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## Introduction

Founded in 1983, Progman Oy is a Finnish company with its headquarters located in Rauma, Finland.

Progman specialises in software and services for the building industry and is known as the developer of MagiCAD software for MEP design.

With more than 20,000 licenses in use in over 50 countries, MagiCAD has a solid track record from thousands of successful projects internationally.

MagiCAD is IFC2x3 CV2.0 MEP Export Certified from MagiCAD version 2015.11 onwards.

IFC functionality is integrated in the MagiCAD software and there is no need for additional installations or updates.




MagiCAD's flexible IFC export supports MEP export with user-selected data source and free selection of objects manually, based on storey or by selecting the entire project.

User-selected data source improves collaboration and coordination in multidisciplinary projects and object selection enables the user to export and deliver vast projects in smaller parts.

MagiCAD supports the export of native data by enabling the users to either build their own property sets or use ready-made ones.

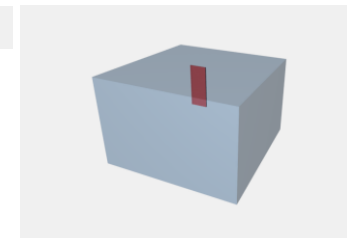
A ready-made property set configuration is delivered with MagiCAD.

## Testlist

Name test	concepts total	manually checked		
				
CharsetTest-01MEP / 2x3	2	2		
DuplexHouse_Electrical / 2x3	65	47	2	16
DuplexHouse_Heating / 2x3	56	46		10
DuplexHouse_Sanitary / 2x3	52	45		7
DuplexHouse_Ventilation / 2x3	44	40		4
RandomMEP-X1 / 2x3	18	16		2
RandomMEP-X2 / 2x3	29	29		
RandomMEP-X3 / 2x3	30	30		
RandomMEP-X4 / 2x3	42	42		
RandomMEP-X5 / 2x3	64	64		
Space_01MEP / 2x3			1	14
UnitTest-01MEP / 2x3	3	1	1	1

## Concepts

### CharsetTest-01MEP / 2x3












General	<i>company statement</i>		<i>CharsetTest-01MEP / 2x3</i>
_G1 Character sets	■	\S\, \X1 and \X2\ encoding is supported.	
_G4 Remarks	■		











## DuplexHouse\_Electrical / 2x3



















DuplexHouse\_Electrical / 2x3

204 IfcEnergyConversionDevice	<i>company statement</i>	
010 Naming	■	Added blind motors (ifcEnergyConversionDevice)
020 Placement 020-2 Placement Relative	■	Added blind motors ifcEnergyConversionDevice)
030 Geometry 030-6 Geometry Body 030-6-5 Geometry Explicit 030-6-9 Geometry Mapped	■	Added blind motors ifcEnergyConversionDevice) [[2015-03-31 MR] Added blind motors ifcEnergyConversionDevice)
100 Element Aggregation 100-4 Port Assignment	■	Ports are not supported yet.
110 Connectivity 110-5 Connectivity by Ports	■	Ports are not supported yet.
120 Spatial Containment	■	Added blind motors ifcEnergyConversionDevice)
130 Grouping 130-2 Grouping to Systems	■	Added blind motors ifcEnergyConversionDevice)












300 Type		
300-1 Type Geometry		Mapped geometry for instances. Not geometry for types.
300-2 Type Naming		Added blind motors ifcEnergyConversionDevice)
205 IfcFlowController		<i>company statement</i> <span style="float: right;"><i>DuplexHouse_Electrical / 2x3</i></span>
010 Naming		Added type and instance name/descriptions. Type name comes from (our native) product name Type descriptions comes from (native) description of product. Instance name comes from (native) instance code, which is set by user (automatically or manually) Instance description is (native) group name (group where entity belongs)
020 Placement		
020-2 Placement Relative		
030 Geometry		
030-6 Geometry Body		
030-6-5 Geometry Explicit		Sorry, I am not sure of this but at least in Plumbing this is acceptable (quote from Plumbing section/KH):  "All IFCFLOWCONTROLLER have explicit geometry (SurfaceModel)."
030-6-9 Geometry Mapped		
100 Element Aggregation		
100-4 Port Assignment		Ports are not supported yet.
110 Connectivity		
110-5 Connectivity by Ports		Ports are not supported yet.
120 Spatial Containment		
130 Grouping		
130-2 Grouping to Systems		




