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Introduction

Founded in 1989, C.A.T.S. Software GmbH is a German company with its headquarters in Darmstadt.




C.A.T.S. Software is a pioneer when it comes to CAD applications for MEP. The product portfolio consists of the complete range of MEP trades, i.e. HVAC, Plumbing, Sprinkler, and Electro, including their respective integrated calculations. The applications are tried and tested, easy to use, and fully featured. More than 5000 licenses are in use by planners, engineers, and contractors.

C.A.T.S. Software is IFC2x3 CV2.0 MEP Export Certified from C.A.T.S. version R2023.1 onwards.

The complete IFC functionality is part of the C.A.T.S. software BIM package, which also consists of a powerful BIM Viewer.

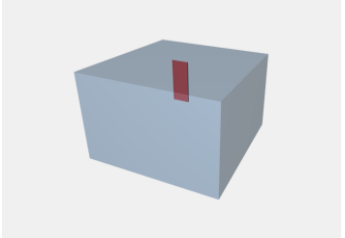
The flexible IFC export of C.A.T.S. supports MEP export with a free selection of objects, based on a storey or by selecting the entire project. The mapping from C.A.T.S. objects to IFC entities and also from properties to user-defined or built-in psets can be easily customized. A ready-to-use configuration is delivered with C.A.T.S.

Testlist

Name test	concepts total	manually checked		
				
CharsetTest-01MEP / 2x3	2	2		
DuplexHouse_Electrical / 2x3	65	29		36
DuplexHouse_Heating / 2x3	56	38		18
DuplexHouse_Sanitary / 2x3	52	39		13
DuplexHouse_Ventilation / 2x3	44	34	1	9
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RandomMEP-X2 / 2x3	61	61		
RandomMEP-X3 / 2x3	49	49		
RandomMEP-X4 / 2x3	31	31		
RandomMEP-X5 / 2x3	57	57		
Space_01MEP / 2x3	15	1		14
UnitTest-01MEP / 2x3	3	2		1

Concepts

CharsetTest-01MEP / 2x3










General	<i>company statement</i>	<i>CharsetTest-01MEP / 2x3</i>
_G1 Character sets	■	
_G4 Remarks	■	

DuplexHouse_Electrical / 2x3


















204 IfcEnergyConversionDevice	<i>company statement</i>		<i>DuplexHouse_Electrical / 2x3</i>
010 Naming	■		
020 Placement 020-2 Placement Relative	■		
030 Geometry 030-6 Geometry Body 030-6-5 Geometry Explicit 030-6-9 Geometry Mapped	■	We do not support explicit geometry for electrical equipment.	
100 Element Aggregation 100-4 Port Assignment	■	We do not support ports for electrical equipment, but for raceways.	
110 Connectivity 110-5 Connectivity by Ports	■	We do not support connectivity by ports for electrical equipment, but for raceways.	
120 Spatial Containment	■		
130 Grouping 130-2 Grouping to Systems	■		
300 Type 300-1 Type Geometry 300-2 Type Naming	■	We do not support type geometry for electrical equipment due to the many variants and parameter sets.	
205 IfcFlowController	<i>company statement</i>		<i>DuplexHouse_Electrical / 2x3</i>
010 Naming	■		

020 Placement	
020-2 Placement Relative	
030 Geometry	
030-6 Geometry Body	
030-6-5 Geometry Explicit	 We do not support explicit geometry for electrical equipment.
030-6-9 Geometry Mapped	
100 Element Aggregation	
100-4 Port Assignment	 We do not support ports for electrical equipment, but for raceways.
110 Connectivity	
110-5 Connectivity by Ports	 We do not support connectivity by ports for electrical equipment, but for raceways.
120 Spatial Containment	
130 Grouping	
130-2 Grouping to Systems	
300 Type	
300-1 Type Geometry	 We do not support type geometry for electrical equipment due to the many variants and parameter sets.
300-2 Type Naming	
206 IfcFlowFitting	<i>company statement</i> <i>DuplexHouse_Electrical / 2x3</i>
010 Naming	 From our understanding this is not part of the test instruction. Raceways (FlowFittings & Segments) are part of our random model.
020 Placement	
020-2 Placement Relative	

030 Geometry		
030-6 Geometry Body		
030-6-5 Geometry Explicit	■	
030-6-9 Geometry Mapped	■	
100 Element Aggregation		
100-4 Port Assignment	■	
110 Connectivity		
110-5 Connectivity by Ports	■	
120 Spatial Containment	■	
130 Grouping		
130-2 Grouping to Systems	■	
300 Type		
300-1 Type Geometry	■	
300-2 Type Naming	■	
208 IfcFlowSegment		<i>company statement</i> <i>DuplexHouse_Electrical / 2x3</i>
010 Naming	■	From our understanding this is not part of the test instruction. Raceways (FlowFittings & Segments) are part of our random model.
020 Placement		
020-2 Placement Relative	■	
030 Geometry		
030-6 Geometry Body		
030-6-5 Geometry Explicit	■	
030-6-9 Geometry Mapped	■	
040 Presentation		
040-1 Geometric Presentation	■	

