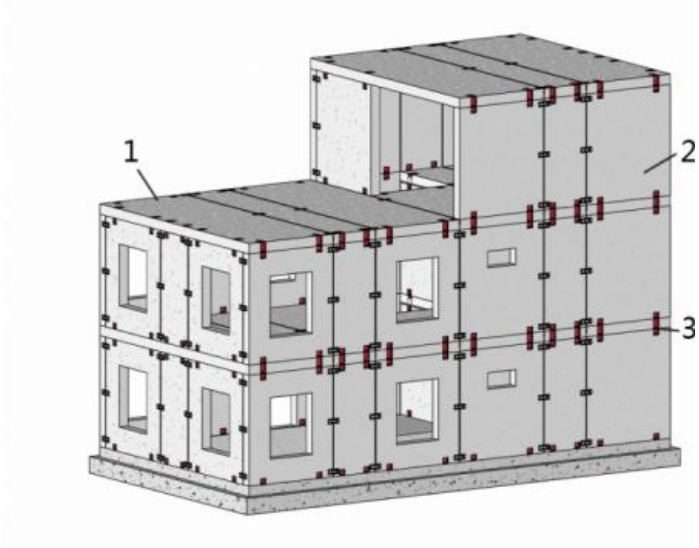
基于轻质钢筋混凝土板式构件的干式全装配节能建筑体系

POLYBO建筑体系简介

POLYBO建筑体系

1. 技术体系

这是一种通过在工厂或现场预制的、基于格构钢筋聚苯颗粒轻质混凝土的标准化楼板和墙板，采用螺栓连接、墙板拼缝干式处理工艺，形成的保温、结构一体化的新型装配式建筑体系，简称POLYBO建筑体系。本房屋体系无梁无柱，自重小，性能高，全干法作业，装配迅速，构件标准化程度高，同时适应多样化需求，构件可循环使用，总成本较低，适合需要短期快速建造的低层公寓类项目。



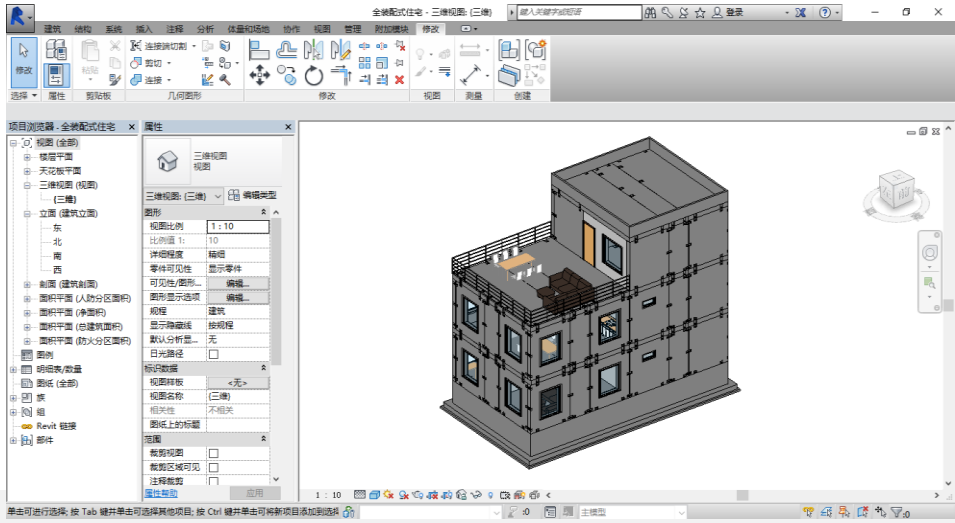
1. 预制楼板　2. 预制墙板　3. 预制连接件

2. 产品适应性

本房屋产品适用范围广，即可适用于临时性设施也可用于对性能要求更高的公寓和公共房屋。产品主要面对严寒和寒冷气候区推广，技术体系也可适用于夏热冬冷和夏热冬暖等南部地区，目前抗震设防8度区可建设3层及以下房屋，未来可建设8层或更高建筑。