300 Type		
300-1 Type Geometry		MagiCAD is not currently supporting that kind of type geometry but we map geometry between instances to reduce file size.
300-2 Type Naming		
206 IfcFlowFitting		<i>company statement</i> <span style="float: right;"><i>DuplexHouse_Electrical / 2x3</i></span>
010 Naming		There is not such classes in original testing instructions -> prove that we support those kind of elements are in separate file.  Please see additional file: DuplexHouse_Electrical_Segments_And_Voids_MagiCAD.ifc - includes fittings, segments and voids.
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		Ports are not supported yet.
110 Connectivity		
110-5 Connectivity by Ports		Ports are not supported yet.
120 Spatial Containment		
130 Grouping		
130-2 Grouping to Systems		

300 Type		
300-1 Type Geometry		MagiCAD is not currently supporting that kind of type geometry but we map geometry between instances to reduce file size.
300-2 Type Naming		
208 IfcFlowSegment		<i>company statement</i> <span style="float: right;"><i>DuplexHouse_Electrical / 2x3</i></span>
010 Naming		There is not such classes in original testing instructions -> prove that we support those kind of elements are in separate file.  Please see additional file: DuplexHouse_Electrical_Segments_And_Voids_MagiCAD.ifc - includes fittings, segments and voids.
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		Ports are not supported yet.
110 Connectivity		
110-5 Connectivity by Ports		Ports are not supported yet.
120 Spatial Containment		
130 Grouping		
130-2 Grouping to Systems		

300 Type		
300-1 Type Geometry		MagiCAD is not currently supporting that kind of type geometry but we map geometry between instances to reduce file size.
300-2 Type Naming		
210 IfcFlowTerminal		<i>company statement</i> <span style="float: right;"><i>DuplexHouse_Electrical / 2x3</i></span>
010 Naming		Added type and instance name/descriptions. Type descriptions comes from (native) description of product. Instance name comes from (native) instance code, which is set by user (automatically or manually) Instance description is (native) group name (group where entity belongs)
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		
050 CAD Layer		
100 Element Aggregation		
100-4 Port Assignment		Ports are not supported yet.
110 Connectivity		
110-5 Connectivity by Ports		Ports are not supported yet.
120 Spatial Containment		
130 Grouping		
130-2 Grouping to Systems		

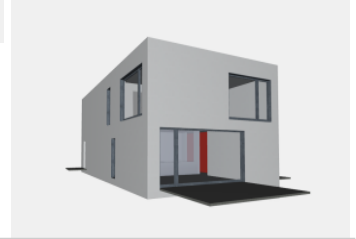


210 Property Set			
210-1 Property Set IFC Common			
210-6 Property Set IFC any			
210-9 Property Set User Defined			
300 Type			
300-1 Type Geometry		MagiCAD is not currently supporting that kind of type geometry but we map geometry between instances to reduce file size.	
300-2 Type Naming			
501 IfcProject		<i>company statement</i>	<i>DuplexHouse_Electrical / 2x3</i>
010 Naming		We are not fully supporting project/site/building name (just setting bulk name for it) since common work flow is such that Building name comes from Arch-ifc. And when HVAC/Electrical ifc is combined to it, building name issue is not relevant to us.	
503 IfcBuilding		<i>company statement</i>	<i>DuplexHouse_Electrical / 2x3</i>
010 Naming		We are not fully supporting project/site/building name (just setting bulk name for it) since common work flow is such that Building name comes from Arch-ifc. And when HVAC/Electrical ifc is combined to it, building name issue is not relevant to us.	
504 IfcBuildingStorey		<i>company statement</i>	<i>DuplexHouse_Electrical / 2x3</i>
010 Naming		Corrected	
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		System to system grouping is not supported. Entities to systems grouping is supported. To our understanding this is the point (of systems)
130-5 Is Group		
General		<i>company statement</i>
_G4 Remarks		

DuplexHouse\_Electrical / 2x3













## 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	■	
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	■ MagiCAD is not currently supporting that kind of type geometry but we map geometry between instances to reduce file size.	
300-5 Type Property Set	■ MagiCAD is not currently supporting type property sets for all classes.	
205 IfcFlowController	<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	■
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	■ MagiCAD is not currently supporting that kind of type geometry but we map geometry between instances to reduce file size.
300-5 Type Property Set	■ MagiCAD is not currently supporting type property sets for all classes.
206 IfcFlowFitting	<i>company statement</i>
010 Naming	■
030 Geometry	
030-6 Geometry Body	
030-6-5 Geometry Explicit	■
030-6-9 Geometry Mapped	■
040 Presentation	
040-1 Geometric Presentation	■

