ICCF-24

Appropriate Calorimetric Systems for LENR and the Irrelvance of COP

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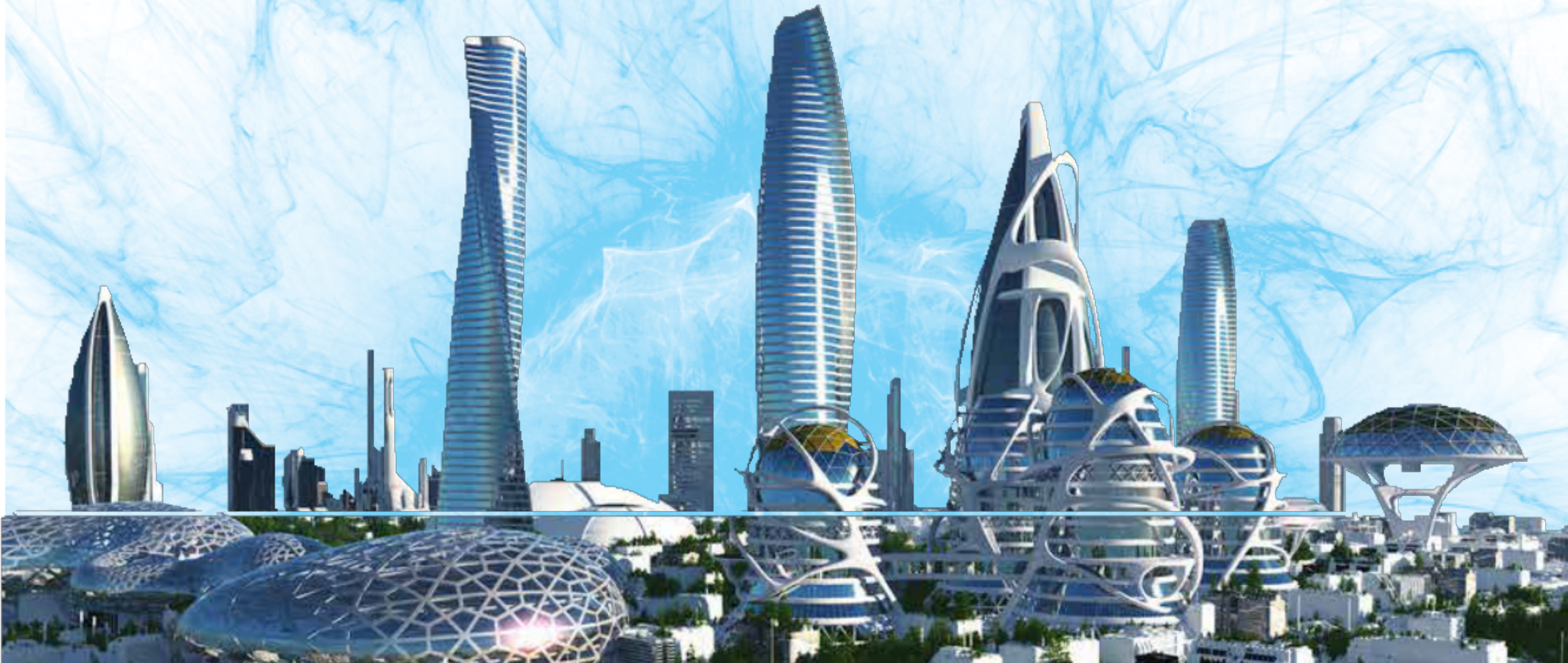
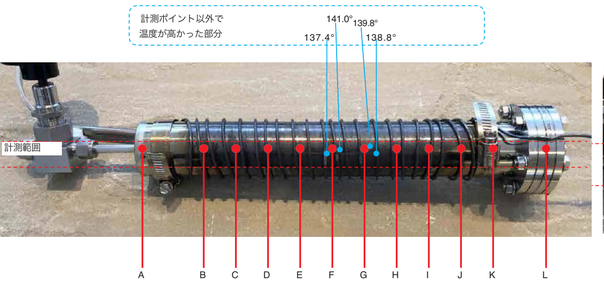
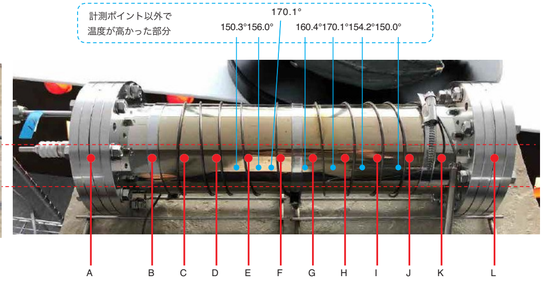


