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LiteWWeight® Pin

WHAT IS MM WELDING®?

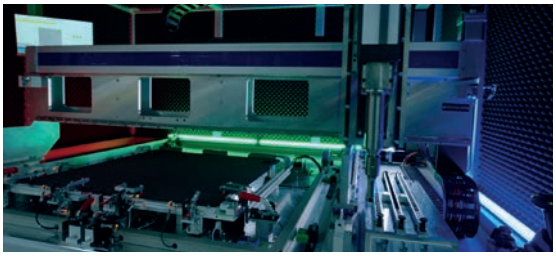
MultiMaterial-Welding (MM-Welding® in short) is a Fastening Technology Platform that uses ultrasonic energy to partially liquify thermoplastic materials to create a functional and strong connection within lightweight materials in fractions of a second.

LITEWWEIGHT® PIN FASTENER

- This is a family of fasteners designed to realize fast and strong fixation on sandwich structures with internal honeycomb or similar patterns.
- Full integration in substrate possible.
- Pull-out forces of higher than 1000N can be achieved through deep integration into HCB material.
- Very fast processing time of ~1 second.
- No pre-drilling necessary in most cases.
- Possible to pierce through thick decor materials.
- Placement directly at the edge of the material possible.
- The different fastener geometries enable different types of applications.

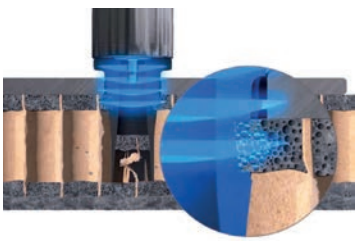
SERIAL PRODUCTION

To install the MM-Welding® fasteners, ultrasonic welding equipment is necessary, which is available through the MM-Welding® production systems. From stand-alone systems for small scale and flexible projects, up to massive serial production projects are available.

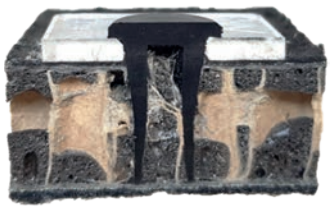


INSTALLATION PROCESS

- Start process
- Activate ultrasound



- Pierce through top layer
- Create friction between fastener and substrate to liquefy polymer
- Fill porous structure of substrate with liquified polymer



- Polymers solidifies in fractions of a second
- Strong mechanical form-lock connection is created.

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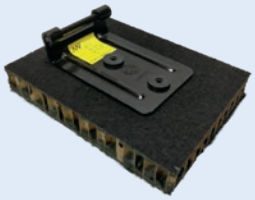
STANDARD HONEYCOMB MATERIALS

These fasteners are designed for sandwich structures with honeycomb core, and can be installed through a glass fiber top layer without the need of pre-drilling or having a pre-molded hole.

Standard Pin

Diameter	10 mm
Length	11 to 25 mm
Pull-out force	~900 N*

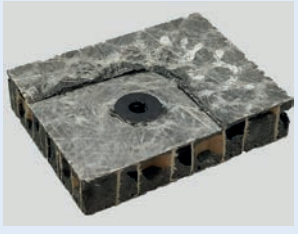


HONEYCOMB MATERIALS WITH PRE-MOLDED HOLES

These fasteners are designed for sandwich structures that include pre-molded holes, and achieve an even stronger pull-out force.

SN Pin

Diameter	10 mm
Length	12 mm
Hole diameter	7.5 mm
Hole length	min. 9 mm
Pull-out force	~1500 N*



HEAD GEOMETRY

The LiteWWeight Pin fasteners are available with different head geometries:

STANDARD

BUTTON

UNIVERSAL

BALL/CLIP

WASHER

* Exact pull-out force depends on substrate characteristics

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FUNCTIONALLY INTEGRATED PART (FIP)

MM-Welding® LiteWWeight® Pin connection geometry can be integrated into the injection molded part, which simplifies production, reduces costs and enables complete design freedom.

APPLICATION EXAMPLE: FUNCTIONALLY INTEGRATED PART FOR AN AUTOMOTIVE LOADFLOOR

MM-Welding® LiteWWeight® Pin fastener geometries are integrated into the functional part during the injection molding process. Complete part is installed in one step without the need for any separate fasteners.

ADVANTAGES

- Reduced cycle **time**.
- Reduced **costs** due to the fast process and less parts to manipulate.
- **Higher Strength:** With less material, higher strength can be achieved.
- Easy **one sided access** only assembly process for lightweight honeycomb structures.
- **Geometric Simplification:** Connection geometry can be integrated into the part to connect.
- **Size freedom:** Size Large / long geometries possible.
- **Form freedom:** No rotational symmetry required.
- **Improved aesthetics:** No fasteners are visible.