100 Element Aggregation 100-4 Port Assignment		
110 Connectivity 110-5 Connectivity by Ports		
120 Spatial Containment		
130 Grouping 130-2 Grouping to Systems		
300 Type 300-1 Type Geometry 300-2 Type Naming	 	
210 IfcFlowTerminal		<i>company statement</i> <i>DuplexHouse_Electrical / 2x3</i>
010 Naming		
020 Placement 020-2 Placement Relative		
030 Geometry 030-6 Geometry Body 030-6-5 Geometry Explicit 030-6-9 Geometry Mapped	 	We do not support explicit geometry for electrical equipment.
040 Presentation 040-1 Geometric Presentation		
050 CAD Layer		
100 Element Aggregation 100-4 Port Assignment		We do not support ports for electrical equipment, but for raceways.
110 Connectivity 110-5 Connectivity by Ports		We do not support connectivity by ports for electrical equipment, but for raceways.

120 Spatial Containment		
130 Grouping		
130-2 Grouping to Systems		
210 Property Set		
210-1 Property Set IFC Common		
210-6 Property Set IFC any		We just support user defined psets for electrical equipment
210-9 Property Set User Defined		
300 Type		
300-1 Type Geometry		We do not support type geometry for electrical equipment due to the many variants and parameter sets.
300-2 Type Naming		
501 IfcProject		<i>company statement</i> <i>DuplexHouse_Electrical / 2x3</i>
010 Naming		
503 IfcBuilding		<i>company statement</i> <i>DuplexHouse_Electrical / 2x3</i>
010 Naming		
504 IfcBuildingStorey		<i>company statement</i> <i>DuplexHouse_Electrical / 2x3</i>
010 Naming		
020 Placement		
020-2 Placement Relative		
150 Spatial Aggregation		
150-1 Spatial Composition		
507 IfcSystem		<i>company statement</i> <i>DuplexHouse_Electrical / 2x3</i>
010 Naming		
130 Grouping		
130-2 Grouping to Systems		We do not support nested systems.
130-5 Is Group		

General

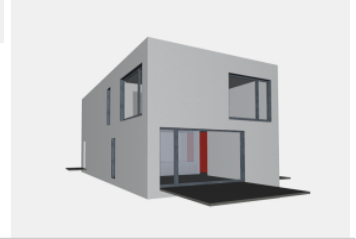
company statement

DuplexHouse_Electrical / 2x3

_G4 Remarks
























DuplexHouse_Heating / 2x3



204 IfcEnergyConversionDevice	<i>company statement</i>		<i>DuplexHouse_Heating / 2x3</i>
010 Naming	■		
030 Geometry 030-6 Geometry Body 030-6-5 Geometry Explicit 030-6-9 Geometry Mapped	■	We do not support explicit geometry.	
040 Presentation 040-1 Geometric Presentation	■		
100 Element Aggregation 100-4 Port Assignment	■	We do not support ports for this specific entity; other than that, ports are supported.	
110 Connectivity 110-5 Connectivity by Ports	■	We do not support connectivity by ports for this specific entity; other than that, connectivity by ports are supported.	
130 Grouping 130-2 Grouping to Systems	■		
300 Type 300-1 Type Geometry 300-5 Type Property Set	■	We do not support type geometry due to the variety of graphical parameter sets. We do not support type property sets for this entity	
205 IfcFlowController	<i>company statement</i>		<i>DuplexHouse_Heating / 2x3</i>
010 Naming	■		

030 Geometry	
030-6 Geometry Body	
030-6-5 Geometry Explicit	 We do not support explicit geometry.
030-6-9 Geometry Mapped	
040 Presentation	
040-1 Geometric Presentation	
100 Element Aggregation	
100-4 Port Assignment	
110 Connectivity	
110-5 Connectivity by Ports	
130 Grouping	
130-2 Grouping to Systems	
300 Type	
300-1 Type Geometry	 We do not support type geometry due to the variety of graphical parameter sets.
300-5 Type Property Set	 We do not support type property sets for this entity
206 IfcFlowFitting	<i>company statement</i> <i>DuplexHouse_Heating / 2x3</i>
010 Naming	
030 Geometry	
030-6 Geometry Body	
030-6-5 Geometry Explicit	 We do not support explicit geometry.
030-6-9 Geometry Mapped	
040 Presentation	
040-1 Geometric Presentation	
100 Element Aggregation	
100-4 Port Assignment	