Talk Outline

- Calorimetry and LENR (Past and Present)
- Results of some external validations
- Irrelevance of COP
- Putting it all together for the future (what it all means)

Reactor Heating Methods

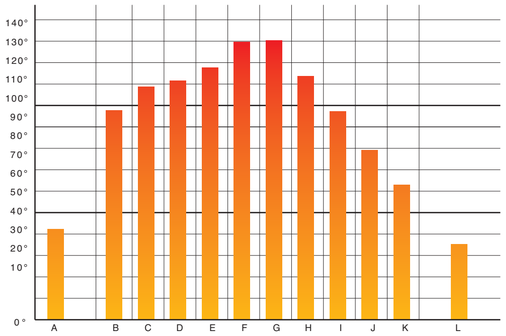




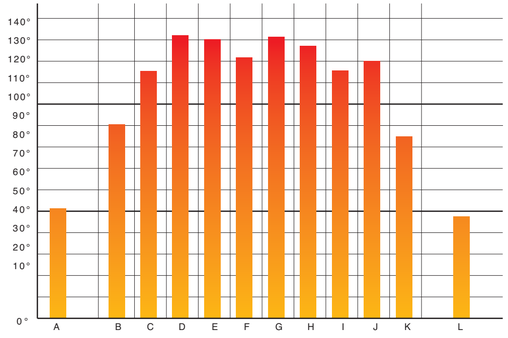
計測箇所	A	B	C	D	E	F	G	H	I	J	K	L
計測１回目	45.5°	108.2°	113.1°	113.2°	123.5°	135.4°	117.5°	102.2°	74.4°	74.4°	36.5°	32.9°
計測２回目	42.2°	93.0°	110.8°	105.1°	115.3°	120.6°	141.9°	120.4°	108.9°	94.1°	46.9°	36.1°
計測３回目	41.0°	99.7°	110.1°	116.0°	112.6°	133.3°	127.8°	109.3°	96.2°	69.7°	43.9°	34.5°
計測４回目	39.9°	89.3°	100.7°	112.0°	118.8°	129.3°	134.2°	122.5°	108.9°	77.8°	87.6°	37.2°
平均	42.1°	97.5°	108.6°	111.5°	117.5°	129.6°	130.3°	113.6°	97.1°	79°	62.8°	35.1°

計測箇所	A	B	C	D	E	F	G	H	I	J	K	L
計測１回目	46.8°	71.6°	101.3°	114.2°	121.9°	112.0°	112.5°	105.2°	105.1°	126.1°	75.6°	42.7°
計測２回目	48.8°	104.8°	136.1°	126.9°	110.2°	110.1°	113.5°	125.1°	131.7°	104.1°	97.9°	50.5°
計測３回目	48.6°	73.5°	112.3°	128.4°	132.5°	138.5°	104.4°	108.6°	105.4°	104.9°	87.9°	48.8°
計測４回目	61.3°	112.4°	111.6°	158.9°	156.0°	126.4°	131.4°	170.1°	120.7°	145.3°	77.9°	48.3°
平均	51.3°	90.5°	115.3°	132.1°	130.15°	121.7°	131.4°	127.2°	115.7°	120.1°	84.8°	47.5°