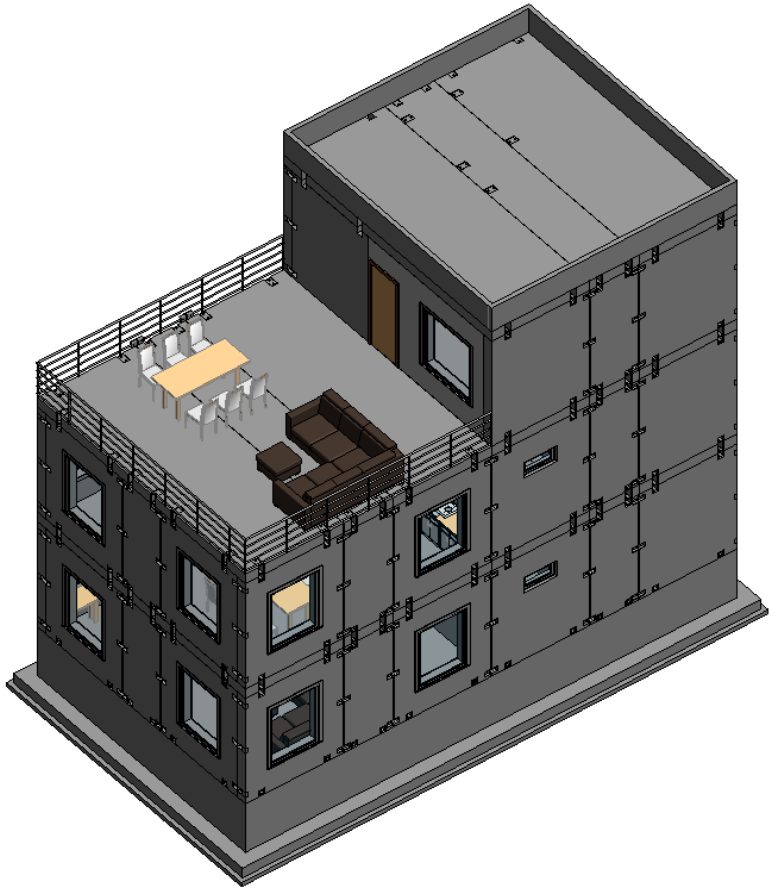
3. 产品优势

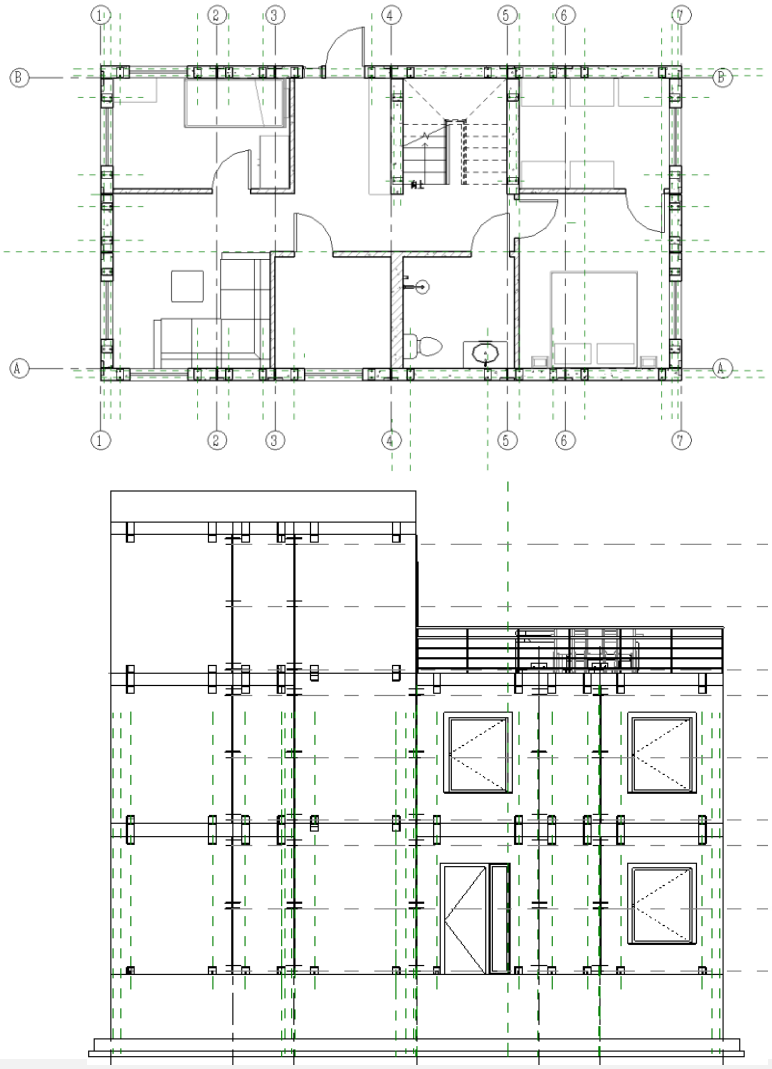
本房屋产品性价比很高，保证房屋保温隔热高性能的同时，减小自重，优化结构，标准化构件和节点，装配迅速，无限循环使用。本产品很好的平衡了装配式房屋中热工性能、施工周期和价格的矛盾，有着广阔的适应空间。