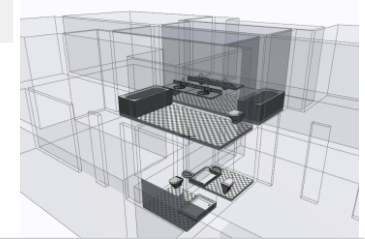
110 Connectivity		
110-5 Connectivity by Ports		
130 Grouping		
130-2 Grouping to Systems		
300 Type		
300-1 Type Geometry		We do not support type geometry due to the variety of graphical parameter sets.
300-5 Type Property Set		
207 IfcFlowMovingDevice		<i>company statement</i> <i>DuplexHouse_Heating / 2x3</i>
010 Naming		
030 Geometry		
030-6 Geometry Body		
030-6-5 Geometry Explicit		We do not support explicit geometry.
030-6-9 Geometry Mapped		
040 Presentation		
040-1 Geometric Presentation		
100 Element Aggregation		
100-4 Port Assignment		
110 Connectivity		
110-5 Connectivity by Ports		
130 Grouping		
130-2 Grouping to Systems		
300 Type		
300-1 Type Geometry		We do not support type geometry due to the variety of graphical parameter sets.
300-5 Type Property Set		We do not support type property sets for this entity
208 IfcFlowSegment		<i>company statement</i> <i>DuplexHouse_Heating / 2x3</i>

010 Naming		
030 Geometry		
030-6 Geometry Body		
030-6-1 Geometry SweptSolid		We do not support swept solids due to the complexity and variety of shapes.
030-6-5 Geometry Explicit		We do not support explicit geometry.
030-6-9 Geometry Mapped		
040 Presentation		
040-1 Geometric Presentation		
100 Element Aggregation		
100-4 Port Assignment		
110 Connectivity		
110-5 Connectivity by Ports		
130 Grouping		
130-2 Grouping to Systems		
300 Type		
300-1 Type Geometry		We do not support type geometry due to the variety of graphical parameter sets.
300-5 Type Property Set		
210 IfcFlowTerminal		<i>company statement</i> <i>DuplexHouse_Heating / 2x3</i>
010 Naming		
030 Geometry		
030-6 Geometry Body		
030-6-5 Geometry Explicit		We do not support explicit geometry.
030-6-9 Geometry Mapped		
040 Presentation		
040-1 Geometric Presentation		


100 Element Aggregation		
100-4 Port Assignment		
110 Connectivity		
110-5 Connectivity by Ports		
130 Grouping		
130-2 Grouping to Systems		
300 Type		
300-1 Type Geometry		We do not support type geometry due to the variety of graphical parameter sets.
300-5 Type Property Set		
General		<i>company statement</i>
_G4 Remarks		















DuplexHouse_Heating / 2x3












DuplexHouse_Sanitary / 2x3



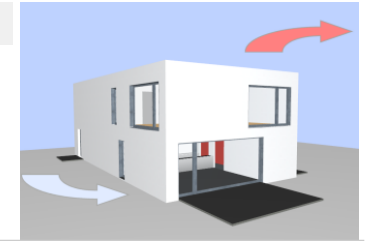
205 IfcFlowController	<i>company statement</i>		<i>DuplexHouse_Sanitary / 2x3</i>
010 Naming	■		
020 Placement			
020-2 Placement Relative	■		
030 Geometry			
030-6 Geometry Body			
030-6-1 Geometry SweptSolid	■	We do not support swept solids due to the complexity and variety of shapes.	
030-6-5 Geometry Explicit	■	We do not support explicit geometry.	
030-6-9 Geometry Mapped	■		
040 Presentation			
040-1 Geometric Presentation	■		
100 Element Aggregation			
100-4 Port Assignment	■		
110 Connectivity			
110-5 Connectivity by Ports	■		
120 Spatial Containment	■		
130 Grouping			
130-2 Grouping to Systems	■		
206 IfcFlowFitting	<i>company statement</i>		<i>DuplexHouse_Sanitary / 2x3</i>
010 Naming	■		

020 Placement		
020-2 Placement Relative		
030 Geometry		
030-6 Geometry Body		
030-6-1 Geometry SweptSolid		We do not support swept solids due to the complexity and variety of shapes.
030-6-5 Geometry Explicit		We do not support explicit geometry.
030-6-9 Geometry Mapped		
040 Presentation		
040-1 Geometric Presentation		
100 Element Aggregation		
100-4 Port Assignment		
110 Connectivity		
110-5 Connectivity by Ports		
120 Spatial Containment		
130 Grouping		
130-2 Grouping to Systems		
208 IfcFlowSegment		<i>company statement</i> <i>DuplexHouse_Sanitary / 2x3</i>
010 Naming		
020 Placement		
020-2 Placement Relative		
030 Geometry		
030-6 Geometry Body		
030-6-1 Geometry SweptSolid		We do not support swept solids due to the complexity and variety of shapes.
030-6-5 Geometry Explicit		We do not support explicit geometry.
030-6-9 Geometry Mapped		

