

ALUMiC-An Innovative Hybrid MiC System

AluHouse Co. Ltd.
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Aging and diminishing workforce are a severe problem for construction industry. Modular Integrated Construction (MiC) systems which increases productivity, enhances quality, and reduces wastages might just be the perfect solution. However, conventional steel MiC systems were conceived from shipping containers. By design, there are double array of steel frames, thick double walls, thick ceiling, and floor slab. It wastes valuable floor space and headroom. It is very costly to manufacture.

AluHouse has been collaborating with P&T Group to develop the new innovative ALUMiC System. ALUMiC adopts a radical approach that turns the conventional MiC module upside down. The top of the module is a reinforced concrete floor slab while the bottom of the module is a lightweight aluminum deck which carries floor finishes and fixtures.

We have designed two types of modules, α module with structural steel frames on the opposite long sides, and β modules with structural steel frame on one side only. Construction starts with α module, followed by β modules. β module share the steel frame of an α module for permanent structural support. Concrete floor slabs are connected across modules with simple bolts and nuts which are grouted to form a robust structural diaphragm, an effective acoustic and fire barrier. Steel connections are protected from corrosion and fire with high strength grout without the need for maintenance openings.

The advanced AluMiC system greatly simplifies fire proofing details. It reduces total wall thickness by approximately 75 to 100mm and increases ceiling height approximately by 200 to 250mm. With simple connection details and omission of double steel frames, construction cost is greatly reduced. The AluMiC system is a very flexible system that is suitable for residences, schools, offices, and institutional buildings.