POLYBO建筑体系

- **采用信息模型实现设计、生产与建造的数据无损传递**





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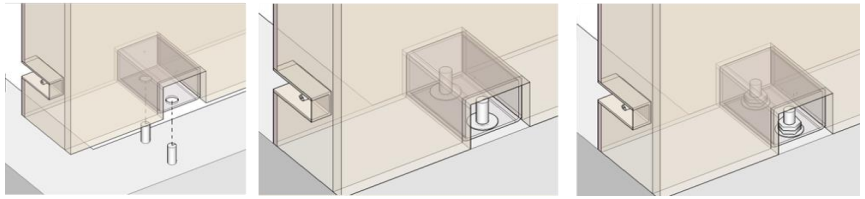
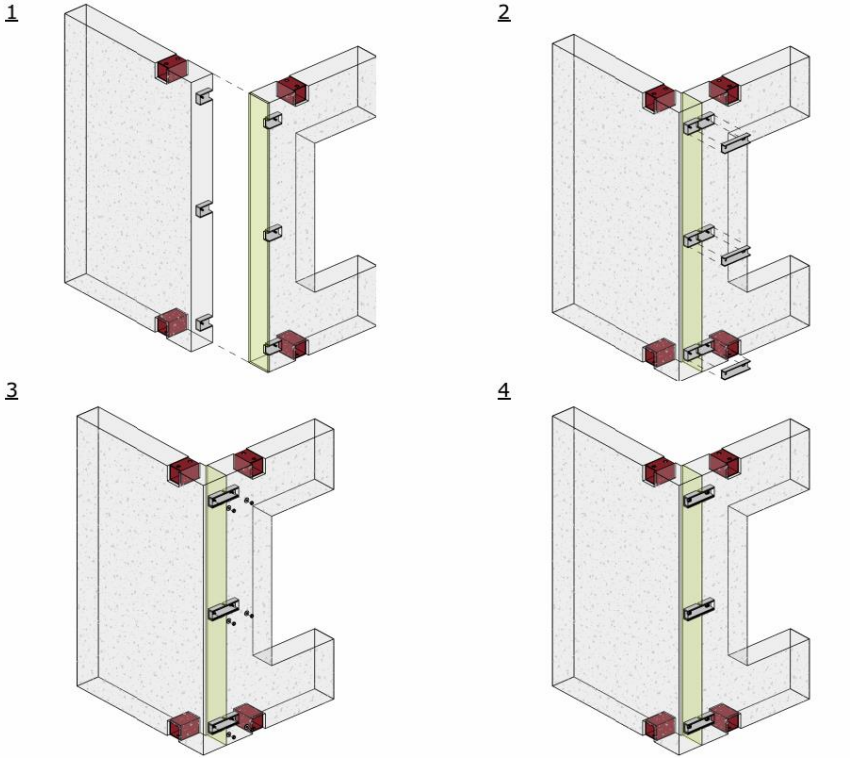
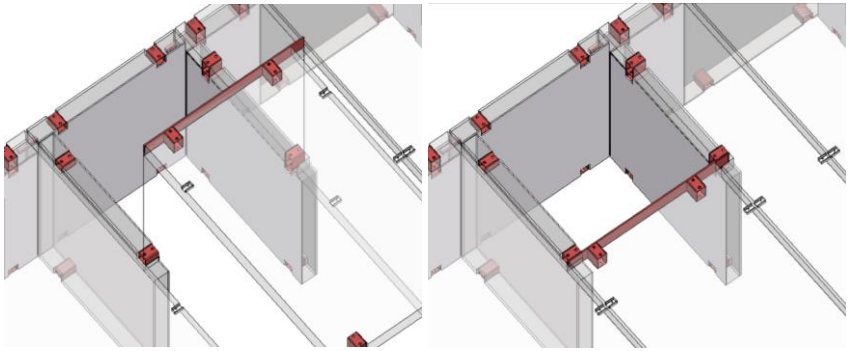
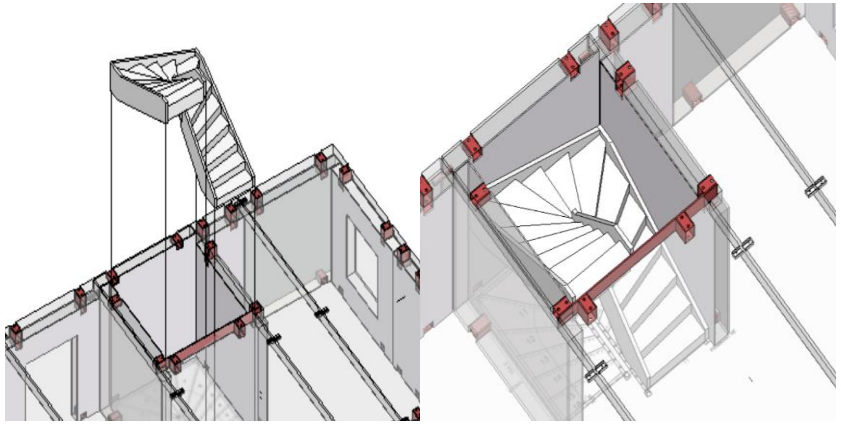
□ 标准化的干式螺栓连接