040 Presentation		
040-1 Geometric Presentation		
100 Element Aggregation		
100-4 Port Assignment		
110 Connectivity		
110-5 Connectivity by Ports		
120 Spatial Containment		
130 Grouping		
130-2 Grouping to Systems		
210 IfcFlowTerminal		<i>company statement</i> <i>DuplexHouse_Sanitary / 2x3</i>
010 Naming		
020 Placement		
020-2 Placement Relative		
030 Geometry		
030-6 Geometry Body		
030-6-1 Geometry SweptSolid		We do not support swept solids due to the complexity and variety of shapes.
030-6-5 Geometry Explicit		We do not support explicit geometry.
030-6-9 Geometry Mapped		
040 Presentation		
040-1 Geometric Presentation		
050 CAD Layer		
100 Element Aggregation		
100-4 Port Assignment		
110 Connectivity		
110-5 Connectivity by Ports		















120 Spatial Containment		
130 Grouping		
130-2 Grouping to Systems		
200 Material		
200-1 Single Material		We do not support materials.
210 Property Set		
210-6 Property Set IFC any		We do not support this kind of pset for Sanitary.
210-9 Property Set User Defined		
300 Type		
300-1 Type Geometry		We do not support type geometry due to the variety of graphical parameter sets.
300-2 Type Naming		
300-3 Type Material		We do not support materials.
300-5 Type Property Set		
507 IfcSystem		<i>company statement</i> <i>DuplexHouse_Sanitary / 2x3</i>
010 Naming		
130 Grouping		
130-5 Is Group		
250 System Assignment		
250-2 Services Spatial Element		In our understanding, a MEP system cannot be assigned to a particular spatial structure. It is rather a logical entity, that relates to an arbitrary set of spatial elements
General		<i>company statement</i> <i>DuplexHouse_Sanitary / 2x3</i>
_G4 Remarks		






DuplexHouse_Ventilation / 2x3

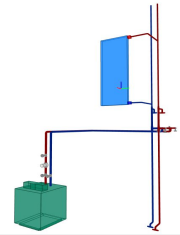


206 IfcFlowFitting	<i>company statement</i>		<i>DuplexHouse_Ventilation / 2x3</i>
010 Naming	■		
020 Placement 020-2 Placement Relative	■		
030 Geometry 030-6 Geometry Body 030-6-1 Geometry SweptSolid 030-6-5 Geometry Explicit 030-6-9 Geometry Mapped	■	We do not support swept solids due to the complexity and variety of shapes.	
040 Presentation 040-1 Geometric Presentation	■	We do not support explicit geometry.	
100 Element Aggregation 100-4 Port Assignment	■		
110 Connectivity 110-5 Connectivity by Ports	■		
120 Spatial Containment	■		
130 Grouping 130-2 Grouping to Systems	■		
207 IfcFlowMovingDevice	<i>company statement</i>		<i>DuplexHouse_Ventilation / 2x3</i>
010 Naming	■		

020 Placement	
020-2 Placement Relative	
030 Geometry	
030-6 Geometry Body	
030-6-1 Geometry SweptSolid	 We do not support swept solids due to the complexity and variety of shapes.
030-6-5 Geometry Explicit	 We do not support explicit geometry.
030-6-9 Geometry Mapped	
040 Presentation	
040-1 Geometric Presentation	
100 Element Aggregation	
100-4 Port Assignment	
110 Connectivity	
110-5 Connectivity by Ports	 Box units like in test case only if connected to center
120 Spatial Containment	
130 Grouping	
130-2 Grouping to Systems	
208 IfcFlowSegment	<i>company statement</i> <i>DuplexHouse_Ventilation / 2x3</i>
010 Naming	
020 Placement	
020-2 Placement Relative	
030 Geometry	
030-6 Geometry Body	
030-6-1 Geometry SweptSolid	 We do not support swept solids due to the complexity and variety of shapes.
030-6-5 Geometry Explicit	 We do not support explicit geometry.
030-6-9 Geometry Mapped	















040 Presentation		
040-1 Geometric Presentation		
100 Element Aggregation		
100-4 Port Assignment		
110 Connectivity		
110-5 Connectivity by Ports		
120 Spatial Containment		
130 Grouping		
130-2 Grouping to Systems		
210 IfcFlowTerminal		<i>company statement</i> <i>DuplexHouse_Ventilation / 2x3</i>
010 Naming		
020 Placement		
020-2 Placement Relative		
030 Geometry		
030-6 Geometry Body		
030-6-1 Geometry SweptSolid		We do not support swept solids due to the complexity and variety of shapes.
030-6-5 Geometry Explicit		We do not support explicit geometry.
030-6-9 Geometry Mapped		
040 Presentation		
040-1 Geometric Presentation		
100 Element Aggregation		
100-4 Port Assignment		
110 Connectivity		
110-5 Connectivity by Ports		
120 Spatial Containment		

