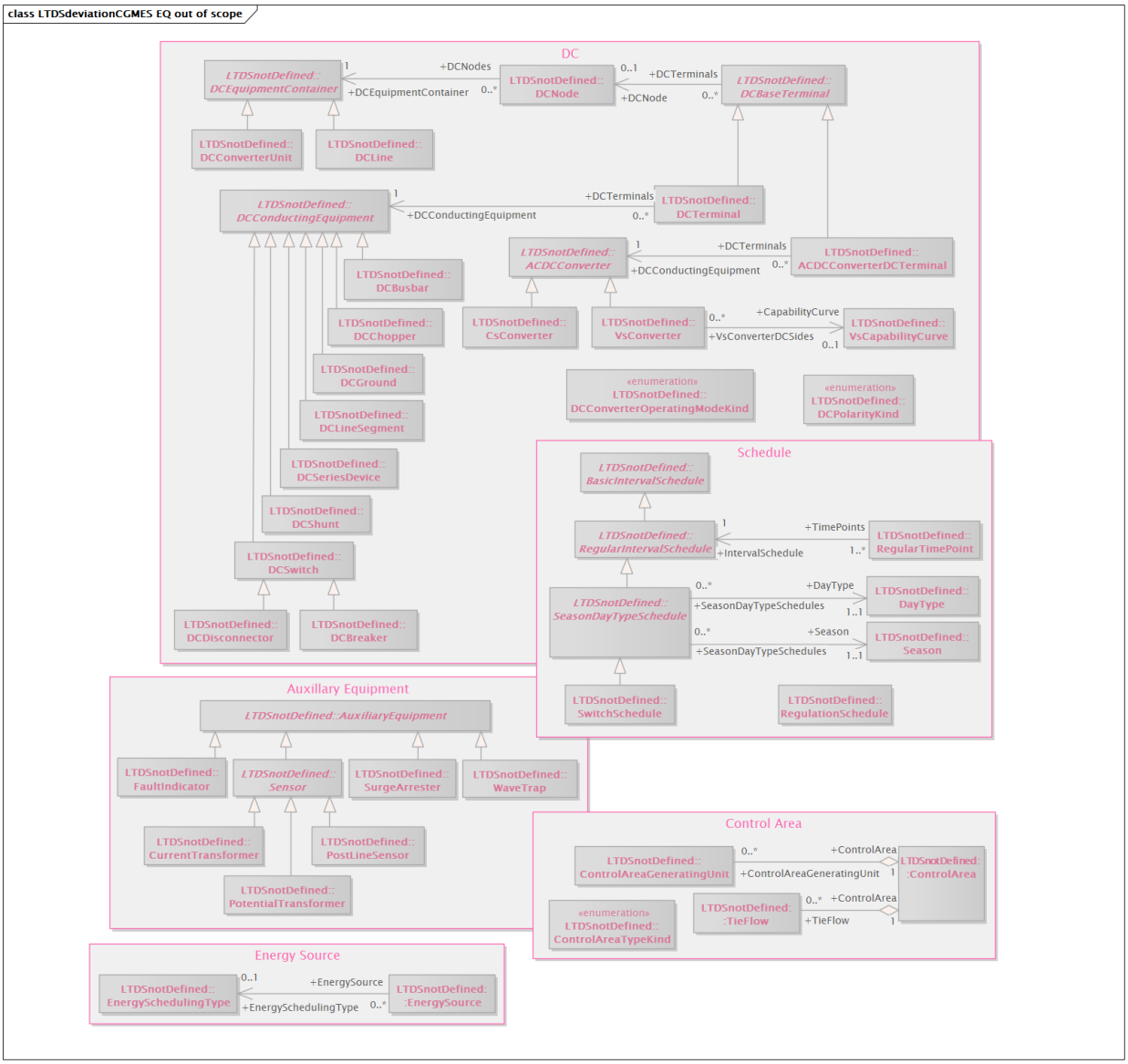

Figure 2 – Class diagram LTDSdeviationCGMESEquipmentProfile::LTDSdeviationCGMES EQ out of scope

Figure 2: This diagram shows additional classes of the CGMES Equipment profile which are not defined for LTDS. Classes appearing on this diagram relate to portions of the CGMES Equipment profile which are out of scope for LTDS.

Table 1 shows all the CGMES v3.0 attributes whose cardinality or definition is overwritten by the LTDS Deviation Equipment profile.

Table 1 – CGMES v3.0 attributes overwritten by LTDS Deviation Equipment profile

	CGMES v3.0	LTDS
BoundaryPoint.fromEndIsoCode	required	not defined
BoundaryPoint.fromEndName	required	not defined

BoundaryPoint.fromEndNameTso	required	not defined
BoundaryPoint.isDirectCurrent	[0..1]	not defined
BoundaryPoint.isExcludedFromAreaInterchange	[0..1]	not defined
BoundaryPoint.toEndIsoCode	required	not defined
BoundaryPoint.toEndName	required	not defined
BoundaryPoint.toEndNameTso	required	not defined
Conductor.length	[0..1]	required
EnergyConsumer.pfixed	[0..1]	not defined
EnergyConsumer.pfixedPct	[0..1]	not defined
EnergyConsumer.qfixed	[0..1]	not defined
EnergyConsumer.qfixedPct	[0..1]	not defined
Equipment.normallyInService	[0..1]	not defined
GeneratingUnit.genControlSource	[0..1]	not defined
GeneratingUnit.governorSCD	[0..1]	not defined
GeneratingUnit.longPF	[0..1]	not defined
GeneratingUnit.maximumAllowableSpinningReserve	[0..1]	not defined
GeneratingUnit.maxOperatingP	required	[0..1]
GeneratingUnit.minOperatingP	required	[0..1]
GeneratingUnit.nominalP	[0..1]	not defined
GeneratingUnit.ratedGrossMaxP	[0..1]	not defined
GeneratingUnit.ratedGrossMinP	[0..1]	not defined
GeneratingUnit.ratedNetMaxP	[0..1]	required
GeneratingUnit.shortPF	[0..1]	not defined
GeneratingUnit.startupCost	[0..1]	not defined
GeneratingUnit.startupTime	[0..1]	not defined
GeneratingUnit.totalEfficiency	[0..1]	not defined
GeneratingUnit.variableCost	[0..1]	not defined
HydroGeneratingUnit.dropHeight	[0..1]	not defined
HydroGeneratingUnit.energyConversionCapability	[0..1]	not defined
HydroGeneratingUnit.turbineType	[0..1]	not defined
IdentifiedObject.energyIdentCodeEic	[0..1]	not defined
IdentifiedObject.shortName	[0..1]	not defined
PhaseTapChangerLinear.xMin	required	not defined
PhaseTapChangerNonLinear.xMin	required	not defined
PowerElectronicsUnit.maxP	[0..1]	required
PowerTransformerEnd. connectionKind	[0..1]	required
PowerTransformerEnd.ratedS	[0..1]	required
StaticVarCompensator.sVCControlMode	[0..1]	not defined
StaticVarCompensator.voltageSetPoint	[0..1]	not defined
Switch.ratedCurrent	[0..1]	required
Switch.retained	required	not defined
VoltageLevel.highVoltageLimit	[0..1]	not defined
VoltageLevel.lowVoltageLimit	[0..1]	not defined
WindGeneratingUnit.windGenUnitType	required	not defined

Table 2 shows all the CGMES v3.0 associations whose cardinality is overwritten by the LTDS Deviation Equipment profile.

Table 2 – CGMES v3.0 associations overwritten by LTDS Deviation Equipment profile

	CGMES v3.0	LTDS
ConnectivityNode.ConnectivityNodeContainer	0..* 1	not defined
OperationalLimitSet.Equipment	0..* 0..1	not defined
Terminal.ConnectivityNode	0..* 0..1	0..* 1

1.2 LTDS Extended Equipment profile

1.2.1 General

The LTDS Extended Equipment profile defines extensions to the CGMES Equipment profile.