平均値グラフ



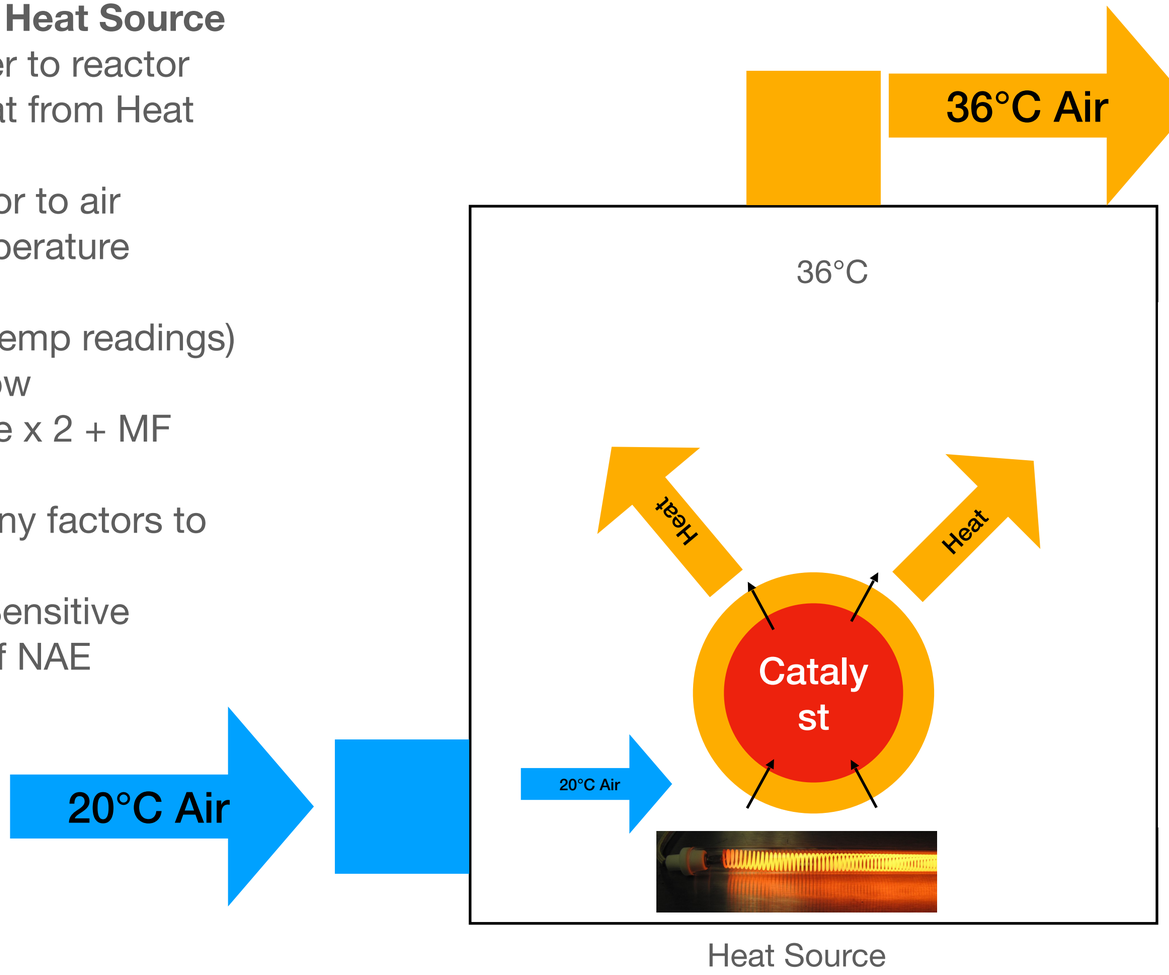
平均値グラフ



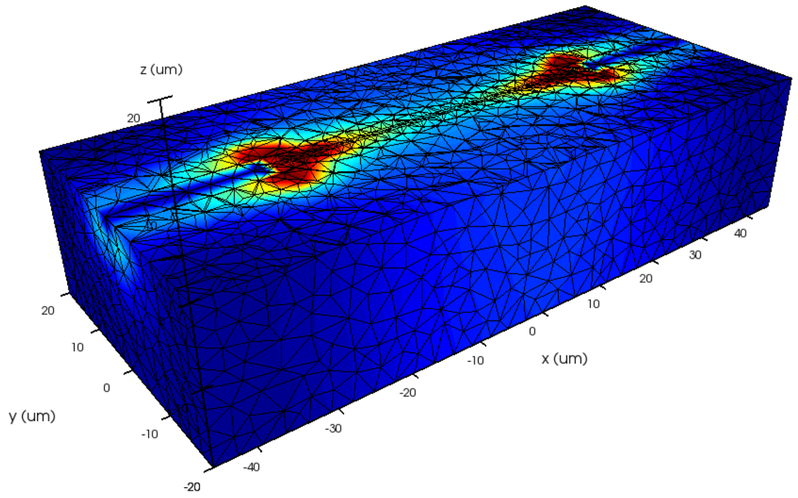
- Uneven Heating Observed
- What is the cause? LENR?
- Mizuno’s Data shows Temp. Dependant Reaction Rate
- Proximity to Heating Wire an issue?

Legacy Calorimetry-Too Many Variables

- **Temperature Dependent Heat Source**
- Conductive HX from heater to reactor
- Catalyst both receives heat from Heat Source & Emits Exh
- Convective HX from reactor to air
- Temporal and Spatial temperature differences
- Must measure Delta-T (2 temp readings)
- Must measure air mass flow
- Uncertainties: Temperature x 2 + MF
- S/N Ratio can be low
- Difficult to replicate as many factors to control
- Reaction is Temperature Sensitive
- No control over location of NAE