130 Grouping 130-2 Grouping to Systems			
507 IfcSystem		<i>company statement</i>	<i>DuplexHouse_Ventilation / 2x3</i>
010 Naming			
130 Grouping 130-5 Is Group			
250 System Assignment 250-2 Services Spatial Element		In our understanding, a MEP system cannot be assigned to a particular spatial structure. It is rather a logical entity, that relates to an arbitrary set of spatial elements	
General		<i>company statement</i>	<i>DuplexHouse_Ventilation / 2x3</i>
_G4 Remarks			



RandomMEP-X1 / 2x3

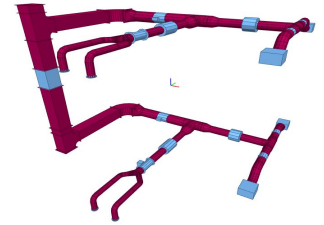
204 IfcEnergyConversionDevice	<i>company statement</i>	<i>RandomMEP-X1 / 2x3</i>
001 GUIDs	■	
030 Geometry 030-6 Geometry Body 030-6-9 Geometry Mapped	■	
120 Spatial Containment	■	
130 Grouping 130-2 Grouping to Systems	■	
300 Type 300-2 Type Naming	■	
205 IfcFlowController	<i>company statement</i>	<i>RandomMEP-X1 / 2x3</i>
001 GUIDs	■	
010 Naming	■	
030 Geometry 030-6 Geometry Body 030-6-9 Geometry Mapped	■	
100 Element Aggregation 100-4 Port Assignment	■	
110 Connectivity 110-5 Connectivity by Ports	■	

120 Spatial Containment		
130 Grouping		
130-2 Grouping to Systems		
300 Type		
300-2 Type Naming		
206 IfcFlowFitting		<i>company statement</i> <i>RandomMEP-X1 / 2x3</i>
001 GUIDs		
010 Naming		
030 Geometry		
030-6 Geometry Body		
030-6-9 Geometry Mapped		
040 Presentation		
040-1 Geometric Presentation		
100 Element Aggregation		
100-4 Port Assignment		
110 Connectivity		
110-5 Connectivity by Ports		
120 Spatial Containment		
130 Grouping		
130-2 Grouping to Systems		
300 Type		
300-2 Type Naming		
300-5 Type Property Set		
208 IfcFlowSegment		<i>company statement</i> <i>RandomMEP-X1 / 2x3</i>
001 GUIDs		

010 Naming	■
030 Geometry	
030-6 Geometry Body	
030-6-9 Geometry Mapped	■
040 Presentation	
040-1 Geometric Presentation	■
100 Element Aggregation	
100-4 Port Assignment	■
110 Connectivity	
110-5 Connectivity by Ports	■
120 Spatial Containment	■
130 Grouping	
130-2 Grouping to Systems	■
300 Type	
300-2 Type Naming	■
300-5 Type Property Set	■
210 IfcFlowTerminal	<i>company statement</i>
	<i>RandomMEP-X1 / 2x3</i>
001 GUIDs	■
010 Naming	■
030 Geometry	
030-6 Geometry Body	
030-6-9 Geometry Mapped	■
100 Element Aggregation	
100-4 Port Assignment	■

110 Connectivity			
110-5 Connectivity by Ports	■		
130 Grouping			
130-2 Grouping to Systems	■		
300 Type			
300-2 Type Naming	■		
300-5 Type Property Set	■		
507 IfcSystem		<i>company statement</i>	<i>RandomMEP-X1 / 2x3</i>
010 Naming	■		
130 Grouping			
130-5 Is Group	■		
General		<i>company statement</i>	<i>RandomMEP-X1 / 2x3</i>
_G4 Remarks	■		

RandomMEP-X2 / 2x3



205 IfcFlowController	<i>company statement</i>	<i>RandomMEP-X2 / 2x3</i>
001 GUIDs	■	
010 Naming	■	
020 Placement 020-2 Placement Relative	■	
030 Geometry 030-6 Geometry Body 030-6-9 Geometry Mapped	■	
040 Presentation 040-1 Geometric Presentation	■	
050 CAD Layer	■	
100 Element Aggregation 100-4 Port Assignment	■	
110 Connectivity 110-5 Connectivity by Ports	■	
120 Spatial Containment	■	
130 Grouping 130-2 Grouping to Systems	■	
300 Type 300-2 Type Naming	■	