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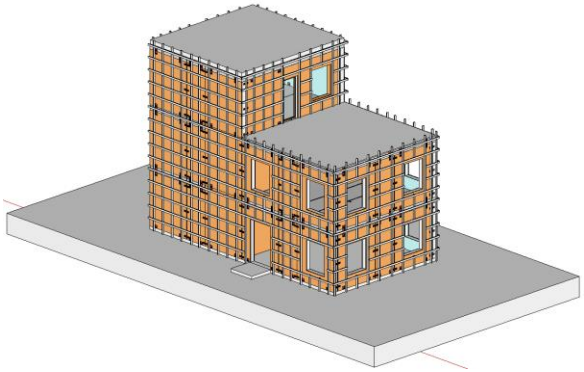
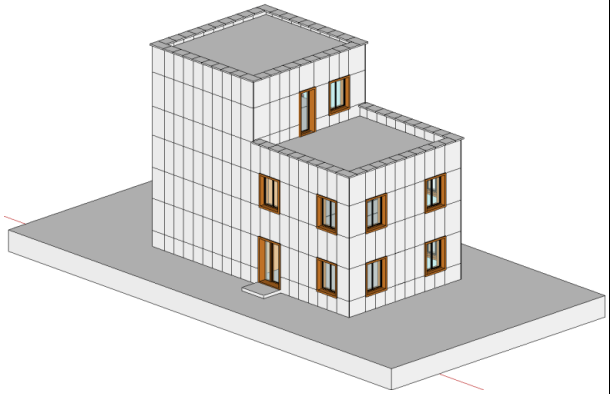
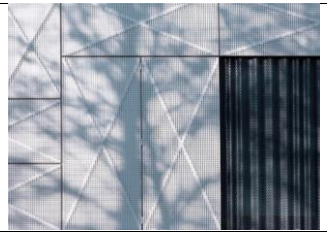
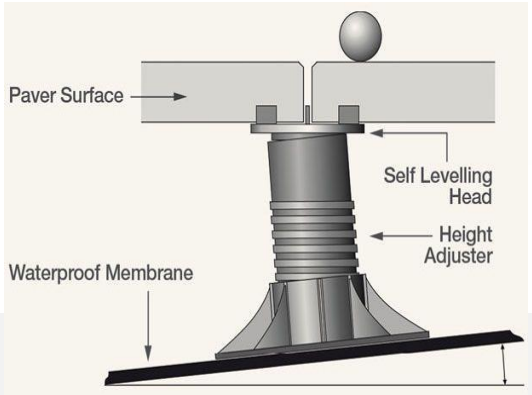
□ 全装配干法装修





