

PLURAL Technologies, description, function, developer, manufacturer and related Ifc Class										
Technologies	Name	City	System	BimObjectName	Component descriptions	Functions	Developer	Manufacturer	IfcClass	ElectricityDependent
Core system 1	eWHC kit	Kasava	Heating and cooling integration	Plural_CZ_eWHCToolBox	BMS Building Management Systems toolbox	Communication/interfacing/Control	CVUT	CVUT	IfcCommunicationsAppliance/IfcController	Y
Core system 1	eWHC kit	Kasava	Heating and cooling integration	Plural_CZ_eWHCPipeFitting	Pipe fitting for SPF system	Heating/cooling	SPF	RDR	IfcPipeFitting	N
Core system 1	eWHC kit	Kasava	Heating and cooling integration	Plural_CZ_eWHCPipe	Pipes for SPF system	Heating/cooling	SPF	RDR	IfcPipeSegment	N
Core system 1	eWHC kit	Kasava	Heating and cooling integration	Plural_CZ_eWHCControlBox	External digital panel for manual control (in each room) Toolbox	User interface	CVUT	CVUT	IfcUnitaryControlElement	Y
Core system 1	eWHC kit	Kasava	Heating and cooling integration	Plural_CZ_eWHCMechanicalVentilation	IEQ control system+filters (energy recovery system)	Airhandling, Fresh air supply	--	RDR	IfcUnitaryControlElement	Y
Core system 1	eWHC kit	Kasava	Heating and cooling integration	Plural_CZ_eWHCHTHeatPump	Heat pump	Heating/cooling	--	DAIKIN	IfcUnitaryEquipment	Y
Core system 1	eWHC kit	Kasava	Panel integration	Not modelled	Anchors (automatically linked to the panels)	Anchoring system	CVUT	--	IfcAnchor	N
Core system 1	eWHC kit	Kasava	Panel integration	Plural_CZ_eWHCSubframe	Timber structure (260/80, 180/80, 50/40 mm)	Panel frame/structure	RDR	RDR	IfcMember / IfcBeam / IfcColumn	N
Core system 1	eWHC kit	Kasava	Panel integration	Plural_CZ_eWHCRoofPanel	Several layers (see detailed design on PLURAL_D2.1_V1.4_CZ_ANNEXCZ01)	Panel system for roof	--	RDR	IfcRoof	N
Core system 1	eWHC kit	Kasava	Panel integration	Plural_CZ_eWHCWallPanelAddition	Vertical wooden cladding	Cladding	--	RDR	IfcWall	N
Core system 1	eWHC kit	Kasava	Panel integration	Plural_CZ_eWHCWallPanelAddition	SPF system (60 mm) with insulation and heating pipes thermal water heating system	Heating/cooling	SPF	RDR	IfcWall	N
Core system 1	eWHC kit	Kasava	Panel integration	Plural_CZ_eWHCWallPanelAddition	Eco-friendly insulation (Isover Akustic TP3 260mm, Hardwood insulation 50mm)	Insulation system	--	RDR	IfcWall	N
Core system 1	eWHC kit	Kasava	Panel integration	Plural_CZ_eWHCWallPanelAddition	Gypsum board (Fermacell 15 mm)	Panel system for wall	--	RDR	IfcWall	N
Core system 1	eWHC kit	Kasava	Panel integration	Plural_CZ_eWHCWallPanelAddition	Vapour barrier + Weathering membrane	Waterproofing	--	RDR	IfcWall	N
Core system 1	eWHC kit	Kasava	Panel integration	Plural_CZ_eWHCWallPanelIndependent	Wall panel Independent	Envelope	--	RDR	IfcWall	N
Core system 1	eWHC kit	Kasava	Photovoltaic panels	Plural_CZ_eWHCPVPanels	High performance PV panels (only for roof panels)	Renewable energy source	--	RDR	IfcSolarDevice	Y
Core system 1	eWHC kit	Kasava	Windows and shading integration	Plural_CZ_eWHCWindow+Blinds	Internal blinds for windows shading	Shading	--	BGTC	IfcWindow	Y
Core system 1	eWHC kit	Kasava	Windows and shading integration	Plural_CZ_eWHCWindow+Blinds	Recovery windows	Windows	--	BGTC	IfcWindow	N
Core system 2	SmartWall	Voula	Heating system	Plural_GR_SmartWallVentilationGrille	Fan coil outlet grille (Integrated with duct?)	Cooling	Standard product	To be defined	IfcAirTerminal	N
Core system 2	SmartWall	Voula	Heating system	Plural_GR_SmartWallDuct	Fan coil inlet/outlet duct (To be considered if necessary)	Cooling	Standard product	To be defined	IfcDuctSegment	N
Core system 2	SmartWall	Voula	Heating system	Plural_GR_SmartWallFanCoilUnit	Fan coil unit DAIKIN FWXM10ATV3 fan coil unit	Heating/Cooling	DAIKIN	DAIKIN	IfcUnitaryEquipment	Y