206 IfcFlowFitting		<i>company statement</i>	<i>RandomMEP-X2 / 2x3</i>
001 GUIDs	■		
010 Naming	■		
020 Placement			
020-2 Placement Relative	■		
030 Geometry			
030-6 Geometry Body			
030-6-9 Geometry Mapped	■		
040 Presentation			
040-1 Geometric Presentation	■		
050 CAD Layer	■		
100 Element Aggregation			
100-4 Port Assignment	■		
110 Connectivity			
110-5 Connectivity by Ports	■		
120 Spatial Containment	■		
130 Grouping			
130-2 Grouping to Systems	■		
300 Type			
300-2 Type Naming	■		
300-5 Type Property Set	■		
207 IfcFlowMovingDevice		<i>company statement</i>	<i>RandomMEP-X2 / 2x3</i>
001 GUIDs	■		
010 Naming	■		

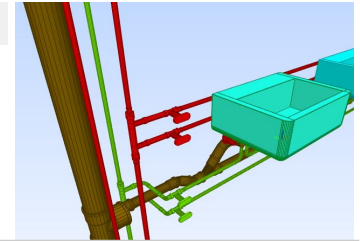
020 Placement	
020-2 Placement Relative	■
030 Geometry	
030-6 Geometry Body	
030-6-9 Geometry Mapped	■
040 Presentation	
040-1 Geometric Presentation	■
050 CAD Layer	■
100 Element Aggregation	
100-4 Port Assignment	■
110 Connectivity	
110-5 Connectivity by Ports	■
120 Spatial Containment	■
130 Grouping	
130-2 Grouping to Systems	■
300 Type	
300-2 Type Naming	■
208 IfcFlowSegment	<i>company statement</i>
001 GUIDs	■
010 Naming	■
020 Placement	
020-2 Placement Relative	■
030 Geometry	
030-6 Geometry Body	
030-6-9 Geometry Mapped	■

RandomMEP-X2 / 2x3

040 Presentation		
040-1 Geometric Presentation	■	
050 CAD Layer	■	
100 Element Aggregation		
100-4 Port Assignment	■	
110 Connectivity		
110-5 Connectivity by Ports	■	
120 Spatial Containment	■	
130 Grouping		
130-2 Grouping to Systems	■	
300 Type		
300-2 Type Naming	■	
300-5 Type Property Set	■	
210 IfcFlowTerminal		<i>company statement</i> <i>RandomMEP-X2 / 2x3</i>
001 GUIDs	■	
010 Naming	■	
020 Placement		
020-2 Placement Relative	■	
030 Geometry		
030-6 Geometry Body		
030-6-9 Geometry Mapped	■	
040 Presentation		
040-1 Geometric Presentation	■	
050 CAD Layer	■	

100 Element Aggregation			
100-4 Port Assignment	■		
110 Connectivity			
110-5 Connectivity by Ports	■		
120 Spatial Containment	■		
130 Grouping			
130-2 Grouping to Systems	■		
300 Type			
300-2 Type Naming	■		
300-5 Type Property Set	■		
401 IfcMember		<i>company statement</i>	<i>RandomMEP-X2 / 2x3</i>
507 IfcSystem		<i>company statement</i>	<i>RandomMEP-X2 / 2x3</i>
010 Naming	■		
130 Grouping			
130-5 Is Group	■		
General		<i>company statement</i>	<i>RandomMEP-X2 / 2x3</i>
_G4 Remarks	■		

RandomMEP-X3 / 2x3



205 IfcFlowController	<i>company statement</i>		<i>RandomMEP-X3 / 2x3</i>
001 GUIDs	■		
010 Naming	■		
020 Placement			
020-2 Placement Relative	■		
030 Geometry			
030-6 Geometry Body			
030-6-9 Geometry Mapped	■		
110 Connectivity			
110-5 Connectivity by Ports	■		
120 Spatial Containment	■		
130 Grouping			
130-2 Grouping to Systems	■		
300 Type			
300-2 Type Naming	■		
206 IfcFlowFitting	<i>company statement</i>		<i>RandomMEP-X3 / 2x3</i>
001 GUIDs	■		
010 Naming	■		
020 Placement			
020-2 Placement Relative	■		

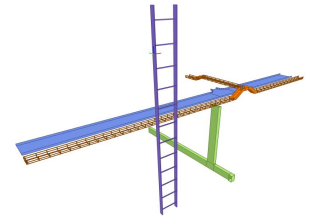
030 Geometry	
030-6 Geometry Body	
030-6-9 Geometry Mapped	■
040 Presentation	
040-1 Geometric Presentation	■
050 CAD Layer	■
100 Element Aggregation	
100-4 Port Assignment	■
110 Connectivity	
110-5 Connectivity by Ports	■
120 Spatial Containment	■
130 Grouping	
130-2 Grouping to Systems	■
210 Property Set	
210-9 Property Set User Defined	■
300 Type	
300-2 Type Naming	■
208 IfcFlowSegment	<i>company statement</i>
001 GUIDs	■
010 Naming	■
020 Placement	
020-2 Placement Relative	■
030 Geometry	
030-6 Geometry Body	
030-6-9 Geometry Mapped	■