类别	材料	图示
内墙	石膏板	
外墙	石材	
	穿孔板	
	铝方通	
	绿植墙模块	



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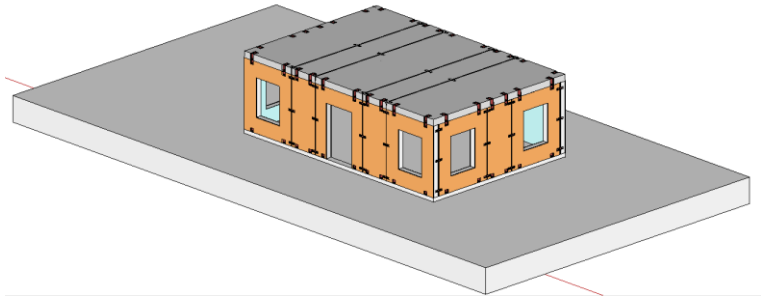
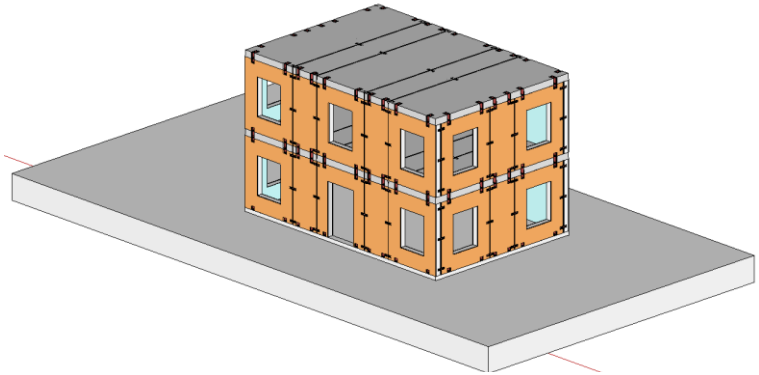
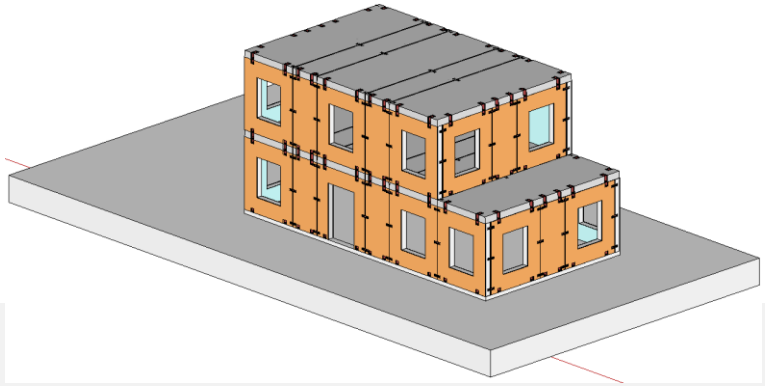
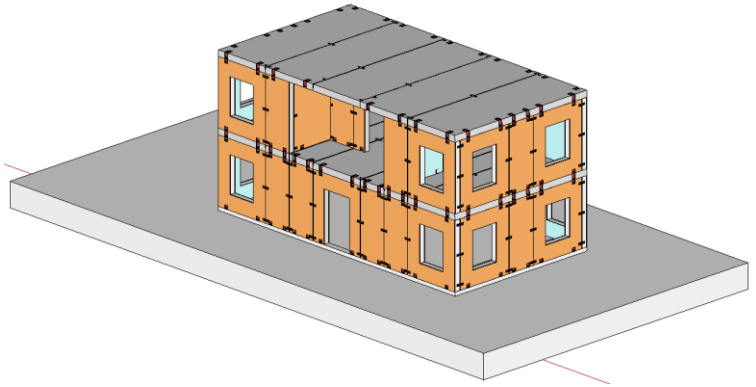
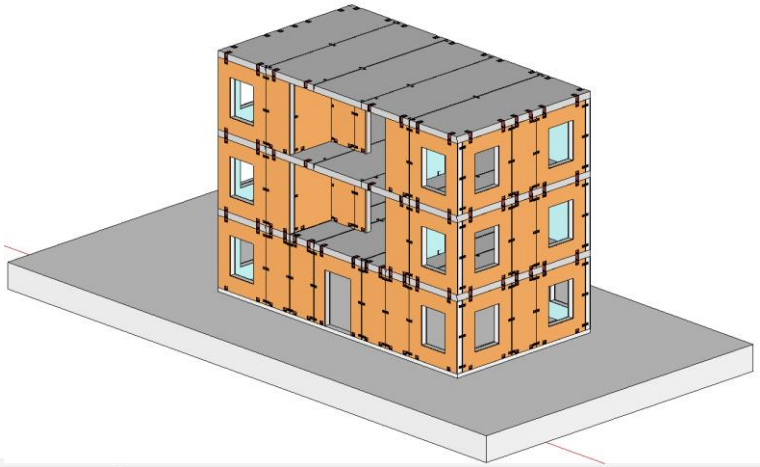
适应各种应用场景