DuplexHouse\_Heating / 2x3

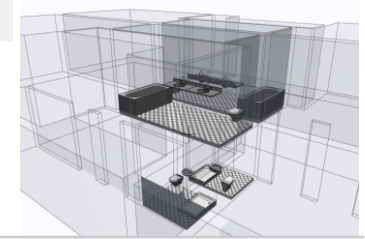
100 Element Aggregation		
100-4 Port Assignment		
110 Connectivity		
110-5 Connectivity by Ports		
130 Grouping		
130-2 Grouping to Systems		
300 Type		
300-1 Type Geometry		MagiCAD is not currently supporting that kind of type geometry but we map geometry between instances to reduce file size.
300-5 Type Property Set		
207 IfcFlowMovingDevice		<i>company statement</i> <span style="float: right;"><i>DuplexHouse_Heating / 2x3</i></span>
010 Naming		
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		
130 Grouping		
130-2 Grouping to Systems		

300 Type			
300-1 Type Geometry		MagiCAD is not currently supporting that kind of type geometry but we map geometry between instances to reduce file size.	
300-5 Type Property Set		MagiCAD is not currently supporting type property sets for all classes.	
208 IfcFlowSegment		<i>company statement</i>	<i>DuplexHouse_Heating / 2x3</i>
010 Naming			
030 Geometry			
030-6 Geometry Body			
030-6-1 Geometry SweptSolid		Note: user can decide if SweptSolids are used (UI selection).	
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			
130 Grouping			
130-2 Grouping to Systems			
300 Type			
300-1 Type Geometry		MagiCAD is not currently supporting that kind of type geometry but we map geometry between instances to reduce file size.	
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	■
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	■ MagiCAD is not currently supporting that kind of type geometry but we map geometry between instances to reduce file size.
300-5 Type Property Set	■ MagiCAD is not currently supporting type property sets for all classes.
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 are supporting sweptSolids for ducts and pipes, not other classes.	
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	■		
206 IfcFlowFitting	<i>company statement</i>		<i>DuplexHouse_Sanitary / 2x3</i>
010 Naming	■		



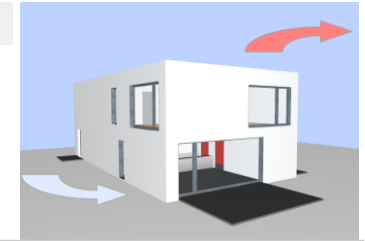
020 Placement		
020-2 Placement Relative		
030 Geometry		
030-6 Geometry Body		
030-6-1 Geometry SweptSolid		We are supporting sweptSolids for ducts and pipes, not other classes.
030-6-5 Geometry Explicit		
030-6-9 Geometry Mapped		
040 Presentation		
040-1 Geometric Presentation		
100 Element Aggregation		
100-4 Port Assignment		
110 Connectivity		
110-5 Connectivity by Ports		
120 Spatial Containment		
130 Grouping		
130-2 Grouping to Systems		
208 IfcFlowSegment		<i>company statement</i> <span style="float: right;"><i>DuplexHouse_Sanitary / 2x3</i></span>
010 Naming		
020 Placement		
020-2 Placement Relative		

030 Geometry		
030-6 Geometry Body		
030-6-1 Geometry SweptSolid	■	MR 2014-3-13] Note: user can decide if SweptSolids are used (UI selection).
030-6-5 Geometry Explicit	■	MR 2014-3-13] Note: user can decide if SweptSolids are used (UI selection).
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> <span style="float: right;"><i>DuplexHouse_Sanitary / 2x3</i></span>
010 Naming	■	
020 Placement		
020-2 Placement Relative	■	
030 Geometry		
030-6 Geometry Body		
030-6-1 Geometry SweptSolid	■	We are supporting sweptSolids for ducts and pipes, not other classes.
030-6-5 Geometry Explicit	■	
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 are not supporting materials.
210 Property Set	
210-6 Property Set IFC any	■ Added instance psets for sanitary terminals and also to flowmeters  New test file including 'official' property sets uploaded.
210-9 Property Set User Defined	■ New test file including user defined property sets uploaded.