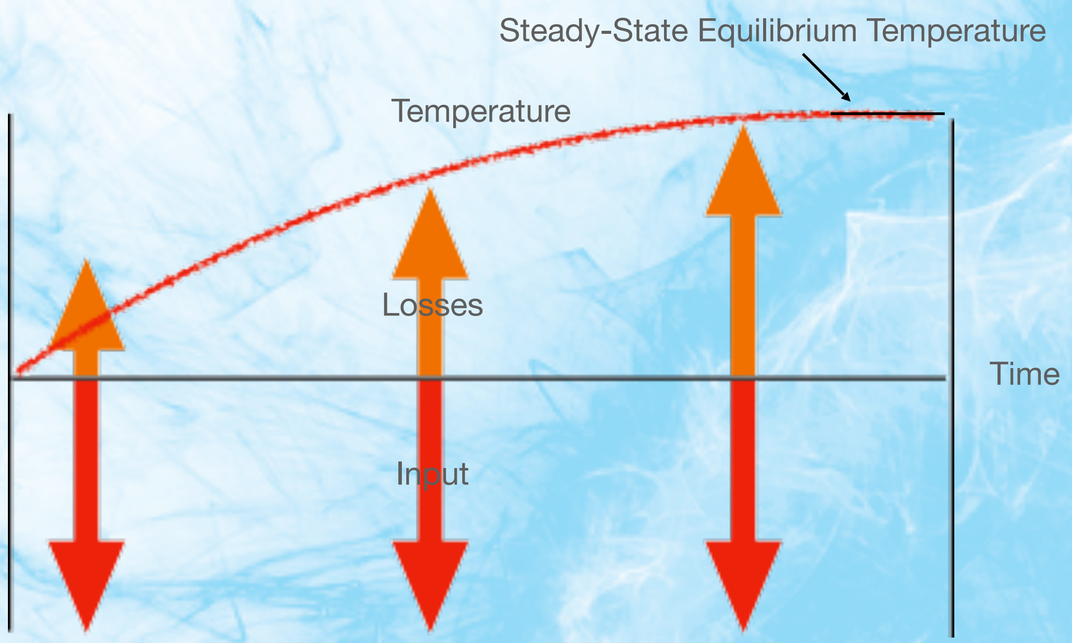


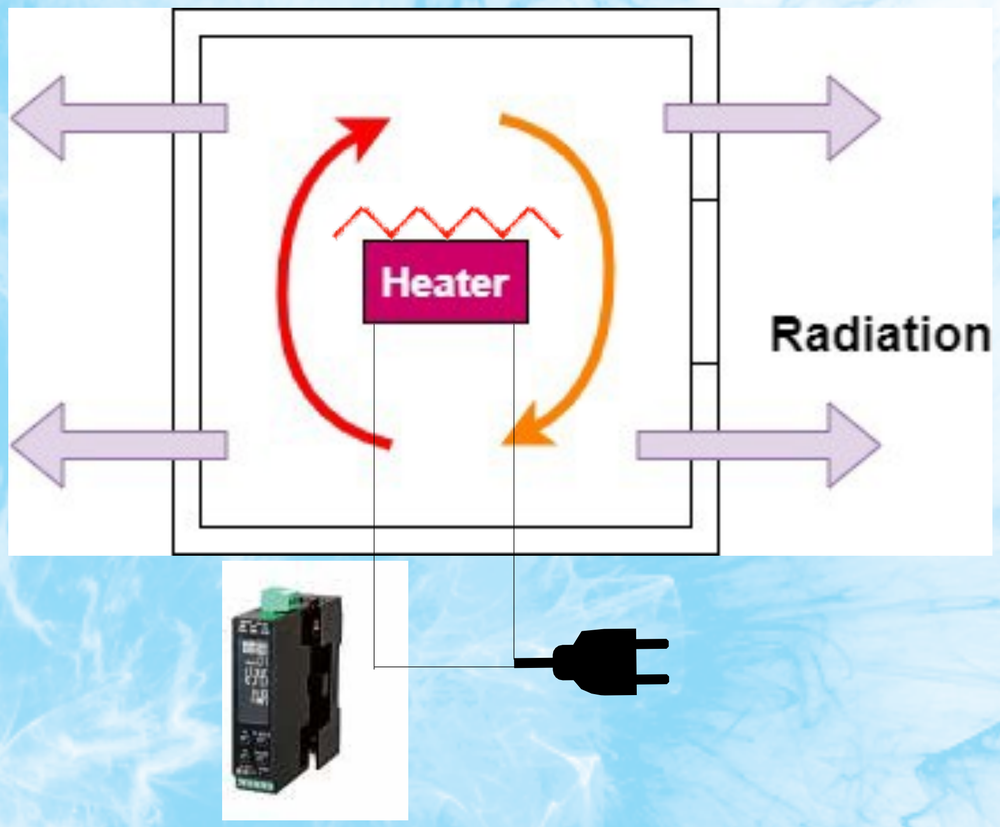