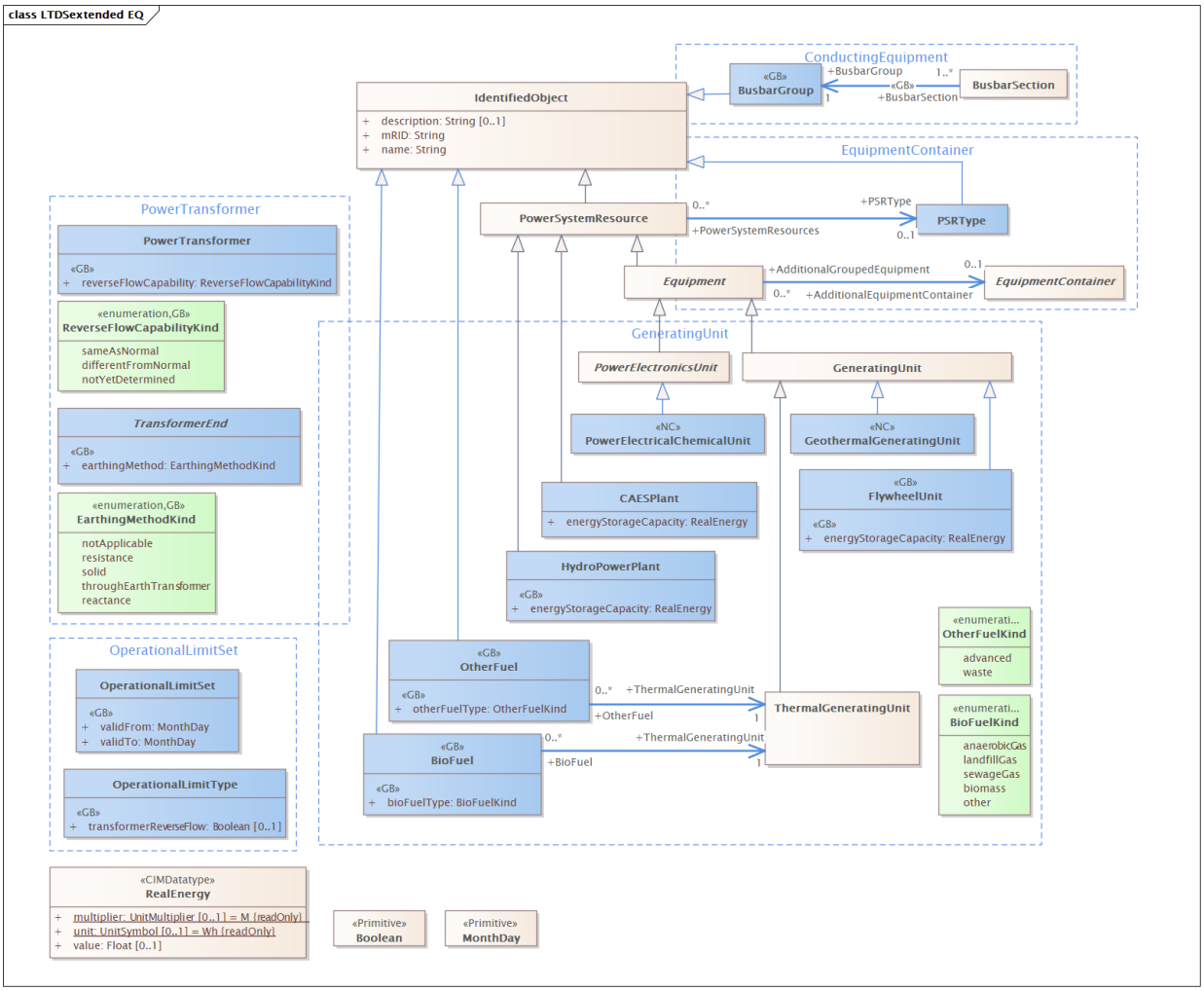

Figure 3 – Class diagram LTDSextendedEquipmentProfile::LTDSextended EQ

Figure 3: This diagram shows the LTDS profile extensions to the CGMES Equipment profile. Classes appearing on this diagram are also shown on the indicated layered profile diagram.

1.2.2 (GB) BioFuel

Inheritance path = IdentifiedObject

The bio fuel consumed by the non-nuclear thermal generating unit.

Table 3 shows all attributes of BioFuel.

Table 3 – Attributes of LTDSextendedEquipmentProfile::BioFuel

name	mult	type	description
bioFuelType	1..1	BioFuelKind	(GB) The type of bio fuel.

Table 4 shows all association ends of BioFuel with other classes.

Table 4 – Association ends of LTDSextendedEquipmentProfile::BioFuel with other classes

mult from	name	mult to	type	description
0..*	ThermalGeneratingUnit	1..1	ThermalGeneratingUnit	The generating unit that has this bio fuel.

1.2.3 (GB) BusbarGroup

Inheritance path = IdentifiedObject

Collection of busbar sections for the purpose of reporting results applicable to the group.

1.2.4 BusbarSection root class

A conductor, or group of conductors, with negligible impedance, that serve to connect other conducting equipment within a single substation.

Voltage measurements are typically obtained from voltage transformers that are connected to busbar sections. A bus bar section may have many physical terminals but for analysis is modelled with exactly one logical terminal.

Table 5 shows all association ends of BusbarSection with other classes.

Table 5 – Association ends of LTDSextendedEquipmentProfile::BusbarSection with other classes

mult from	name	mult to	type	description
1..*	BusbarGroup	1..1	BusbarGroup	(GB) The busbar group for this busbar section.

1.2.5 CAESPlant

Inheritance path = PowerSystemResource : IdentifiedObject

Compressed air energy storage plant.

Table 6 shows all attributes of CAESPlant.

Table 6 – Attributes of LTDSextendedEquipmentProfile::CAESPlant

name	mult	type	description
energyStorageCapacity	1..1	RealEnergy	The rated energy storage capacity. The attribute shall be a positive value.

Table 7 shows all association ends of CAESPlant with other classes.

Table 7 – Association ends of LTDSextendedEquipmentProfile::CAESPlant with other classes

mult from	name	mult to	type	description
0..*	PSRType	0..1	PSRType	inherited from: PowerSystemResource

1.2.6 (abstract) Equipment

Inheritance path = PowerSystemResource : IdentifiedObject

The parts of a power system that are physical devices, electronic or mechanical.

Table 8 shows all association ends of Equipment with other classes.

Table 8 – Association ends of LTDSextendedEquipmentProfile::Equipment with other classes

mult from	name	mult to	type	description
0..*	AdditionalEquipmentContainer	0..1	EquipmentContainer	Additional equipment container beyond the primary equipment container. The equipment is contained in another equipment container, but also grouped with this equipment container.
0..*	PSRType	0..1	PSRType	inherited from: PowerSystemResource

1.2.7 (abstract) EquipmentContainer root class

A modelling construct to provide a root class for containing equipment.

1.2.8 (GB) FlywheelUnit

Inheritance path = GeneratingUnit : Equipment : PowerSystemResource : IdentifiedObject

A flywheel is a mechanical device which uses the conservation of angular momentum to store rotational energy. Therefore, it is a heavy wheel attached to a rotating shaft so as to smooth out delivery of power from a motor to a machine. The inertia of the flywheel opposes and moderates fluctuations in the speed of the engine and stores the excess energy for intermittent use.

Table 9 shows all attributes of FlywheelUnit.

Table 9 – Attributes of LTDSextendedEquipmentProfile::FlywheelUnit

name	mult	type	description
energyStorageCapacity	1..1	RealEnergy	(GB) The rated energy storage capacity. The attribute shall be a positive value.

Table 10 shows all association ends of FlywheelUnit with other classes.

Table 10 – Association ends of LTDSextendedEquipmentProfile::FlywheelUnit with other classes

mult from	name	mult to	type	description
0..*	AdditionalEquipmentContainer	0..1	EquipmentContainer	inherited from: Equipment
0..*	PSRType	0..1	PSRType	inherited from: PowerSystemResource

1.2.9 GeneratingUnit

Inheritance path = Equipment : PowerSystemResource : IdentifiedObject

A single or set of synchronous machines for converting mechanical power into alternating-current power. For example, individual machines within a set may be defined for scheduling purposes while a single control signal is derived for the set. In this case there would be a GeneratingUnit for each member of the set and an additional GeneratingUnit corresponding to the set.

Table 11 shows all association ends of GeneratingUnit with other classes.

Table 11 – Association ends of LTDSextendedEquipmentProfile::GeneratingUnit with other classes

mult from	name	mult to	type	description
0..*	AdditionalEquipmentContainer	0..1	EquipmentContainer	inherited from: Equipment
0..*	PSRType	0..1	PSRType	inherited from: PowerSystemResource

1.2.10(NC) GeothermalGeneratingUnit

Inheritance path = GeneratingUnit : Equipment : PowerSystemResource : IdentifiedObject

Generating unit that is generating electrical power from geothermal energy. Technologies in use include dry steam power stations, flash steam power stations and binary cycle power stations.

Table 12 shows all association ends of GeothermalGeneratingUnit with other classes.

Table 12 – Association ends of LTDSextendedEquipmentProfile::GeothermalGeneratingUnit with other classes

mult from	name	mult to	type	description
0..*	AdditionalEquipmentContainer	0..1	EquipmentContainer	inherited from: Equipment
0..*	PSRType	0..1	PSRType	inherited from: PowerSystemResource

1.2.11HydroPowerPlant

Inheritance path = PowerSystemResource : IdentifiedObject

A hydro power station which can generate or pump. When generating, the generator turbines receive water from an upper reservoir. When pumping, the pumps receive their water from a lower reservoir.

Table 13 shows all attributes of HydroPowerPlant.

Table 13 – Attributes of LTDSextendedEquipmentProfile::HydroPowerPlant

name	mult	type	description
energyStorageCapacity	1..1	RealEnergy	(GB) The rated energy storage capacity. The attribute shall be a positive value.

Table 14 shows all association ends of HydroPowerPlant with other classes.

Table 14 – Association ends of LTDSextendedEquipmentProfile::HydroPowerPlant with other classes

mult from	name	mult to	type	description
0..*	PSRType	0..1	PSRType	inherited from: PowerSystemResource

1.2.12IdentifiedObject root class

This is a root class to provide common identification for all classes needing identification and naming attributes.

1.2.13OperationalLimitSet root class

A set of limits associated with equipment. Sets of limits might apply to a specific temperature, or season for example. A set of limits may contain different severities of limit levels that would apply to the same equipment. The set may contain limits of different types such as apparent power and current limits or high and low voltage limits that are logically applied together as a set.

Table 15 shows all attributes of OperationalLimitSet.

Table 15 – Attributes of LTDSextendedEquipmentProfile::OperationalLimitSet

name	mult	type	description
validFrom	1..1	MonthDay	(GB) Defines the beginning of the validity period of the operational limit set.
validTo	1..1	MonthDay	(GB) Defines the end of the validity period of the operational limit set. Used only in combination with validFrom and in case duration is not provided.