RandomMEP-X3 / 2x3

040 Presentation		
040-1 Geometric Presentation	■	
050 CAD Layer	■	
100 Element Aggregation		
100-4 Port Assignment	■	
110 Connectivity		
110-5 Connectivity by Ports	■	
120 Spatial Containment	■	
130 Grouping		
130-2 Grouping to Systems	■	
210 Property Set		
210-1 Property Set IFC Common	■	
210-9 Property Set User Defined	■	
300 Type		
300-2 Type Naming	■	
300-5 Type Property Set	■	
210 IfcFlowTerminal		<i>company statement</i> <i>RandomMEP-X3 / 2x3</i>
001 GUIDs	■	
010 Naming	■	
020 Placement		
020-2 Placement Relative	■	
030 Geometry		
030-6 Geometry Body		
030-6-9 Geometry Mapped	■	

040 Presentation			
040-1 Geometric Presentation	■		
050 CAD Layer	■		
100 Element Aggregation			
100-4 Port Assignment	■		
110 Connectivity			
110-5 Connectivity by Ports	■		
120 Spatial Containment	■		
130 Grouping			
130-2 Grouping to Systems	■		
210 Property Set			
210-9 Property Set User Defined	■		
300 Type			
300-2 Type Naming	■		
507 IfcSystem		<i>company statement</i>	<i>RandomMEP-X3 / 2x3</i>
010 Naming	■		
130 Grouping			
130-5 Is Group	■		
General		<i>company statement</i>	<i>RandomMEP-X3 / 2x3</i>
_G4 Remarks	■		

RandomMEP-X4 / 2x3

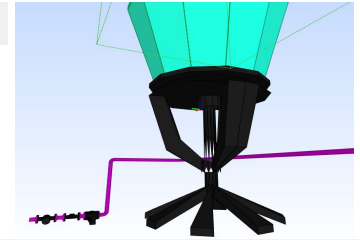


206 IfcFlowFitting	<i>company statement</i>	<i>RandomMEP-X4 / 2x3</i>
001 GUIDs	■	
010 Naming	■	
020 Placement 020-2 Placement Relative	■	
030 Geometry 030-6 Geometry Body 030-6-9 Geometry Mapped	■	
040 Presentation 040-1 Geometric Presentation	■	
050 CAD Layer	■	
100 Element Aggregation 100-4 Port Assignment	■	
110 Connectivity 110-5 Connectivity by Ports	■	
120 Spatial Containment	■	
130 Grouping 130-2 Grouping to Systems	■	
210 Property Set 210-9 Property Set User Defined	■	

300 Type		
300-2 Type Naming	■	
208 IfcFlowSegment		<i>company statement</i> <i>RandomMEP-X4 / 2x3</i>
001 GUIDs	■	
010 Naming	■	
020 Placement		
020-2 Placement Relative	■	
030 Geometry		
030-6 Geometry Body		
030-6-9 Geometry Mapped	■	
040 Presentation		
040-1 Geometric Presentation	■	
050 CAD Layer	■	
100 Element Aggregation		
100-4 Port Assignment	■	
110 Connectivity		
110-5 Connectivity by Ports	■	
120 Spatial Containment	■	
130 Grouping		
130-2 Grouping to Systems	■	
210 Property Set		
210-9 Property Set User Defined	■	
300 Type		
300-2 Type Naming	■	
501 IfcProject		<i>company statement</i> <i>RandomMEP-X4 / 2x3</i>

001 GUIDs	■		
010 Naming	■		
507 IfcSystem		<i>company statement</i>	<i>RandomMEP-X4 / 2x3</i>
001 GUIDs	■		
010 Naming	■		
130 Grouping			
130-5 Is Group	■		
508 IfcZone		<i>company statement</i>	<i>RandomMEP-X4 / 2x3</i>
General		<i>company statement</i>	<i>RandomMEP-X4 / 2x3</i>
_G4 Remarks	■		















RandomMEP-X5 / 2x3



RandomMEP-X5 / 2x3

205 IfcFlowController	<i>company statement</i>	
001 GUIDs	■	
010 Naming	■	
020 Placement		
020-2 Placement Relative	■	
030 Geometry		
030-6 Geometry Body		
030-6-9 Geometry Mapped	■	
040 Presentation		
040-1 Geometric Presentation	■	
050 CAD Layer	■	
100 Element Aggregation		
100-4 Port Assignment	■	
110 Connectivity		
110-5 Connectivity by Ports	■	
120 Spatial Containment	■	
130 Grouping		
130-2 Grouping to Systems	■	
210 Property Set		
210-3 Property Set User Defined	■	