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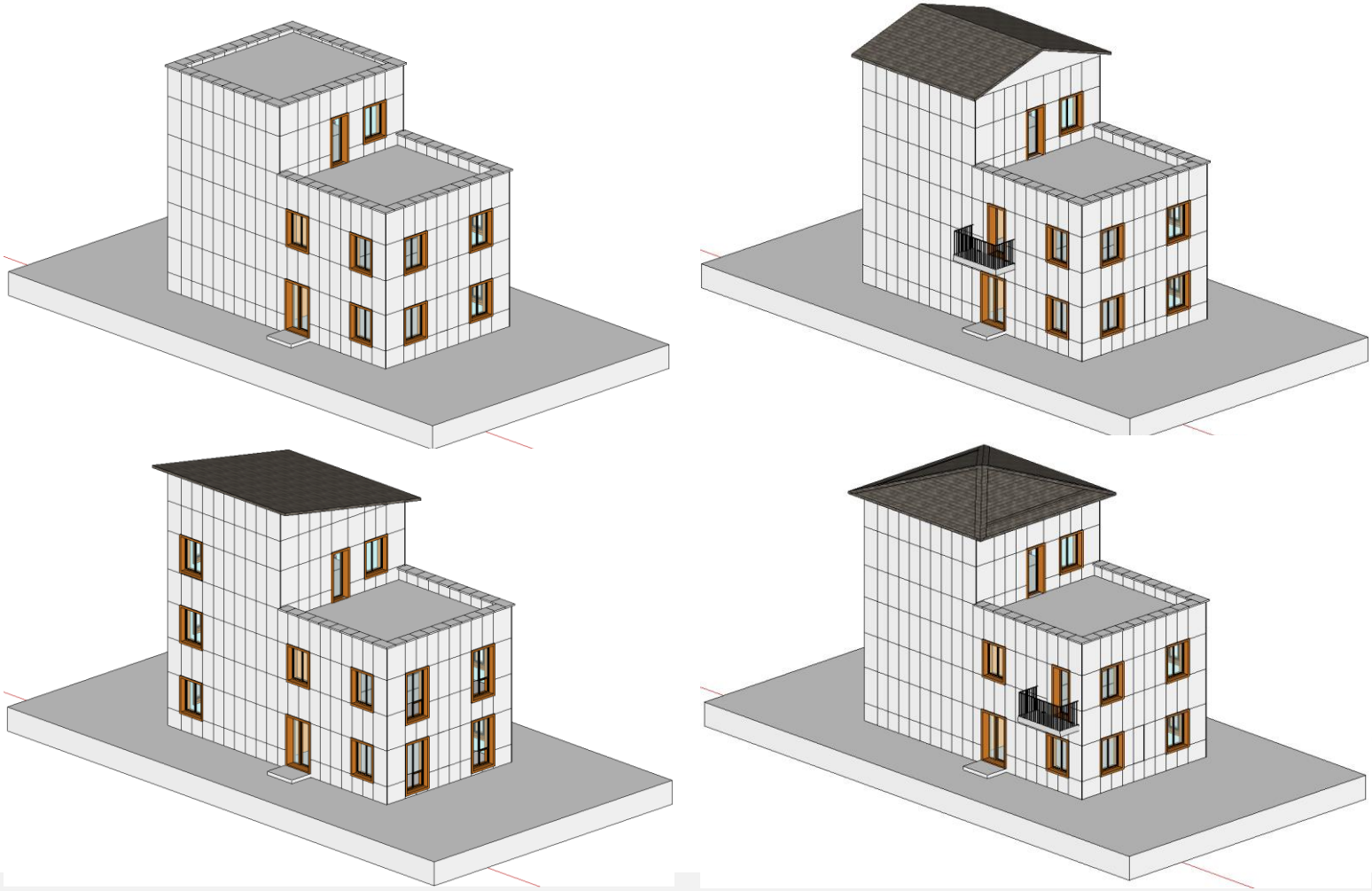
满足丰富的建筑形态需求



