

## Janda Seam Welder:



Resistance weld parting sheets to edge bar pressure boundary

## Braze Assembly Station:



500 lb Jib Hoist

Graphite fixture  
with 3 unit cells

Assemble unit cells into a graphite braze fixture for vacuum furnace brazing

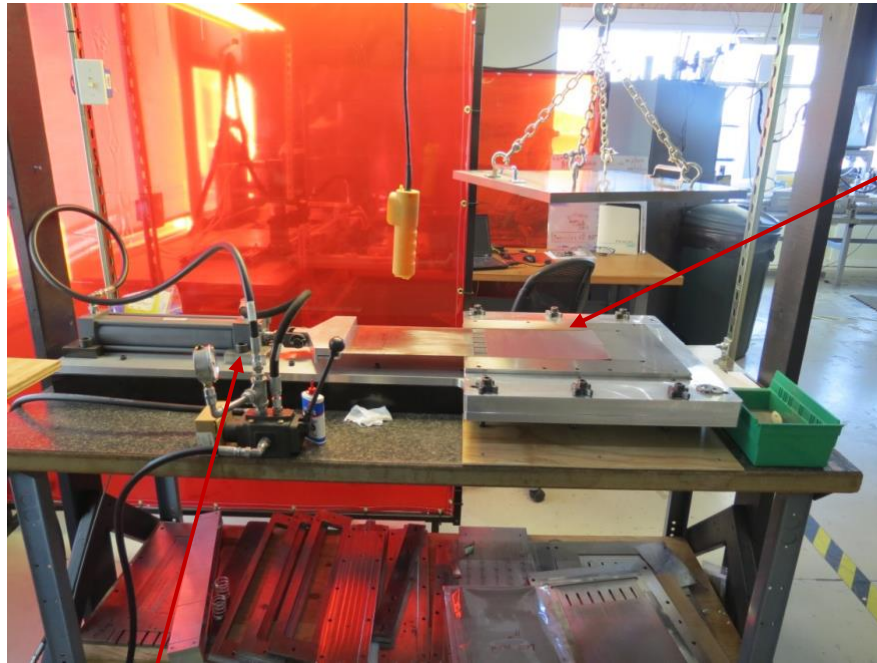


## Resistance Welder 320 joules:



Light energy tack weld to apply foil onto parting sheets

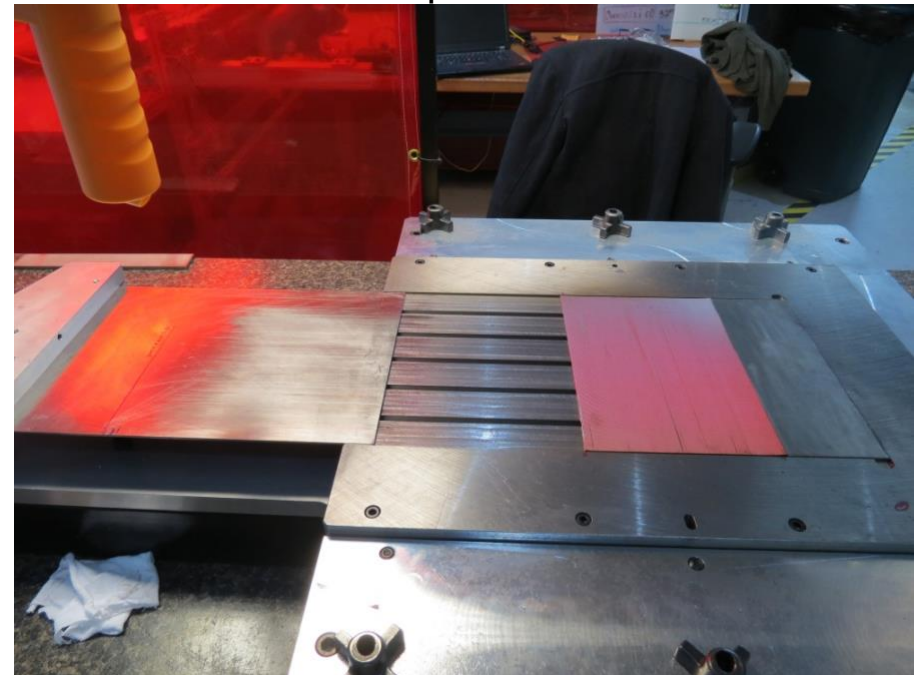
## Fin compaction tooling:



Uncompacted  
Fin

1500 lb Hydraulic  
Compaction Ram

Compacted Fin:



## Plate Stamping Rig:



Three 250 lb  
rams

Stamp parting sheets onto forming dies



## Pressure Test Station:



Manifold Seals

23000 psi  
Barbie hydro test  
pump

Pressurize internal cell to validate acceptance into core assembly

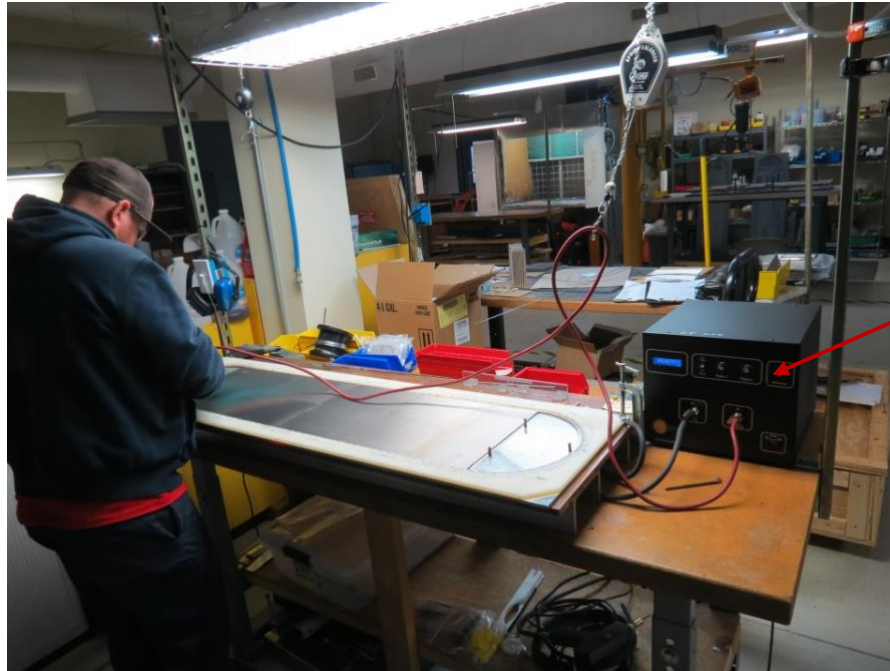
## Parts Degreaser:



Cabinet Spray Washer. High pressure jets aqueous degreaser solution.



## Unit Cell Assembly Table:



Resistance weld unit cell details into a cell assembly for brazing

600 joule  
resistance  
welder

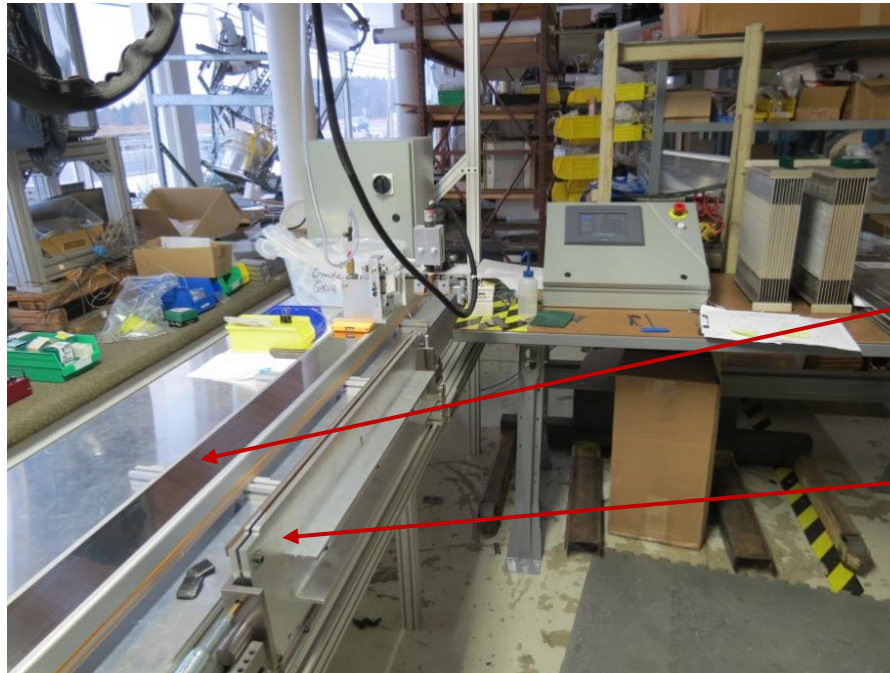
Tack weld probe

High pressure  
internal fin. 70  
fins per inch.





## Linear Edge Weld Station:



Plasma weld unit cells along a profiled plate edge.