1.2.14OperationalLimitType root class

The operational meaning of a category of limits.

Table 16 shows all attributes of OperationalLimitType.

Table 16 – Attributes of LTDSextendedEquipmentProfile::OperationalLimitType

name	mult	type	description
transformerReverseFlow	0..1	Boolean	(GB) Limit applies to transformer flow in reverse of normal (high to low voltage level) direction. High is the winding that has TransformerEnd.endNumber equal to 1. If true, the OperationalLimitType defines a type for reverse limit.

1.2.15(GB) OtherFuel

Inheritance path = IdentifiedObject

The other fuel consumed by the non-nuclear thermal generating unit.

Table 17 shows all attributes of OtherFuel.

Table 17 – Attributes of LTDSextendedEquipmentProfile::OtherFuel

name	mult	type	description
otherFuelType	1..1	OtherFuelKind	(GB) The type of other fuel.

Table 18 shows all association ends of OtherFuel with other classes.

Table 18 – Association ends of LTDSextendedEquipmentProfile::OtherFuel with other classes

mult from	name	mult to	type	description
0..*	ThermalGeneratingUnit	1..1	ThermalGeneratingUnit	The generating unit that has this fuel.

1.2.16(NC) PowerElectricalChemicalUnit

Inheritance path = PowerElectronicsUnit : Equipment : PowerSystemResource : IdentifiedObject

An unit capable of either generating electrical energy from chemical reactions or using electrical energy to cause chemical reactions.

Table 19 shows all association ends of PowerElectricalChemicalUnit with other classes.

Table 19 – Association ends of LTDSextendedEquipmentProfile::PowerElectricalChemicalUnit with other classes

mult from	name	mult to	type	description
0..*	AdditionalEquipmentContainer	0..1	EquipmentContainer	inherited from: Equipment
0..*	PSRType	0..1	PSRType	inherited from: PowerSystemResource

1.2.17(abstract) PowerElectronicsUnit

Inheritance path = Equipment : PowerSystemResource : IdentifiedObject

A generating unit or battery or aggregation that connects to the AC network using power electronics rather than rotating machines.

Table 20 shows all association ends of PowerElectronicsUnit with other classes.

Table 20 – Association ends of LTDSextendedEquipmentProfile::PowerElectronicsUnit with other classes

mult from	name	mult to	type	description
0..*	AdditionalEquipmentContainer	0..1	EquipmentContainer	inherited from: Equipment
0..*	PSRType	0..1	PSRType	inherited from: PowerSystemResource

1.2.18PowerSystemResource

Inheritance path = IdentifiedObject

A power system resource (PSR) can be an item of equipment such as a switch, an equipment container containing many individual items of equipment such as a substation, or an organisational entity such as sub-control area. Power system resources can have measurements associated.

Table 21 shows all association ends of PowerSystemResource with other classes.

Table 21 – Association ends of LTDSextendedEquipmentProfile::PowerSystemResource with other classes

mult from	name	mult to	type	description
0..*	PSRType	0..1	PSRType	Custom classification for this power system resource.

1.2.19 PowerTransformer root class

An electrical device consisting of two or more coupled windings, with or without a magnetic core, for introducing mutual coupling between electric circuits. Transformers can be used to control voltage and phase shift (active power flow).

A power transformer may be composed of separate transformer tanks that need not be identical.

A power transformer can be modelled with or without tanks and is intended for use in both balanced and unbalanced representations. A power transformer typically has two terminals, but may have one (grounding), three or more terminals.

The inherited association ConductingEquipment.BaseVoltage should not be used. The association from TransformerEnd to BaseVoltage should be used instead.

Table 22 shows all attributes of PowerTransformer.

Table 22 – Attributes of LTDSextendedEquipmentProfile::PowerTransformer

name	mult	type	description
reverseFlowCapability	1..1	ReverseFlowCapabilityKind	(GB) Nature of transformer's reverse flow capability.

1.2.20 PSRType

Inheritance path = IdentifiedObject

Classifying instances of the same class, e.g. overhead and underground ACLineSegments. This classification mechanism is intended to provide flexibility outside the scope of this document, i.e. provide customisation that is non standard.

1.2.21 ThermalGeneratingUnit

Inheritance path = GeneratingUnit : Equipment : PowerSystemResource : IdentifiedObject

A generating unit whose prime mover could be a steam turbine, combustion turbine, or diesel engine.

Table 23 shows all association ends of ThermalGeneratingUnit with other classes.

Table 23 – Association ends of LTDSextendedEquipmentProfile::ThermalGeneratingUnit with other classes

mult from	name	mult to	type	description
0..*	AdditionalEquipmentContainer	0..1	EquipmentContainer	inherited from: Equipment
0..*	PSRType	0..1	PSRType	inherited from: PowerSystemResource

1.2.22(abstract) TransformerEnd root class

A conducting connection point of a power transformer. It corresponds to a physical transformer winding terminal. In earlier CIM versions, the TransformerWinding class served a similar purpose, but this class is more flexible because it associates to terminal but is not a specialization of ConductingEquipment.

Table 24 shows all attributes of TransformerEnd.

Table 24 – Attributes of LTDSextendedEquipmentProfile::TransformerEnd

name	mult	type	description
earthingMethod	1..1	EarthingMethodKind	(GB) Type of grounding.

1.2.23(GB) BioFuelKind enumeration

Kinds of bio fuel.

Table 25 shows all literals of BioFuelKind.

Table 25 – Literals of LTDSextendedEquipmentProfile::BioFuelKind

literal	value	description
anaerobicGas		Anaerobic gas.
landfillGas		Landfill gas.
sewageGas		Sewage gas.
biomass		Biomass.
other		Other.

1.2.24(GB) EarthingMethodKind enumeration

The method of grounding employed on a transformer winding.

Table 26 shows all literals of EarthingMethodKind.

Table 26 – Literals of LTDSextendedEquipmentProfile::EarthingMethodKind

literal	value	description
resistance		Resistance grounding (LTDS), Neutral grounding resistors (GC0139).
solid		Solid grounding (LTDS), Solid (GC0139).
throughEarthTransformer		Through earth transformer (LTDS), Through earthing transformer (GC0139).

literal	value	description
reactance		Reactance grounding (LTDS).
notApplicable		Not earthed.

1.2.25 (GB) OtherFuelKind enumeration

Kinds of other fuels.

Table 27 shows all literals of OtherFuelKind.

Table 27 – Literals of LTDSextendedEquipmentProfile::OtherFuelKind

literal	value	description
advanced		Advanced fuel.
waste		Waste fuel.

1.2.26 (GB) ReverseFlowCapabilityKind enumeration

Describes the transformer's reverse flow capability with respect to its normal flow capability.

Table 28 shows all literals of ReverseFlowCapabilityKind.

Table 28 – Literals of LTDSextendedEquipmentProfile::ReverseFlowCapabilityKind

literal	value	description
sameAsNormal		Transformer's reverse flow capability is same as its normal direction flow capability.
differentFromNormal		Transformer's reverse flow capability is different from its normal direction flow capability.
notYetDetermined		Transformer's reverse flow capability is unknown.

1.2.27 RealEnergy datatype

Real electrical energy.

1.2.28 Boolean primitive

A type with the value space "true" and "false".

1.2.29 MonthDay primitive

MonthDay format as "--mm-dd", which conforms with XSD data type gMonthDay.

1.3 LTDS Deviation Short Circuit profile

1.3.1 General

The LTDS Deviation Short Circuit profile defines deviations from the CGMES Short Circuit profile.