<p>300 Type</p> <p>300-1 Type Geometry</p> <p>300-2 Type Naming</p> <p>300-3 Type Material</p> <p>300-5 Type Property Set</p>	<p> We are mapping geometry by sharing with IfcRepresentationMap. Which is as I have understood (by mailing with TL) sufficient way. Quite: "sharing with IfcRepresentationMap is sufficient, having it assigned to the types would be better..."</p> <p></p> <p> We are not supporting materials.</p> <p> Added type psets for flow terminals (among others).</p> <p>MagiCAD is not currently supporting type property sets for all classes.</p>
<p>507 IfcSystem</p>	<p><i>company statement</i></p>
<p>010 Naming</p>	<p></p>
<p>130 Grouping</p> <p>130-5 Is Group</p>	<p></p>
<p>250 System Assignment</p> <p>250-2 Services Spatial Element</p>	<p> According to our understanding there is no need for that kind of relations. System is kind of abstract entity and it (usually) can't be positioned any meaningful spatial structure. System's parts (objects) are related to spatial structures, but IfcSystem not.</p>
<p>General</p>	<p><i>company statement</i></p>
<p>_G4 Remarks</p>	<p> Replaced those two common parts with models that goes to IfcFlowType.</p> <p>Those two shower trays are modeled as common parts, since we don't have such 'real' parts in our current databases.</p>






## 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	■		
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	■		
207 IfcFlowMovingDevice		<i>company statement</i>	<i>DuplexHouse_Ventilation / 2x3</i>
010 Naming	■		

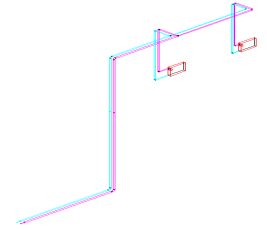
020 Placement		
020-2 Placement Relative		
030 Geometry		
030-6 Geometry Body		
030-6-1 Geometry SweptSolid		
030-6-5 Geometry Explicit		
030-6-9 Geometry Mapped		
040 Presentation		
040-1 Geometric Presentation		
100 Element Aggregation		
100-4 Port Assignment		
110 Connectivity		
110-5 Connectivity by Ports		
120 Spatial Containment		
130 Grouping		
130-2 Grouping to Systems		
208 IfcFlowSegment		<i>company statement</i> <span style="float: right;"><i>DuplexHouse_Ventilation / 2x3</i></span>
010 Naming		
020 Placement		
020-2 Placement Relative		
030 Geometry		
030-6 Geometry Body		
030-6-1 Geometry SweptSolid		Note: user can decide if SweptSolids are used (UI selection).
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		
210 IfcFlowTerminal		<i>company statement</i> <span style="float: right;"><i>DuplexHouse_Ventilation / 2x3</i></span>
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		
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		<p>According to our understanding there is no need for that kind of relations. System is kind of abstract entity and it (usually) can't be positioned any meaningful spatial structure. System's parts (objects) are related to spatial structures, but IfcSystem not.</p>	
General		<i>company statement</i>	<i>DuplexHouse_Ventilation / 2x3</i>
_G4 Remarks			



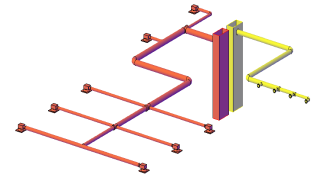
## RandomMEP-X1 / 2x3



206 IfcFlowFitting	<i>company statement</i>		<i>RandomMEP-X1 / 2x3</i>
030 Geometry			
030-6 Geometry Body			
030-6-9 Geometry Mapped	■		
040 Presentation			
040-1 Geometric Presentation	■		
110 Connectivity			
110-5 Connectivity by Ports	■		
300 Type			
300-1 Type Geometry	■	We are supporting sweptSolids for ducts and pipes, not other classes.	
300-2 Type Naming	■		
300-5 Type Property Set	■		
208 IfcFlowSegment	<i>company statement</i>		<i>RandomMEP-X1 / 2x3</i>
030 Geometry			
030-6 Geometry Body			
030-6-9 Geometry Mapped	■		
040 Presentation			
040-1 Geometric Presentation	■		
110 Connectivity			
110-5 Connectivity by Ports	■	Flow directions are corrected now.	

210 Property Set		
300 Type		
300-2 Type Naming		
300-5 Type Property Set		
210 IfcFlowTerminal		<i>company statement</i> <span style="float: right;"><i>RandomMEP-X1 / 2x3</i></span>
030 Geometry		
030-6 Geometry Body		
030-6-9 Geometry Mapped		
110 Connectivity		
110-5 Connectivity by Ports		
300 Type		
300-1 Type Geometry		We are supporting sweptSolids for ducts and pipes, not other classes.
300-2 Type Naming		
507 IfcSystem		<i>company statement</i> <span style="float: right;"><i>RandomMEP-X1 / 2x3</i></span>
010 Naming		
130 Grouping		
130-5 Is Group		
General		<i>company statement</i> <span style="float: right;"><i>RandomMEP-X1 / 2x3</i></span>
_G4 Remarks		Flow directions are corrected now.