Core system 2	SmartWall	Voula	Heating system	Plural_GR_SmartWallHeatPump	Heat pump - low temperature external wall heating distribution system (hidronic wall heating system) / Heat pump - external wall cooling distribution system	Heating/Cooling	SPF/RDR (simulation NTUA+SPF)	DAIKIN	IfcUnitaryEquipment	Y
Core system 2	SmartWall	Voula	Heating system	Plural_GR_SmartWallMountedCoilUnit	Wall mounted fan coil unit, Slim-type fan coil (FWXM-A 12kg)	Heating/Cooling	DAIKIN	DAIKIN	IfcUnitaryEquipment	Y
Core system 2	SmartWall	Voula	Heating system	Plural_GR_SmartWallRoofHeatPump	Roof heat pump	Heating/Cooling	DAIKIN	DAIKIN	IfcUnitaryEquipment	Y
Core system 2	SmartWall	Voula	Panel system	Not modelled	Simulation/calculation of anchoring system (Frame's supporting brackets S245 @ RHSC 50mm (l) x 50mm (w) x 3mm (t))	Anchoring system	SPF/RDR/PA	RDR	IfcMember	N

PLURAL Technologies, description, function, developer, manufacturer and related Ifc Class										
Technologies	Name	City	System	BimObjectName	Component descriptions	Functions	Developer	Manufacturer	IfcClass	ElectricityDependent
Core system 2	SmartWall	Voula	Panel system	Not modelled	Steel stud frame / Access panel frame	Panel frame/structure	SPF/RDR/PA	RDR	IfcMember	N
Core system 2	SmartWall	Voula	Panel system	Plural_GR_SmartWallPanelFrame	Steel stud frame / Steel frame S245 @ RHSC 50mm (l) x 50mm (w) x 3mm (t) (hollow rectangular section S245, 50x30x3mm 3.45 kg/m)	Panel frame/structure	SPF/RDR/PA	RDR	IfcMember	N
Core system 2	SmartWall	Voula	Panel system	Plural_GR_SmartWallPanel	Rockwool FIBRAN geo BP-70 @ 100mm thick / Rockwool in core layer, 25mm Glasswool Isomat in internal layer, Damp Proof Membrane 2mm, Rockwool Fibran Ngeo B01 100mm 100 kg/m3	Insulation system	SPF	RDR	IfcWall	N
Core system 2	SmartWall	Voula	Panel system	Plural_GR_SmartWallPanel	Smart wall panel (Double boards x2 Aquapanel, 125 mm/Vacuum panel Kingspan OPTIM R 20 mm, Plasterboard GBK-Knauf @12.5mm painted with AMS's multi-functional coating, Double cement board Knauf 25mm) / Access panel's covering (Plasterboard GBK-Knauf @12.5mm)	Panel system	SPF	RDR	IfcWall	Y
Core system 2	SmartWall	Voula	Piping system	Plural_GR_SmartWallManometer	Manometer	Heating/Cooling	Standard product	To be defined	IfcFlowInstrument	N
Core system 2	SmartWall	Voula	Piping system	Plural_GR_SmartWallThermometer	Thermometer	Heating/Cooling	Standard product	To be defined	IfcFlowInstrument	Y
Core system 2	SmartWall	Voula	Piping system	Plural_GR_SmartWallWaterPipeFitting	Hot/Cold water pipes fittings	Heating/Cooling	Standard product	To be defined	IfcPipeFitting	N
Core system 2	SmartWall	Voula	Piping system	Plural_GR_SmartWallWaterPipe	Hot/Cold water pipes	Heating/Cooling	Standard product	To be defined	IfcPipeSegment	N
Core system 2	SmartWall	Voula	Piping system	Plural_GR_SmartWallBufferTank	Buffer tank	Heating/Cooling	Standard product	To be defined	IfcTank	N
Core system 2	SmartWall	Voula	Piping system	Plural_GR_SmartWallBallValve	Ball valve	Heating/Cooling	Standard product	To be defined	IfcValve	N
Core system 2	SmartWall	Voula	Piping system	Plural_GR_SmartWallSafetyValve	Safety valve	Heating/Cooling	Standard product	To be defined	IfcValve	Y
Core system 2	SmartWall	Voula	Renewable energy system	Plural_GR_SmartWallBattery	Batteries (Gel cyclic battery 12-18V)	Battery	SPF	RDR	IfcElectricFlowStorageDevice	Y
Core system 2	SmartWall	Voula	Renewable energy system	Plural_GR_SmartWallSolarPanelTWHS	Solar panels (thermal water heating system) roof integration Domestic Hot Water supply	Renewable energy source	--	--	IfcSolarDevice	Y
Core system 2	SmartWall	Voula	Renewable energy system	Plural_GR_SmartWallBatteryInverter	Battery inverter	Battery	SPF	RDR	IfcTransformer	Y
Core system 2	SmartWall	Voula	SmartControl	Plural_GR_SmartWallToolbox	TBD Toolbox	Communication/interfaces	CVUT	CVUT	IfcCommunicationsAppliance/IfcController	Y
Core system 2	SmartWall	Voula	SmartControl	Plural_GR_SmartWallControl	Heat pump control and system monitoring, user comfort control (Amscope panel) / Measurement	Monitoring/Control	CVUT	CVUT	IfcController	Y