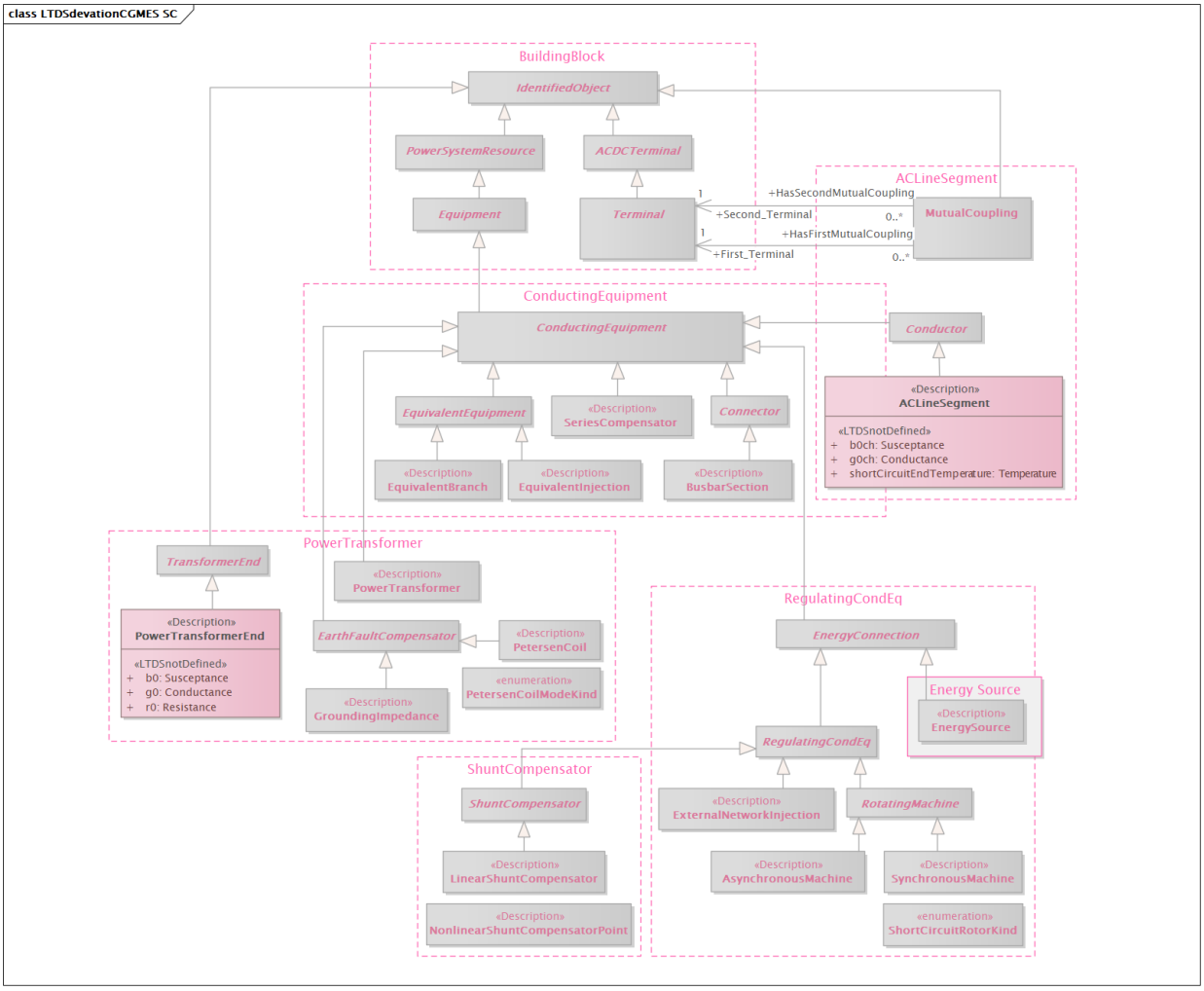

Figure 4 – Class diagram LTDSdeviationCGMESShortCircuitProfile::LTDSdevationCGMES SC

Figure 4: This diagram shows both the LTDS attribute-related modifications to the CGMES Short Circuit profile and the classes of the CGMES Short Circuit profile which are not defined for LTDS. Classes appearing on this diagram (with the exception of EnergySource) are also shown on the indicated layered profile diagram.

Table 29 shows all the CGMES v3.0 attributes whose cardinality or definition is overwritten by the LTDS Deviation Short Circuit profile.

Table 29 – CGMES v3.0 attributes overwritten by LTDS Deviation Short Circuit profile

	CGMES v3.0	LTDS
ACLineSegment.b0ch	required	not defined

ACLineSegment.g0ch	required	not defined
ACLineSegment.shortCircuitEndTemperature	required	not defined
PowerTransformerEnd.b0	required	not defined
PowerTransformerEnd.g0	required	not defined
PowerTransformerEnd.r0	required	not defined

1.4 LTDS Extended Short Circuit profile

1.4.1 General

The LTDS Extended Short Circuit profile defines extensions to the CGMES Short Circuit profile.

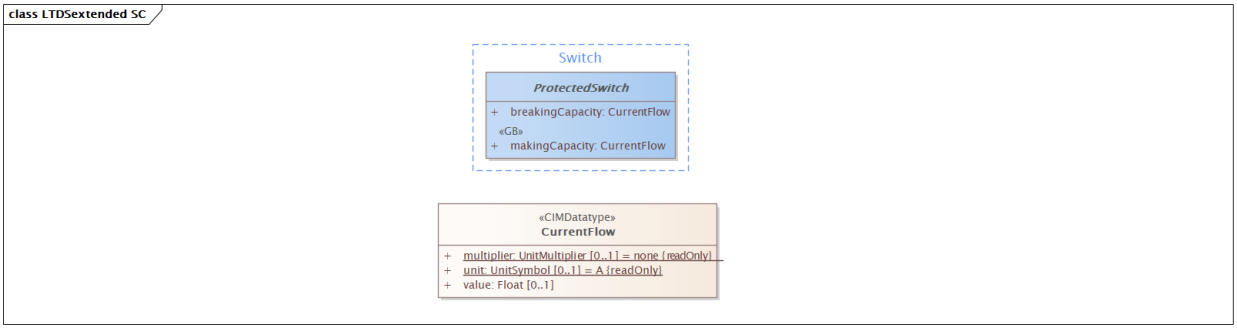

Figure 5 – Class diagram LTDSextendedShortCircuitProfile::LTDSextended SC

Figure 5: This diagram shows the LTDS profile extensions to the CGMES Short Circuit profile. Classes appearing on this diagram are also shown on the indicated layered profile diagram.

1.4.2 (abstract) ProtectedSwitch root class

A ProtectedSwitch is a switching device that can be operated by ProtectionEquipment. Table 30 shows all attributes of ProtectedSwitch.

Table 30 – Attributes of LTDSextendedShortCircuitProfile::ProtectedSwitch

name	mul t	type	description
breakingCapacity	1..1	CurrentFlow	The maximum fault current a breaking device can break safely under prescribed conditions of use.
makingCapacity	1..1	CurrentFlow	(GB) The making current of the circuit breaker is the maximum peak value of the current that the breaker can interrupt without any damage if the breaker is closed at fault.

1.4.3 CurrentFlow datatype

Electrical current with sign convention: positive flow is out of the conducting equipment into the connectivity node. Can be both AC and DC.

1.5 LTDS Deviation Geographical Location profile

1.5.1 General

The LTDS Deviation Geographical Location profile defines deviations from the CGMES Geographical Location profile.

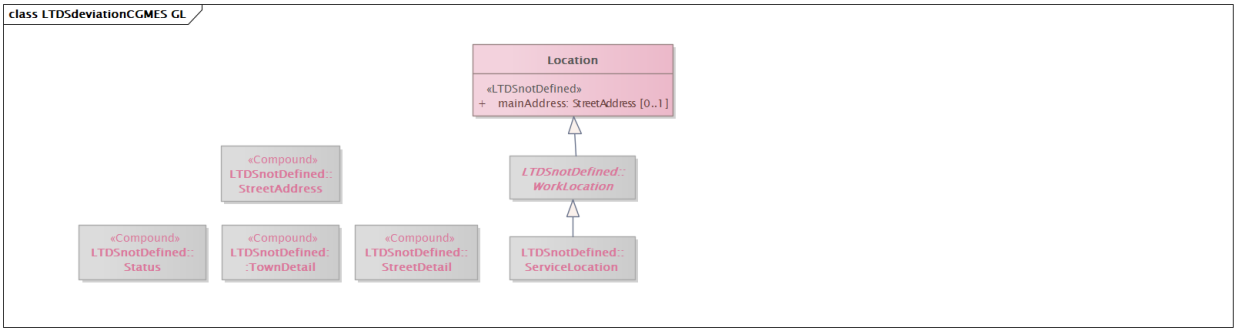

Figure 6 – Class diagram LTDSdeviationCGMESGeographicalLocationProfile::LTDSdeviationCGMES GL

Figure 6: This diagram shows both the LTDS attribute-related modifications to the CGMES Geographical Location profile and the classes of the CGMES Geographical Location profile which are not defined for LTDS.

Table 31 shows all the CGMES v3.0 attributes whose cardinality or definition is overwritten by the LTDS Deviation Geographical Location profile.

Table 31 – CGMES v3.0 attributes overwritten by LTDS Deviation Geographical Location profile

	CGMES v3.0	LTDS
Location.mainAddress	[0..1]	not defined

1.6 LTDS Extended Geographical Location profile

1.6.1 General

The LTDS Extended Geographical Location profile defines extensions to the CGMES Geographical Location profile.

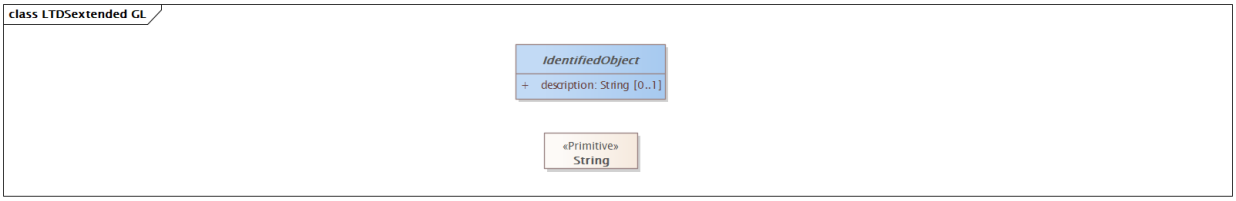

Figure 7 – Class diagram LTDSextendedGeographicalLocationProfile::LTDSextended GL

Figure 7: This diagram shows the LTDS profile extensions to the CGMES Geographical Location profile.

1.6.2 (abstract) IdentifiedObject root class

This is a root class to provide common identification for all classes needing identification and naming attributes.

Table 32 shows all attributes of IdentifiedObject.

Table 32 – Attributes of LTDSextendedGeographicalLocationProfile::IdentifiedObject

name	mult	type	description
description	0..1	String	The description is a free human readable text describing or naming the object. It may be non unique and may not correlate to a naming hierarchy.

1.6.3 String primitive

A string consisting of a sequence of characters. The character encoding is UTF-8. The string length is unspecified and unlimited.

1.7 LTDS Deviation Steady State Hypothesis profile

1.7.1 General

The LTDS Deviation Steady State Hypothesis profile defines deviations from the CGMES Steady State Hypothesis profile.