## RandomMEP-X2 / 2x3



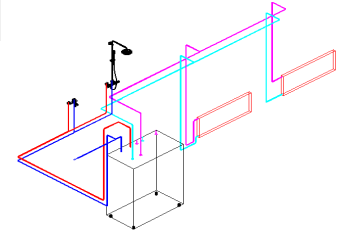
206 IfcFlowFitting	<i>company statement</i>		<i>RandomMEP-X2 / 2x3</i>
010 Naming	■		
020 Placement			
020-2 Placement Relative	■		
030 Geometry			
030-6 Geometry Body			
030-6-5 Geometry Explicit	■		
030-6-9 Geometry Mapped	■		
040 Presentation			
040-1 Geometric Presentation	■		
100 Element Aggregation			
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>RandomMEP-X2 / 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	■	
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> <span style="float: right;"><i>RandomMEP-X2 / 2x3</i></span>
010 Naming	■	
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	■
General	<i>company statement</i>
_G4 Remarks	■

RandomMEP-X2 / 2x3

## RandomMEP-X3 / 2x3

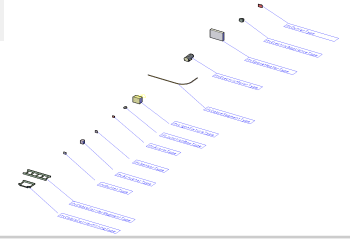


204 IfcEnergyConversionDevice		<i>company statement</i>	<i>RandomMEP-X3 / 2x3</i>
001 GUIDs	■		
010 Naming	■		
030 Geometry			
030-6 Geometry Body			
030-6-5 Geometry Explicit	■		
030-6-9 Geometry Mapped	■		
040 Presentation			
040-1 Geometric Presentation	■		
100 Element Aggregation			
100-4 Port Assignment	■		
110 Connectivity			
110-5 Connectivity by Ports	■		
130 Grouping			
130-2 Grouping to Systems	■		
206 IfcFlowFitting		<i>company statement</i>	<i>RandomMEP-X3 / 2x3</i>
001 GUIDs	■		
010 Naming	■		

030 Geometry		
030-6 Geometry Body		
030-6-9 Geometry Mapped		
040 Presentation		
040-1 Geometric Presentation		
110 Connectivity		
110-5 Connectivity by Ports		Flow directions are corrected now.
300 Type		
300-2 Type Naming		
208 IfcFlowSegment		<i>company statement</i> <span style="float: right;"><i>RandomMEP-X3 / 2x3</i></span>
001 GUIDs		
030 Geometry		
030-6 Geometry Body		
030-6-9 Geometry Mapped		
040 Presentation		
040-1 Geometric Presentation		
110 Connectivity		
110-5 Connectivity by Ports		
300 Type		
300-2 Type Naming		
300-5 Type Property Set		
210 IfcFlowTerminal		<i>company statement</i> <span style="float: right;"><i>RandomMEP-X3 / 2x3</i></span>
001 GUIDs		

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	■	
130 Grouping		
130-2 Grouping to Systems	■	
507 IfcSystem		<i>company statement</i> <span style="float: right;"><i>RandomMEP-X3 / 2x3</i></span>
010 Naming	■	
130 Grouping		
130-5 Is Group	■	
General		<i>company statement</i> <span style="float: right;"><i>RandomMEP-X3 / 2x3</i></span>
_G4 Remarks	■	





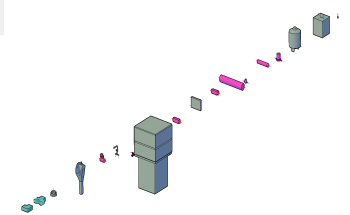
## RandomMEP-X4 / 2x3

203 IfcDistributionControlElement	<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 030-6-5 Geometry Explicit 030-6-9 Geometry Mapped	■ ■ ■	
120 Spatial Containment	■	
130 Grouping 130-2 Grouping to Systems	■	
300 Type 300-2 Type Naming	■	
204 IfcEnergyConversionDevice	<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		
030-6-5 Geometry Explicit	■	
030-6-9 Geometry Mapped	■	
120 Spatial Containment	■	
130 Grouping		
130-2 Grouping to Systems	■	
300 Type		
300-2 Type Naming	■	
206 IfcFlowFitting		<i>company statement</i> <span style="float: right;"><i>RandomMEP-X4 / 2x3</i></span>
001 GUIDs	■	
010 Naming	■	
020 Placement		
020-2 Placement Relative	■	
030 Geometry		
030-6 Geometry Body		
030-6-5 Geometry Explicit	■	
030-6-9 Geometry Mapped	■	
120 Spatial Containment	■	
130 Grouping		
130-2 Grouping to Systems	■	
300 Type		
300-2 Type Naming	■	
208 IfcFlowSegment		<i>company statement</i> <span style="float: right;"><i>RandomMEP-X4 / 2x3</i></span>
001 GUIDs	■	