Core system 2	SmartWall	Voula	SmartControl	Plural_GR_SmartWallLDC	IAQ 04 LCD + User app	User interface	CVUT	CVUT	IfcUnitaryControlElement	Y
Core system 2	SmartWall	Voula	Windows	Plural_GR_SmartWallBalconyDoor+Blinds	Heat recovery windows, PVC/aluminium, triple glazing, integrated blinds, aluminium cover + Sill + Heat breaker	Windows / Airhandling	BGTC/RDR	BGTC	IfcDoor	Y
Core system 2	SmartWall	Voula	Windows	Plural_GR_SmartWallWindow+Blinds	External blinds for windows shading (roller blinds on a metal box) + Sill + Heat breaker	Shading	RDR	RDR	IfcShadingDevice	Y
Core system 2	SmartWall	Voula	Windows	Plural_GR_SmartWallWindow+Blinds	Heat recovery windows, PVC/aluminium, triple glazing, integrated blinds, aluminium cover	Windows / Airhandling	BGTC/RDR	BGTC	IfcWindow	Y

PLURAL Technologies, description, function, developer, manufacturer and related Ifc Class										
Technologies	Name	City	System	BimObjectName	Component descriptions	Functions	Developer	Manufacturer	IfcClass	ElectricityDependent
Core system 3	eAHC kit	Terrassa	eAHC ventilation unit	Not modelled	Modbus/Ethernet	Communication/interfaces	CVUT	IREC	IfcCommunicationsAppliance	Y
Core system 3	eAHC kit	Terrassa	eAHC ventilation unit	Not modelled	Technologies in the panel	Control	CVUT	IREC	IfcController	Y
Core system 3	eAHC kit	Terrassa	eAHC ventilation unit	Plural_ES_eAHC Duct	Air channels	Air distribution	CVUT	CVUT	IfcDuct	N
Core system 3	eAHC kit	Terrassa	eAHC ventilation unit	Plural_ES_eAHC Duct Fitting	Air channel fittings	Air distribution	CVUT	CVUT	IfcDuctFitting	N
Core system 3	eAHC kit	Terrassa	eAHC ventilation unit	Plural_ES_IAQ sensor	IAQ 04 sensors + other utility measurement	Monitoring	CVUT	CVUT	IfcSensor	Y
Core system 3	eAHC kit	Terrassa	eAHC ventilation unit	Plural_ES_eAHC Control Box	Room control	User interface	CVUT	CVUT	IfcUnitaryControlElement	Y
Core system 3	eAHC kit	Terrassa	eAHC ventilation unit	Plural_ES_eAHC Ventilation Unit	AHU with heating and cooling + centralized cooling	Airhandling, Cooling, Heating	CVUT	RECUAIR	IfcUnitaryEquipment	Y
Core system 3	eAHC kit	Terrassa	Photovoltaic panels	Plural_ES_eAHC Battery	Battery + microinverter	Battery	CVUT	IREC	IfcElectricFlowStorageDevice	Y
Core system 3	eAHC kit	Terrassa	Photovoltaic panels	Plural_ES_eAHC PV Integrated Panel	Panel integrated PV	Renewable energy source	DEN	DEN	IfcSolarDevice	Y
Core system 3	eAHC kit	Terrassa	Prefabricated ventilated facade	Not modelled	Connectors	Connectors	DEN	DEN	IfcMember	N
Core system 3	eAHC kit	Terrassa	Prefabricated ventilated facade	Not modelled	Anchors	Anchors	DEN	DEN	IfcMember	N
Core system 3	eAHC kit	Terrassa	Prefabricated ventilated facade	Plural_ES_eAHC Curtain Wall	Vertical guides	Vertical guides	DEN	DEN	IfcMember	N
Core system 3	eAHC kit	Terrassa	Prefabricated ventilated facade	Plural_ES_eAHC Curtain Wall	Cladding	Cladding	DEN	DEN	IfcPlate	N
Core system 3	eAHC kit	Terrassa	Prefabricated ventilated facade	Plural_ES_eAHC Integrated Window	Develops shading system	Shading	DEN	DEN	IfcShadingDevice	Y
Core system 3	eAHC kit	Terrassa	Prefabricated ventilated facade	Plural_ES_eAHC Insulation Layer	To be defined per each project	Insulation system	DEN	DEN	IfcWall	N
Core system 3	eAHC kit	Terrassa	Windows and doors	Plural_ES_eAHC Integrated Balcony Door	High performance balcony door with integrated heat harvesting and ventilation functions	Windows / Airhandling	BGTC/RDR	BGTC	IfcDoor	Y
Core system 3	eAHC kit	Terrassa	Windows and doors	Plural_ES_eAHC Integrated Window 1 VSwinging	High performance windows with integrated heat harvesting and ventilation functions	Windows	BGTC	BGTC	IfcWindow	N
Core system 3	eAHC kit	Terrassa	Windows and doors	Plural_ES_eAHC Integrated Window 2 VSwinging	High performance windows with integrated heat harvesting and ventilation functions	Windows	BGTC	BGTC	IfcWindow	N