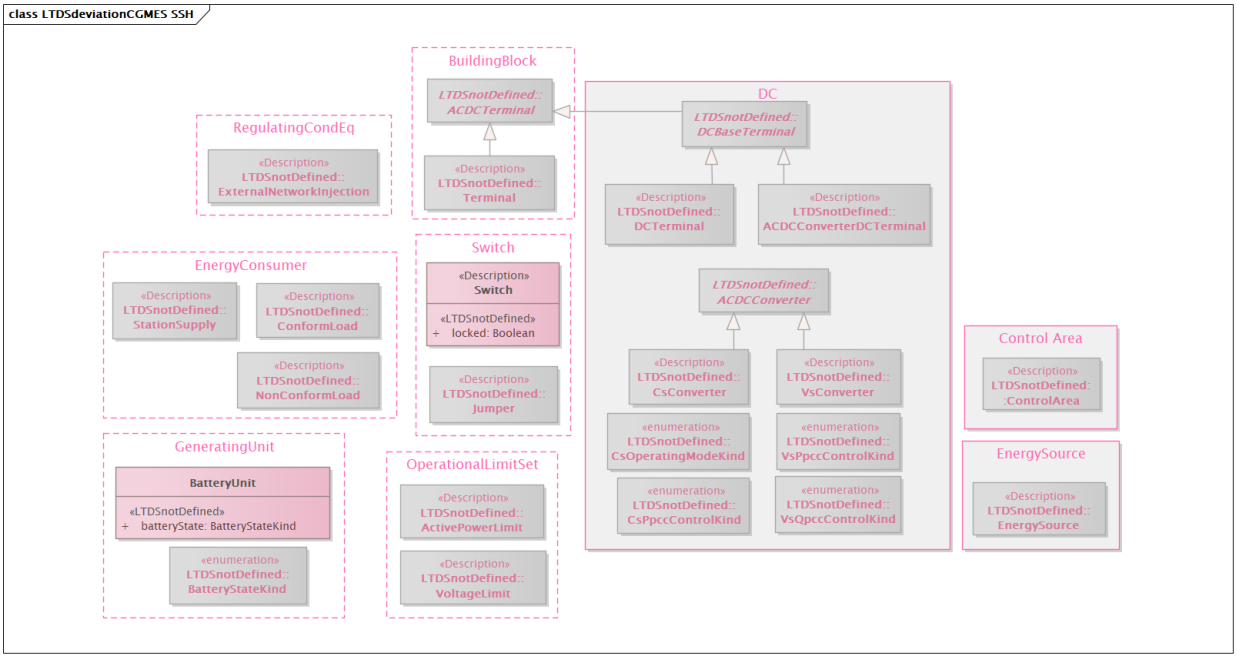

Figure 8 – Class diagram LTDSdeviationCGMESSteadyStateHypothesisProfile::LTDSdeviationCGMES SSH

Figure 8: This diagram shows all LTDS modifications to the CGMES Steady State Hypothesis profile. LTDS attribute-related modifications are indicated in pink classes. CGMES Steady State Hypothesis profile classes which are not defined for LTDS appear in grey. Classes in pink dotted background boxes are also shown on the indicated layered profile diagram. Classes in solid pink-bordered grey background boxes are from portions of the CGMES Steady State Hypothesis profile which are out of LTDS scope.

Table 33 shows all the CGMES v3.0 attributes whose cardinality or definition is overwritten by the LTDS Deviation Steady State Hypothesis profile.

Table 33 – CGMES v3.0 attributes overwritten by LTDS Deviation Steady State Hypothesis profile

	CGMES v3.0	LTDS
BatteryUnit.batteryState	required	not defined
Switch.locked	required	not defined

1.8 LTDS Extended Steady State Hypothesis profile

1.8.1 General

The LTDS Extended Steady State Hypothesis profile defines extensions to the CGMES Steady State Hypothesis profile.

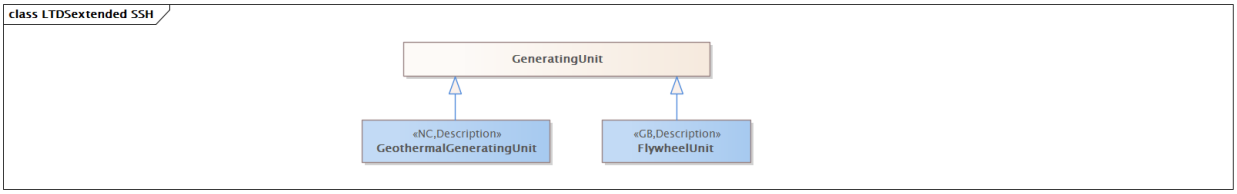

Figure 9 – Class diagram LTDSextendedSteadyStateHypothesisProfile::LTDSextended SSH

Figure 9: This diagram shows the LTDS profile extensions to the CGMES Steady State Hypothesis profile.

1.8.2 (GB,Description) FlywheelUnit

Inheritance path = GeneratingUnit

A flywheel is a mechanical device which uses the conservation of angular momentum to store rotational energy. Therefore, it is a heavy wheel attached to a rotating shaft so as to smooth out delivery of power from a motor to a machine. The inertia of the flywheel opposes and moderates fluctuations in the speed of the engine and stores the excess energy for intermittent use.

1.8.3 GeneratingUnit root class

A single or set of synchronous machines for converting mechanical power into alternating-current power. For example, individual machines within a set may be defined for scheduling purposes while a single control signal is derived for the set. In this case there would be a GeneratingUnit for each member of the set and an additional GeneratingUnit corresponding to the set.

1.8.4 (NC,Description) GeothermalGeneratingUnit

Inheritance path = GeneratingUnit

Generating unit that is generating electrical power from geothermal energy. Technologies in use include dry steam power stations, flash steam power stations and binary cycle power stations.

1.9 LTDS Deviation Topology profile

The LTDS Deviation Topology profile defines deviations from the CGMES Topology profile.

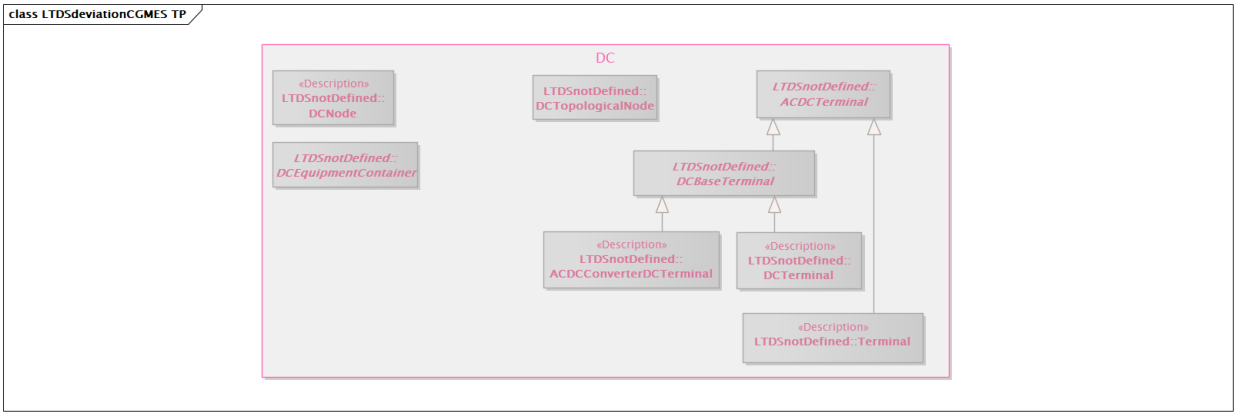

Figure 10 – Class diagram LTDSdeviationCGMESTopologyProfile::LTDSdeviationCGMES TP

Figure 10: This diagram shows the classes of the CGMES Topology profile which are not defined for LTDS.

1.10 LTDS Deviation State Variables profile

The LTDS Deviation State Variables profile defines deviations from the CGMES State Variables profile.

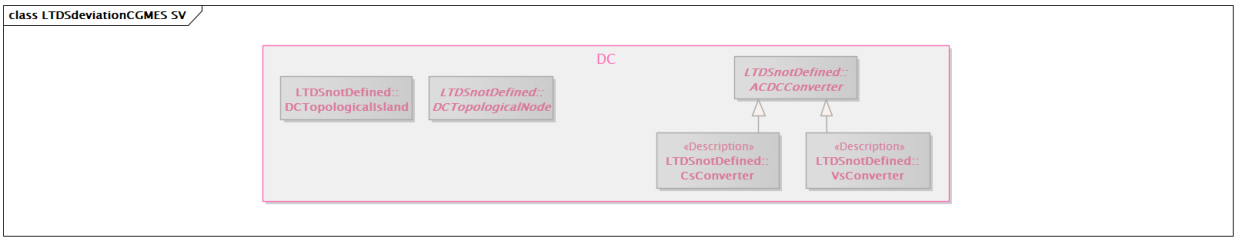

Figure 11 – Class diagram LTDSdeviationCGMESStateVariablesProfile::LTDSdeviationCGMES SV

Figure 11: This diagram shows the classes of the CGMES State Variables profile which are not defined for LTDS.

1.11 LTDS System Capacity profile

1.11.1General

The LTDS System Capacity extension profile is an LTDS-specific profile which defines the exchange of busbar group-related information: short circuit results, system capacities, and loadings.

