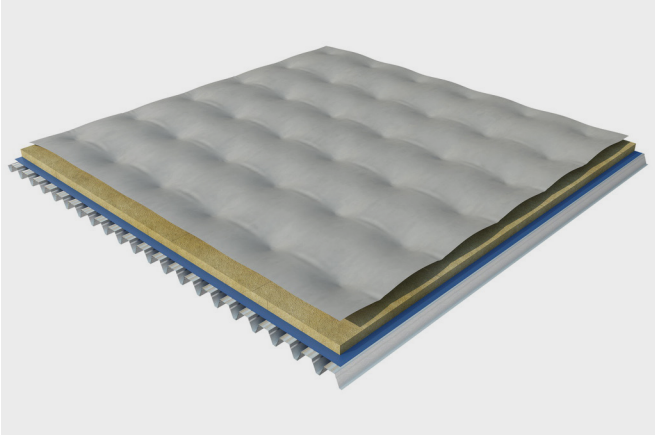
Comparing induction welding vs mechanical fixation

Field fastening (induction welding)



Durability

Risk of leakage
- Zero membrane penetration

Wind-load
- Can be installed in a grid pattern which creates uniform loading across the various zones of the roof

Material Use

Speed
- Quicker installation process, lower installation cost including work and material

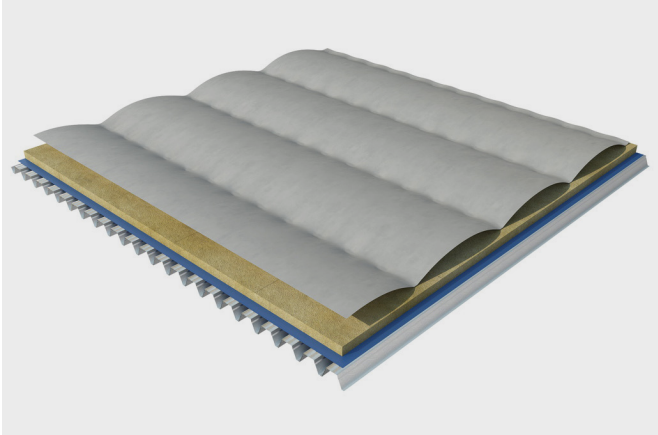
Fasteners
- Typically 25% less fasteners needed at 90 psf design load

Membrane overlap
- 2 inch overlap is the typical minimum

Membrane width
- Less membrane needed so full width sheets can be used

Installation
- Only one type of fastener and plate needed, insulation plates are reused for membrane attachment
- Only insulation needs to be attached before being able to quickly make that section of the roof water-tight

Seam fastening (mechanical fixation)



Durability

Risk of leakage
- Series of fasteners along the edge of membrane, higher risk of leakage

Wind-load
- The wind-load is concentrated at the edges of the membrane and creates stress concentration on the steel deck which may limit design values

Material Use

Speed
- Slow installation process, higher installation cost including work and materials

Fasteners
- Fasteners and plates along the seam

Membrane overlap
- Six inch overlap is the typical minimum

Membrane width
- Various membrane widths necessary, half sheets needed in corner and permieter

Installation
- Two stage process with different fasteners for the insulation and membrane attachments
- Care must be used to get the membrane perpandicular to the steel deck