010 Naming	■	
020 Placement		
020-2 Placement Relative	■	
030 Geometry		
030-6 Geometry Body		
030-6-5 Geometry Explicit	■	
030-6-9 Geometry Mapped	■	
120 Spatial Containment	■	
130 Grouping		
130-2 Grouping to Systems	■	
300 Type		
300-2 Type Naming	■	
210 IfcFlowTerminal		<i>company statement</i> <span style="float: right;"><i>RandomMEP-X4 / 2x3</i></span>
001 GUIDs	■	
010 Naming	■	
020 Placement		
020-2 Placement Relative	■	
030 Geometry		
030-6 Geometry Body		
030-6-5 Geometry Explicit	■	
030-6-9 Geometry Mapped	■	
120 Spatial Containment	■	
130 Grouping		
130-2 Grouping to Systems	■	

300 Type		
300-2 Type Naming	■	
507 IfcSystem		<i>company statement</i> <span style="float: right;"><i>RandomMEP-X4 / 2x3</i></span>
010 Naming	■	
General		<i>company statement</i> <span style="float: right;"><i>RandomMEP-X4 / 2x3</i></span>
_G4 Remarks	■	Fields have been added.



## RandomMEP-X5 / 2x3

204 IfcEnergyConversionDevice	<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			
030-6-5 Geometry Explicit	■		
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	■		
205 IfcFlowController	<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		
030-6-5 Geometry Explicit	■	
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	■	
206 IfcFlowFitting		<i>company statement</i> <span style="float: right;"><i>RandomMEP-X5 / 2x3</i></span>
001 GUIDs	■	
010 Naming	■	
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	■	
120 Spatial Containment	■	

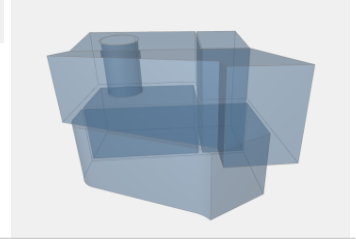
130 Grouping			
130-2 Grouping to Systems		■	
300 Type			
300-2 Type Naming		■	
207 IfcFlowMovingDevice			<i>company statement</i> <span style="float: right;"><i>RandomMEP-X5 / 2x3</i></span>
001 GUIDs		■	
010 Naming		■	
030 Geometry			
030-6 Geometry Body			
030-6-5 Geometry Explicit		■	
030-6-9 Geometry Mapped		■	
040 Presentation			
040-1 Geometric Presentation		■	
120 Spatial Containment		■	
130 Grouping			
130-2 Grouping to Systems		■	
300 Type			
300-2 Type Naming		■	
209 IfcFlowStorageDevice			<i>company statement</i> <span style="float: right;"><i>RandomMEP-X5 / 2x3</i></span>
001 GUIDs		■	
010 Naming		■	
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	■
120 Spatial Containment	■
130 Grouping	
130-2 Grouping to Systems	■
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	
030-6-5 Geometry Explicit	■
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	■	
211 IfcFlowTreatmentDevice		<i>company statement</i> <span style="float: right;"><i>RandomMEP-X5 / 2x3</i></span>
001 GUIDs	■	
010 Naming	■	
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	■	
120 Spatial Containment	■	
130 Grouping		
130-2 Grouping to Systems	■	
300 Type		
300-2 Type Naming	■	
507 IfcSystem		<i>company statement</i> <span style="float: right;"><i>RandomMEP-X5 / 2x3</i></span>
010 Naming	■	
General		<i>company statement</i> <span style="float: right;"><i>RandomMEP-X5 / 2x3</i></span>
_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> <span style="float: right;"><i>Space_01MEP / 2x3</i></span>
_G4 Remarks	■	We are not exporting lfcSpace but we can utilize existing lfcSpaces.



MagiCAD can append MEP parts to existing IfcSpaces but does not produce spaces itself.