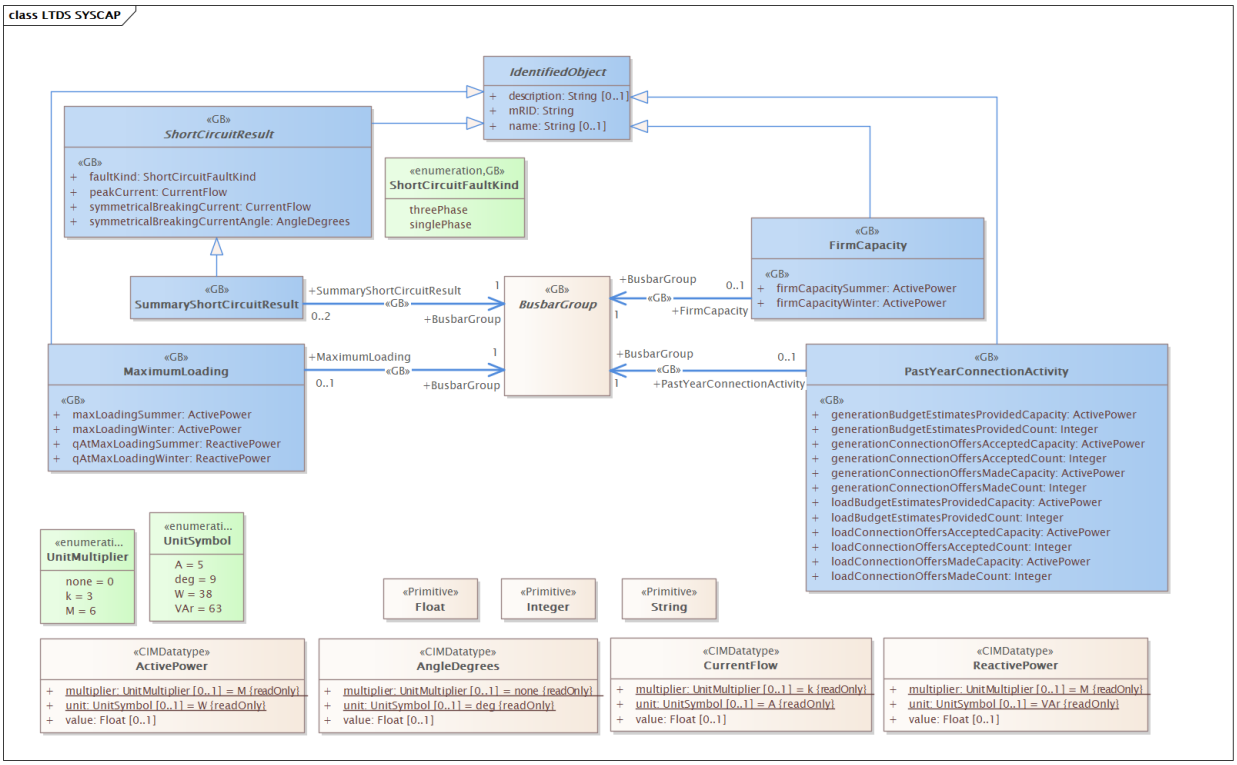

Figure 12 – Class diagram LTDSSystemCapacityProfile::LTDS SYSCAP

Figure 12: This diagram shows the classes of the LTDS System Capacity profile.

1.11.2(abstract,GB) BusbarGroup root class

Collection of busbar sections for the purpose of reporting results applicable to the group.

1.11.3(GB) FirmCapacity

Inheritance path = IdentifiedObject

Seasonal busbar group firm capacity information.

Table 34 shows all attributes of FirmCapacity.

Table 34 – Attributes of LTDSSystemCapacityProfile::FirmCapacity

name	mult	type	description
firmCapacitySummer	1..1	ActivePower	(GB) Summer firm capacity.
firmCapacityWinter	1..1	ActivePower	(GB) Winter firm capacity.

name	mult	type	description
description	0..1	String	inherited from: IdentifiedObject
mRID	1..1	String	inherited from: IdentifiedObject
name	0..1	String	inherited from: IdentifiedObject

Table 35 shows all association ends of FirmCapacity with other classes.

Table 35 – Association ends of LTDSSystemCapacityProfile::FirmCapacity with other classes

mult from	name	mult to	type	description
0..1	BusbarGroup	1..1	BusbarGroup	(GB) The busbar group that has this firm capacity.

1.11.4(abstract) IdentifiedObject root class

This is a root class to provide common identification for all classes needing identification and naming attributes.

Table 36 shows all attributes of IdentifiedObject.

Table 36 – Attributes of LTDSSystemCapacityProfile::IdentifiedObject

name	mult	type	description
description	0..1	String	The description is a free human readable text describing or naming the object. It may be non unique and may not correlate to a naming hierarchy.
mRID	1..1	String	Master resource identifier issued by a model authority. The mRID is unique within an exchange context. Global uniqueness is easily achieved by using a UUID, as specified in RFC 4122, for the mRID. The use of UUID is strongly recommended. For CIMXML data files in RDF syntax conforming to IEC 61970-552, the mRID is mapped to rdf:ID or rdf:about attributes that identify CIM object elements.
name	0..1	String	The name is any free human readable and possibly non unique text naming the object.

1.11.5(GB) MaximumLoading

Inheritance path = IdentifiedObject

Information on maximum busbar group loading during summer and winter periods.

Information may be historic or forecast.

Table 37 shows all attributes of MaximumLoading.

Table 37 – Attributes of LTDSSystemCapacityProfile::MaximumLoading

name	mult	type	description
maxLoadingSummer	1..1	ActivePower	(GB) Summer active power maximum loading.
maxLoadingWinter	1..1	ActivePower	(GB) Winter active power maximum loading.
qAtMaxLoadingSummer	1..1	ReactivePower	(GB) Reactive power at time of summer active power maximum loading.
qAtMaxLoadingWinter	1..1	ReactivePower	(GB) Reactive power at time of winter active power maximum loading.
description	0..1	String	inherited from: IdentifiedObject
mRID	1..1	String	inherited from: IdentifiedObject
name	0..1	String	inherited from: IdentifiedObject

Table 38 shows all association ends of MaximumLoading with other classes.

Table 38 – Association ends of LTDSSystemCapacityProfile::MaximumLoading with other classes

mult from	name	mult to	type	description
0..1	BusbarGroup	1..1	BusbarGroup	(GB) The busbar group that has maximum loading.

1.11.6(GB) PastYearConnectionActivity

Inheritance path = IdentifiedObject

A summary of load and generation connection activity over the last year related to a given busbar group. Counts and capacities of proposed connections, aggregated at the busbar group level, are provided for the following activities: budget estimates provided, connections offered and connection offers accepted.

Table 39 shows all attributes of PastYearConnectionActivity.

Table 39 – Attributes of LTDSSystemCapacityProfile::PastYearConnectionActivity

name	mult	type	description
generationBudgetEstimatesProvidedCount	1..1	Integer	(GB) Count of generation connection requests associated with a busbar group for which budget estimates were provided in the last year.
generationBudgetEstimatesProvidedCapacity	1..1	ActivePower	(GB) Total active power capacity of connection requests counted by generationBudgetEstimatesProvidedCount.
generationConnectionOffersMadeCount	1..1	Integer	(GB) Count of generation connection requests associated with a busbar group for which connection offers were made in the last year.
generationConnectionOffersMadeCapacity	1..1	ActivePower	(GB) Total active power capacity of connection requests counted by generationConnectionOffersMadeCount.

name	mult	type	description
generationConnectionOffersAcceptedCount	1..1	Integer	(GB) Count of generation connection requests associated with a busbar group for which connection offers were accepted in the last year.
generationConnectionOffersAcceptedCapacity	1..1	ActivePower	(GB) Total active power capacity of connection requests counted by generationConnectionOffersAcceptedCount.
loadBudgetEstimatesProvidedCount	1..1	Integer	(GB) Count of load connection requests associated with a busbar group for which budget estimates were provided in the last year.
loadBudgetEstimatesProvidedCapacity	1..1	ActivePower	(GB) Total active power capacity of connection requests counted by loadBudgetEstimatesProvidedCount.
loadConnectionOffersMadeCount	1..1	Integer	(GB) Count of load connection requests associated with a busbar group for which connection offers were made in the last year.
loadConnectionOffersMadeCapacity	1..1	ActivePower	(GB) Total active power capacity of connection requests counted by loadConnectionOffersMadeCount.
loadConnectionOffersAcceptedCount	1..1	Integer	(GB) Count of load connection requests associated with the busbar group for which connection offers were accepted in the last year.
loadConnectionOffersAcceptedCapacity	1..1	ActivePower	(GB) Total active power capacity of connection requests counted by loadConnectionOffersAcceptedCount.
description	0..1	String	inherited from: IdentifiedObject
mRID	1..1	String	inherited from: IdentifiedObject
name	0..1	String	inherited from: IdentifiedObject

Table 40 shows all association ends of PastYearConnectionActivity with other classes.

Table 40 – Association ends of LTDSSystemCapacityProfile::PastYearConnectionActivity with other classes

mult from	name	mult to	type	description
0..1	BusbarGroup	1..1	BusbarGroup	(GB) The busbar group that has this past year connection activity.

1.11.7(abstract,GB) ShortCircuitResult

Inheritance path = IdentifiedObject

Used to report on result of a short circuit calculation or an outcome of multiple calculations.

Table 41 shows all attributes of ShortCircuitResult.