Linear actuator slide

Unit cell weld cassette

Touchscreen Control Panel

Plasma Torch

Pinch Wheels



## Abar Ipsen Vacuum Furnace:



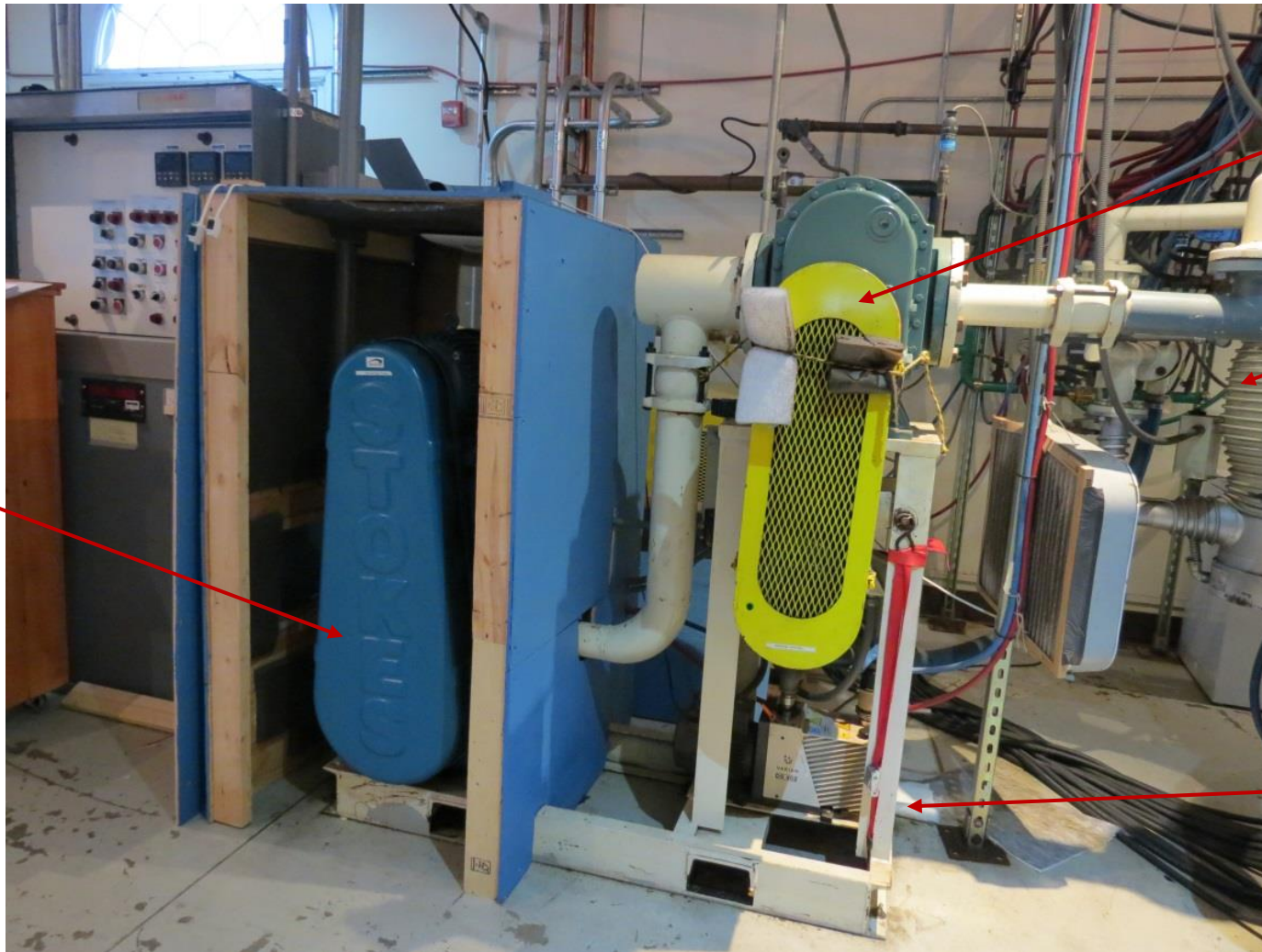
Vacuum  
Furnace

Work zone:  
15" x 12" x 36"

Furnace braze unit cells in graphite fixtures



## Vacuum Pumps:



Roughing  
Pump

Booster Pump

Diffusion  
Pump

Holding  
Pump

Accessory pumps to remove gas molecules and leave a reduced vacuum atmosphere

## Vacuum Furnace Control Station:



Furnace  
control  
software

Vacuum control  
tower

Program and monitor furnace cycle procedure



## Substack Assembly Station:



Unit Cell

10 cell stack  
ready for  
vacuum braze

Station to assemble 10 unit cells into a core substack