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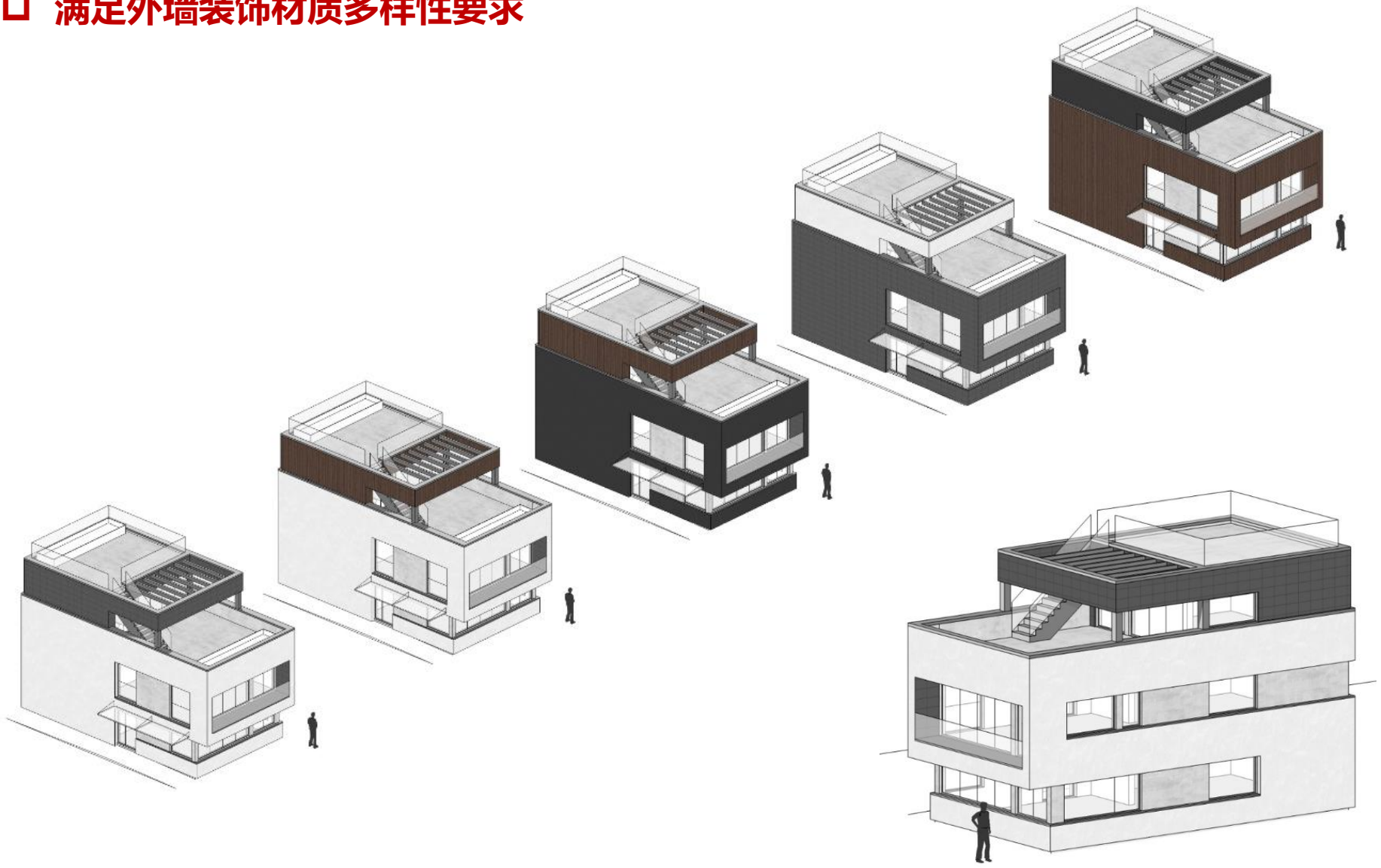
□ 满足外墙装饰材质多样性要求



