



CHANGING WHAT'S POSSIBLE

Day 2: Manufacturing

New Orleans Room readout

May 23, 2014

Manufacturing routes and timeline

- ▶ No ideal route, depends on the concept of the heat exchanger design
 - Leave it open for all ideas

- ▶ Interplay between: Absolute best heat exchanger vs. The Heat Exchanger that can be made this decade
 - Leave it open for spectrum
 - Completely new heat exchange (no manufacturing)
 - Completely new focused manufacturing
 - Large, cheap surface area opposed to high exchange rate
 - Mix of both

Joining

- ▶ Joining is expensive, uniform material design is ideal as you avoid
 - E.g. Polymer or single material
- ▶ Brazing is dominant, but is a custom “black magic”
 - Understood for each product, but changes with each *new* product
- ▶ Spot welding is preferred over other welding techniques due to avoidance of costly additive materials.
- ▶ Diffusion bonding is another option

Alternative markets

- ▶ HVAC is very complimentary, large market
- ▶ Aerospace and specialty chemicals are lower volume, higher value markets

Additive manufacturing

- ▶ Interesting but not necessarily end-all be-all
 - Miles of material per system
- ▶ Possible role as a hybrid or complementary to existing roll to roll or other production lines

New manufacturing techniques

- ▶ Very dependent on the design of the concept
- ▶ Coatings could be a value added finishing touch to enhance specific physical properties
- ▶ 10 years is a reasonable time to develop new technique at this scale