Table 41 – Attributes of LTDSSystemCapacityProfile::ShortCircuitResult

name	mult	type	description
faultKind	1..1	ShortCircuitFaultKind	(GB)
peakCurrent	1..1	CurrentFlow	(GB) Peak short-circuit current. It is the maximum possible instantaneous value of prospective (available) short-circuit current. It is ip according to IEC 60909-0.
symmetricalBreakingCurrent	1..1	CurrentFlow	(GB) Symmetrical short-circuit breaking current. It is a root mean square value of an integral cycle of the symmetrical alternate current component of the prospective short-circuit current at the instant of contact separation of the first pole to open of a switching device. It is Ib according to IEC 60909-0.
symmetricalBreakingCurrentAngle	1..1	AngleDegrees	(GB) Symmetrical short-circuit breaking current angle. It is the angle of a root mean square value of an integral cycle of the symmetrical alternate current component of the prospective short-circuit current at the instant of contact separation of the first pole to open of a switching device.
description	0..1	String	inherited from: IdentifiedObject
mRID	1..1	String	inherited from: IdentifiedObject
name	0..1	String	inherited from: IdentifiedObject

1.11.8(GB) SummaryShortCircuitResult

Inheritance path = ShortCircuitResult : IdentifiedObject

Short circuit result obtained from multiple short circuit calculations using different power system states.

Table 42 shows all attributes of SummaryShortCircuitResult.

Table 42 – Attributes of LTDSSystemCapacityProfile::SummaryShortCircuitResult

name	mult	type	description
faultKind	1..1	ShortCircuitFaultKind	(GB) inherited from: ShortCircuitResult
peakCurrent	1..1	CurrentFlow	(GB) inherited from: ShortCircuitResult
symmetricalBreakingCurrent	1..1	CurrentFlow	(GB) inherited from: ShortCircuitResult
symmetricalBreakingCurrentAngle	1..1	AngleDegrees	(GB) inherited from: ShortCircuitResult
description	0..1	String	inherited from: IdentifiedObject
mRID	1..1	String	inherited from: IdentifiedObject
name	0..1	String	inherited from: IdentifiedObject

Table 43 shows all association ends of SummaryShortCircuitResult with other classes.

Table 43 – Association ends of LTDSSystemCapacityProfile::SummaryShortCircuitResult with other classes

mult from	name	mult to	type	description
0..2	BusbarGroup	1..1	BusbarGroup	(GB) The busbar group that has this short circuit result.

1.11.9 UnitMultiplier enumeration

The unit multipliers defined for the CIM. When applied to unit symbols, the unit symbol is treated as a derived unit. Regardless of the contents of the unit symbol text, the unit symbol shall be treated as if it were a single-character unit symbol. Unit symbols should not contain multipliers, and it should be left to the multiplier to define the multiple for an entire data type.

For example, if a unit symbol is "m2Pers" and the multiplier is "k", then the value is k(m**2/s), and the multiplier applies to the entire final value, not to any individual part of the value. This can be conceptualized by substituting a derived unit symbol for the unit type. If one imagines that the symbol "Þ" represents the derived unit "m2Pers", then applying the multiplier "k" can be conceptualized simply as "kÞ".

For example, the SI unit for mass is "kg" and not "g". If the unit symbol is defined as "kg", then the multiplier is applied to "kg" as a whole and does not replace the "k" in front of the "g". In this case, the multiplier of "m" would be used with the unit symbol of "kg" to represent one gram. As a text string, this violates the instructions in IEC 80000-1. However, because the unit symbol in CIM is treated as a derived unit instead of as an SI unit, it makes more sense to conceptualize the "kg" as if it were replaced by one of the proposed replacements for the SI mass symbol. If one imagines that the "kg" were replaced by a symbol "Þ", then it is easier to conceptualize the multiplier "m" as creating the proper unit "mÞ", and not the forbidden unit "mkg".

Table 44 shows all literals of UnitMultiplier.

Table 44 – Literals of LTDSSystemCapacityProfile::UnitMultiplier

literal	value	description
none	0	No multiplier or equivalently multiply by 1.
k	3	Kilo 10**3.
M	6	Mega 10**6.

1.11.10 UnitSymbol enumeration

The derived units defined for usage in the CIM. In some cases, the derived unit is equal to an SI unit. Whenever possible, the standard derived symbol is used instead of the formula for the derived unit. For example, the unit symbol Farad is defined as "F" instead of "CPerV". In cases where a standard symbol does not exist for a derived unit, the formula

for the unit is used as the unit symbol. For example, density does not have a standard symbol and so it is represented as "kgPerm3". With the exception of the "kg", which is an SI unit, the unit symbols do not contain multipliers and therefore represent the base derived unit to which a multiplier can be applied as a whole.

Every unit symbol is treated as an unparseable text as if it were a single-letter symbol. The meaning of each unit symbol is defined by the accompanying descriptive text and not by the text contents of the unit symbol.

To allow the widest possible range of serializations without requiring special character handling, several substitutions are made which deviate from the format described in IEC 80000-1. The division symbol "/" is replaced by the letters "Per". Exponents are written in plain text after the unit as "m3" instead of being formatted as "m" with a superscript of 3 or introducing a symbol as in "m^3". The degree symbol "°" is replaced with the letters "deg". Any clarification of the meaning for a substitution is included in the description for the unit symbol.

Non-SI units are included in list of unit symbols to allow sources of data to be correctly labelled with their non-SI units (for example, a GPS sensor that is reporting numbers that represent feet instead of meters). This allows software to use the unit symbol information correctly convert and scale the raw data of those sources into SI-based units.

The integer values are used for harmonization with IEC 61850.

Table 45 shows all literals of UnitSymbol.

Table 45 – Literals of LTDSSystemCapacityProfile::UnitSymbol

literal	value	description
A	5	Current in amperes.
deg	9	Plane angle in degrees.
W	38	Real power in watts (J/s). Electrical power may have real and reactive components. The real portion of electrical power (I^2R or VIcos(phi)), is expressed in Watts. See also apparent power and reactive power.
VAr	63	Reactive power in volt amperes reactive. The "reactive" or "imaginary" component of electrical power (VIsin(phi)). (See also real power and apparent power). Note: Different meter designs use different methods to arrive at their results. Some meters may compute reactive power as an arithmetic value, while others compute the value vectorially. The data consumer should determine the method in use and the suitability of the measurement for the intended purpose.

1.11.11 (GB) ShortCircuitFaultKind enumeration

Short circuit fault kind.

Table 46 shows all literals of ShortCircuitFaultKind.

Table 46 – Literals of LTDSSystemCapacityProfile::ShortCircuitFaultKind

literal	value	description
threePhase		Three phase short circuit fault.
singlePhase		Single phase short circuit fault.

1.11.12 ActivePower datatype

Product of RMS value of the voltage and the RMS value of the in-phase component of the current.

Table 47 shows all attributes of ActivePower.

Table 47 – Attributes of LTDSSystemCapacityProfile::ActivePower

name	mult	type	description
multiplier	0..1	UnitMultiplier	(const=M)
unit	0..1	UnitSymbol	(const=W)
value	0..1	Float	

1.11.13 AngleDegrees datatype

Measurement of angle in degrees.

Table 48 shows all attributes of AngleDegrees.

Table 48 – Attributes of LTDSSystemCapacityProfile::AngleDegrees

name	mult	type	description
value	0..1	Float	
unit	0..1	UnitSymbol	(const=deg)
multiplier	0..1	UnitMultiplier	(const=none)

1.11.14 CurrentFlow datatype

Electrical current with sign convention: positive flow is out of the conducting equipment into the connectivity node. Can be both AC and DC.

Table 49 shows all attributes of CurrentFlow.

Table 49 – Attributes of LTDSSystemCapacityProfile::CurrentFlow

name	mult	type	description
multiplier	0..1	UnitMultiplier	(const=k)
unit	0..1	UnitSymbol	(const=A)
value	0..1	Float	

1.11.15 ReactivePower datatype

Product of RMS value of the voltage and the RMS value of the quadrature component of the current.

Table 50 shows all attributes of ReactivePower.

Table 50 – Attributes of LTDSSystemCapacityProfile::ReactivePower

name	mult	type	description
value	0..1	Float	
unit	0..1	UnitSymbol	(const=VAr)
multiplier	0..1	UnitMultiplier	(const=M)

1.11.16 Float primitive

A floating point number. The range is unspecified and not limited.

1.11.17 Integer primitive

An integer number. The range is unspecified and not limited.

1.11.18 String primitive

A string consisting of a sequence of characters. The character encoding is UTF-8. The string length is unspecified and unlimited.

1.12 LTDS Deviation Diagram Layout profile

1.12.1 General

The LTDS Deviation Diagram Layout profile defines deviations from the CGMES Diagram Layout profile.

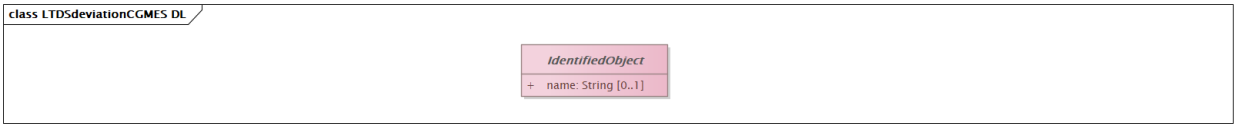

Figure 13 – Class diagram LTDSdeviationCGMESDiagramLayoutProfile::LTDSdeviationCGMES DL

Figure 13: This diagram shows the LTDS attribute-related modifications to the CGMES Diagram Layout profile.

Table 51Table 33 shows all the CGMES v3.0 attributes whose cardinality or definition is overwritten by the LTDS Deviation Diagram Layout profile.