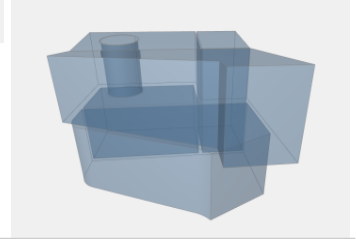
300 Type		
300-2 Type Naming	■	
206 IfcFlowFitting		<i>company statement</i> <i>RandomMEP-X5 / 2x3</i>
001 GUIDs	■	
010 Naming	■	
020 Placement		
020-2 Placement Relative	■	
030 Geometry		
030-6 Geometry Body		
030-6-9 Geometry Mapped	■	
040 Presentation		
040-1 Geometric Presentation	■	
050 CAD Layer	■	
100 Element Aggregation		
100-4 Port Assignment	■	
110 Connectivity		
110-5 Connectivity by Ports	■	
120 Spatial Containment	■	
130 Grouping		
130-2 Grouping to Systems	■	
210 Property Set		
210-9 Property Set User Defined	■	
300 Type		
300-2 Type Naming	■	
207 IfcFlowMovingDevice		<i>company statement</i> <i>RandomMEP-X5 / 2x3</i>

001 GUIDs		
010 Naming		
030 Geometry		
030-6 Geometry Body		
030-6-9 Geometry Mapped		
040 Presentation		
040-1 Geometric Presentation		
120 Spatial Containment		
130 Grouping		
130-2 Grouping to Systems		
300 Type		
300-2 Type Naming		
208 IfcFlowSegment		<i>company statement</i> <i>RandomMEP-X5 / 2x3</i>
001 GUIDs		
010 Naming		
020 Placement		
020-2 Placement Relative		
030 Geometry		
030-6 Geometry Body		
030-6-9 Geometry Mapped		
040 Presentation		
040-1 Geometric Presentation		
050 CAD Layer		
100 Element Aggregation		
100-4 Port Assignment		

110 Connectivity		
110-5 Connectivity by Ports	■	
120 Spatial Containment	■	
130 Grouping		
130-2 Grouping to Systems	■	
210 Property Set		
210-9 Property Set User Defined	■	
300 Type		
300-2 Type Naming	■	
210 IfcFlowTerminal		<i>company statement</i> <i>RandomMEP-X5 / 2x3</i>
001 GUIDs	■	
010 Naming	■	
020 Placement		
020-2 Placement Relative	■	
030 Geometry		
030-6 Geometry Body		
030-6-9 Geometry Mapped	■	
040 Presentation		
040-1 Geometric Presentation	■	
050 CAD Layer	■	
100 Element Aggregation		
100-4 Port Assignment	■	
110 Connectivity		
110-5 Connectivity by Ports	■	
120 Spatial Containment	■	

130 Grouping			
130-2 Grouping to Systems	■		
210 Property Set			
210-9 Property Set User Defined	■		
300 Type			
300-2 Type Naming	■		
507 IfcSystem		<i>company statement</i>	<i>RandomMEP-X5 / 2x3</i>
010 Naming	■		
General		<i>company statement</i>	<i>RandomMEP-X5 / 2x3</i>
_G4 Remarks	■		

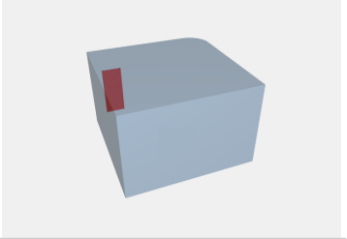
Space_01MEP / 2x3



111 IfcBuildingElementProxy	<i>company statement</i>		<i>Space_01MEP / 2x3</i>
010 Naming	■		
020 Placement			
020-2 Placement Relative	■		
030 Geometry			
030-6 Geometry Body			
030-6-1 Geometry SweptSolid	■		
210 Property Set			
210-2 Property Set IFC any	■		
505 IfcSpace	<i>company statement</i>		<i>Space_01MEP / 2x3</i>
001 GUIDs	■		
002 History	■		
010 Naming	■		
020 Placement			
020-2 Placement Relative	■		
030 Geometry			
030-6 Geometry Body			
030-6-1 Geometry SweptSolid	■		
030-6-2 Geometry Clipping	■		

040 Presentation		
040-1 Geometric Presentation	■	
050 CAD Layer	■	
150 Spatial Aggregation		
150-1 Spatial Composition	■	
210 Property Set		
210-6 Property Set IFC any	■	
General		<i>company statement</i> <i>Space_01MEP / 2x3</i>
_G4 Remarks	■	CATS does not export IfcSpaces.

UnitTest-01MEP / 2x3



501 IfcProject	<i>company statement</i>	<i>UnitTest-01MEP / 2x3</i>
005 Project Units		
005-1 Project Metric Units	■	
005-2 Project Imperial Units	■	
General	<i>company statement</i>	<i>UnitTest-01MEP / 2x3</i>
_G4 Remarks	■	