Heat Source



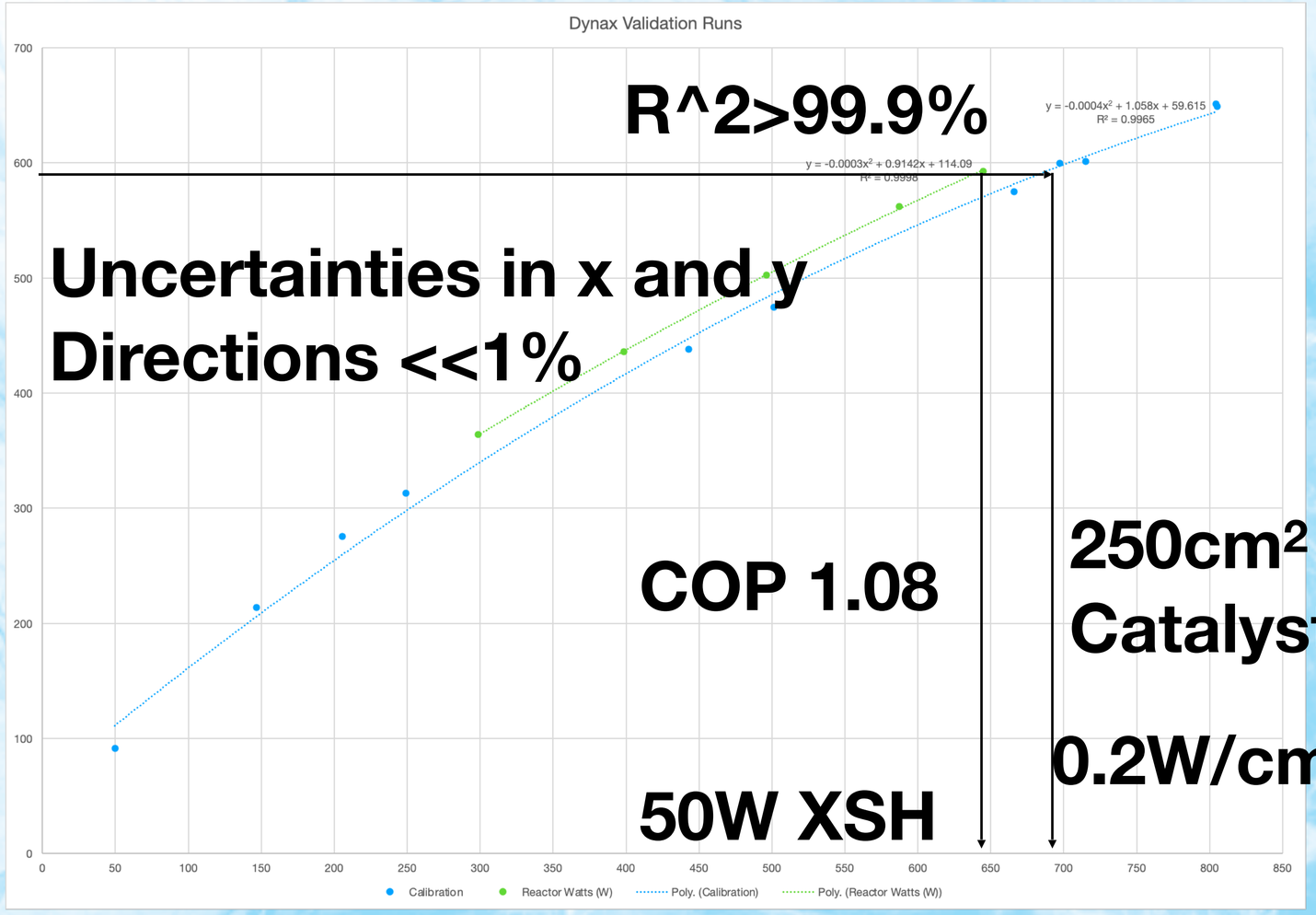
Mizuno Technology Inc.

Incubator Calorimetry