Table 51 – CGMES v3.0 attributes overwritten by LTDS Deviation Diagram Layout profile

	CGMES v3.0	LTDS
IdentifiedObject.name	required	[0..1]

2 LTDS Profile Version information

2.1 LTDS Deviation Equipment profile

- Title: LTDS Deviation Equipment Vocabulary
- Keyword: EQdev
- Description: This vocabulary is describing the LTDS Deviation Equipment profile.
- Version IRI: http://ofgem.gov.uk/ns/CIM/LTDS/DeviationEQ/1.0
- Version info: 1.0.0
- Prior version:
- Conforms to: urn:iso:std:iec:61970-600-2:ed-1|urn:iso:std:iec:61970-301:ed-7:amd1|file://CIM100v111_UK_LTDS.eap|urn:iso:std:iec:61970-401:draft:ed-1|urn:iso:std:iec:61970-501:draft:ed-2
- Identifier: urn:uuid:03c1bd2e-555c-4b77-8b01-448a7eb1de66

2.2 LTDS Extended Equipment profile

- Title: LTDS Extended Equipment Vocabulary
- Keyword: EQext
- Description: This vocabulary is describing the LTDS Extended Equipment profile.
- Version IRI: http://ofgem.gov.uk/ns/CIM/LTDS/ExtendedEQ/1.0
- Version info: 1.0.0
- Prior version:
- Conforms to: urn:iso:std:iec:61970-600-2:ed-1|urn:iso:std:iec:61970-301:ed-7:amd1|file://CIM100v111_UK_LTDS.eap|urn:iso:std:iec:61970-401:draft:ed-1|urn:iso:std:iec:61970-501:draft:ed-2
- Identifier: urn:uuid:c0ccd6b6-db89-425d-8d8c-36fcd31c28b9

2.3 LTDS Deviation Short Circuit profile

- Title: LTDS Deviation Short Circuit Vocabulary
- Keyword: SCdev
- Description: This vocabulary is describing the LTDS Deviation Short Circuit profile.
- Version IRI: http://ofgem.gov.uk/ns/CIM/LTDS/DeviationSC/1.0

- Version info: 1.0.0
- Prior version:
- Conforms to: urn:iso:std:iec:61970-600-2:ed-1|urn:iso:std:iec:61970-301:ed-7:amd1|file://CIM100v111_UK_LTDS.eap|urn:iso:std:iec:61970-401:draft:ed-1|urn:iso:std:iec:61970-501:draft:ed-2
- Identifier: urn:uuid:97938d45-bb5f-4424-b64d-219c1f76ab31

2.4 LTDS Extended Short Circuit profile

- Title: LTDS Extended Short Circuit Vocabulary
- Keyword: SCext
- Description: This vocabulary is describing the LTDS Extended Short Circuit profile.
- Version IRI: http://ofgem.gov.uk/ns/CIM/LTDS/ExtendedSC/1.0
- Version info: 1.0.0
- Prior version:
- Conforms to: urn:iso:std:iec:61970-600-2:ed-1|urn:iso:std:iec:61970-301:ed-7:amd1|file://CIM100v111_UK_LTDS.eap|urn:iso:std:iec:61970-401:draft:ed-1|urn:iso:std:iec:61970-501:draft:ed-2
- Identifier: urn:uuid:2da86370-72d9-4e29-8787-14b9d1290e53

2.5 LTDS Deviation Geographical Location profile

- Title: LTDS Deviation Geographical Location Vocabulary
- Keyword: GLdev
- Description: This vocabulary is describing the LTDS Deviation Geographical Location profile.
- Version IRI: http://ofgem.gov.uk/ns/CIM/LTDS/DeviationGL/1.0
- Version info: 1.0.0
- Prior version:
- Conforms to: urn:iso:std:iec:61970-600-2:ed-1|urn:iso:std:iec:61970-301:ed-7:amd1|file://CIM100v111_UK_LTDS.eap|urn:iso:std:iec:61970-401:draft:ed-1|urn:iso:std:iec:61970-501:draft:ed-2
- Identifier: urn:uuid:862c1230-be19-4a01-bd6f-1a6c03d213ff

2.6 LTDS Extended Geographical Location profile

- Title: LTDS Extended Geographical Location Vocabulary
- Keyword: GLext
- Description: This vocabulary is describing the LTDS Extended Geographical Location profile.
- Version IRI: http://ofgem.gov.uk/ns/CIM/LTDS/ExtendedGL/1.0
- Version info: 1.0.0
- Prior version:
- Conforms to: urn:iso:std:iec:61970-600-2:ed-1|urn:iso:std:iec:61970-301:ed-7:amd1|file://CIM100v111_UK_LTDS.eap|urn:iso:std:iec:61970-401:draft:ed-1|urn:iso:std:iec:61970-501:draft:ed-2
- Identifier: urn:uuid:862c1230-be19-4a01-bd6f-1a6c03d213ff

2.7 LTDS Deviation Steady State Hypothesis profile

- Title: LTDS Deviation Steady State Hypothesis Vocabulary
- Keyword: SSHdev
- Description: This vocabulary is describing the LTDS Deviation Steady State Hypothesis profile.
- Version IRI: http://ofgem.gov.uk/ns/CIM/LTDS/DeviationSSH/1.0
- Version info: 1.0.0
- Prior version:
- Conforms to: urn:iso:std:iec:61970-600-2:ed-1|urn:iso:std:iec:61970-301:ed-7:amd1|file://CIM100v111_UK_LTDS.eap|urn:iso:std:iec:61970-401:draft:ed-1|urn:iso:std:iec:61970-501:draft:ed-2
- Identifier: urn:uuid:5aabb9bd-8fe3-4f3c-a0fa-f6902e767ce5

2.8 LTDS Extended Steady State Hypothesis profile

- Title: LTDS Extended Steady State Hypothesis Vocabulary
- Keyword: SSHext
- Description: This vocabulary is describing the LTDS Extended Steady State Hypothesis profile.

- Version IRI: http://ofgem.gov.uk/ns/CIM/LTDS/ExtendedSSH/1.0
- Version info: 1.0.0
- Prior version:
- Conforms to: urn:iso:std:iec:61970-600-2:ed-1|urn:iso:std:iec:61970-301:ed-7:amd1|file://CIM100v111_UK_LTDS.eap|urn:iso:std:iec:61970-401:draft:ed-1|urn:iso:std:iec:61970-501:draft:ed-2
- Identifier: urn:uuid:a40ec366-2ce4-46f5-9435-72c577353e4f

2.9 LTDS Deviation Topology profile

- Title: LTDS Deviation Topology Vocabulary
- Keyword: TPdev
- Description: This vocabulary is describing the LTDS Deviation Topology profile.
- Version IRI: http://ofgem.gov.uk/ns/CIM/LTDS/DeviationTP/1.0
- Version info: 1.0.0
- Prior version:
- Conforms to: urn:iso:std:iec:61970-600-2:ed-1|urn:iso:std:iec:61970-301:ed-7:amd1|file://CIM100v111_UK_LTDS.eap|urn:iso:std:iec:61970-401:draft:ed-1|urn:iso:std:iec:61970-501:draft:ed-2
- Identifier: urn:uuid:5aabb9bd-8fe3-4f3c-a0fa-f6902e767ce5

2.10 LTDS Deviation State Variables profile

- Title: LTDS Deviation State Variables Vocabulary
- Keyword: SVdev
- Description: This vocabulary is describing the LTDS Deviation State Variables profile.
- Version IRI: http://ofgem.gov.uk/ns/CIM/LTDS/DeviationSV/1.0
- Version info: 1.0.0
- Prior version:
- Conforms to: urn:iso:std:iec:61970-600-2:ed-1|urn:iso:std:iec:61970-301:ed-7:amd1|file://CIM100v111_UK_LTDS.eap|urn:iso:std:iec:61970-401:draft:ed-1|urn:iso:std:iec:61970-501:draft:ed-2
- Identifier: urn:uuid:5aabb9bd-8fe3-4f3c-a0fa-f6902e767ce5

2.11 LTDS System Capacity profile

- Title: LTDS System Capacity Vocabulary
- Keyword: SYSCAP
- Description: This vocabulary is describing the LTDS System Capacity profile.
- Version IRI: http://ofgem.gov.uk/ns/CIM/LTDS/SYSCAP/1.0
- Version info: 1.0.0
- Prior version:
- Conforms to: urn:iso:std:iec:61970-600-2:ed-1|urn:iso:std:iec:61970-301:ed-7:amd1|file://CIM100v111_UK_LTDS.eap|urn:iso:std:iec:61970-401:draft:ed-1|urn:iso:std:iec:61970-501:draft:ed-2
- Identifier: urn:uuid:8eb40e93-f100-4a10-82fd-14a54b276063

2.12 LTDS Deviation Diagram Layout profile

- Title: LTDS Deviation Diagram Layout Vocabulary
- Keyword: DLdev
- Description: This vocabulary is describing the LTDS Deviation Diagram Layout profile.
- Version IRI: http://ofgem.gov.uk/ns/CIM/LTDS/DeviationDL/1.0
- Version info: 1.0.0
- Prior version:
- Conforms to: urn:iso:std:iec:61970-600-2:ed-1|urn:iso:std:iec:61970-301:ed-7:amd1|file://CIM100v111_UK_LTDS.eap|urn:iso:std:iec:61970-401:draft:ed-1|urn:iso:std:iec:61970-501:draft:ed-2
- Identifier: urn:uuid:5aabb9bd-8fe3-4f3c-a0fa-f6902e767ce5