POLYBO建筑体系

□ 在预制工厂生产标准化的楼板和墙板

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□ 便捷高效运输和试验示范建造

POLYBO建筑体系

□ 在国家住宅联盟（北京）试验示范基地示范建造

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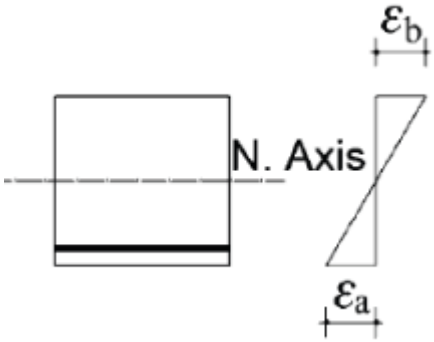
□ 力学和热工性能参数



EPS percentage* 80 %

Wall thickness:

meter	Proportion eps meter	Proportion cement meter	Heat resistance R_t $m^2 \cdot K/W$	Heat resistance R_T ($R_T=R_i+R_e+R_t$) $m^2 \cdot K/W$	Heat Transfer Coefficient U-value W/m^2K
0,10	0,08	0,02	1,968	2,138	0,468
0,15	0,12	0,03	2,952	3,122	0,320
0,20	0,16	0,04	3,936	4,106	0,244
0,25	0,20	0,05	4,920	5,090	0,196
0,30	0,24	0,06	5,904	6,074	0,165
0,35	0,28	0,07	6,888	7,058	0,142
0,40	0,32	0,08	7,872	8,042	0,124
0,45	0,36	0,09	8,855	9,025	0,111
0,50	0,40	0,10	9,839	10,009	0,100

Mechanical properties

Density	Compressive strength MPa	Flexural strength MPa	Elastic modulus GPa
400 kg/m³	1,0	0,5	0,8
600 kg/m³	2,2	0,7	1,0

Thermal conductivity

EPS 60	0,041	w/m·K
Cement	1,200	w/m·K

Thermal resistance

Interior (R_i)	0,13	$m^2 \cdot K/W$
Exterior (R_e)	0,04	$m^2 \cdot K/W$

Comparing polyconcrete, Gas concrete and normal weight concrete

Information from a scientific report

Properties	Polyconcrete	Gas concrete	Normal weight concrete
Dry density / kg/m³	350 – 1100	400 – 600	2200 – 2400
Thermal conductivity coefficient	0,074 – 0,26	0,09 – 0,17	1,7 – 2,3
Sound insulation and absorption	Good absorption, hence open porosity	Weak absorption	Sound reflection Echo-effect
Fire resistance	Highly resistant	Highly resistant	Incombustible – Conducts the heat
Frost resistance	Very resistant	Poorly resistant	Conditionally resistant