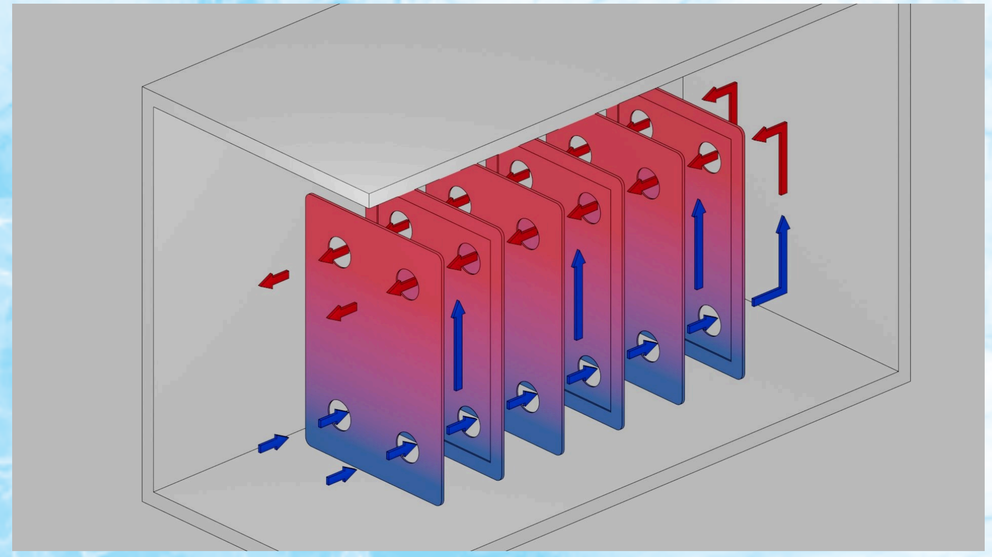


>0.2W/cm² Excess Heat



What is next?

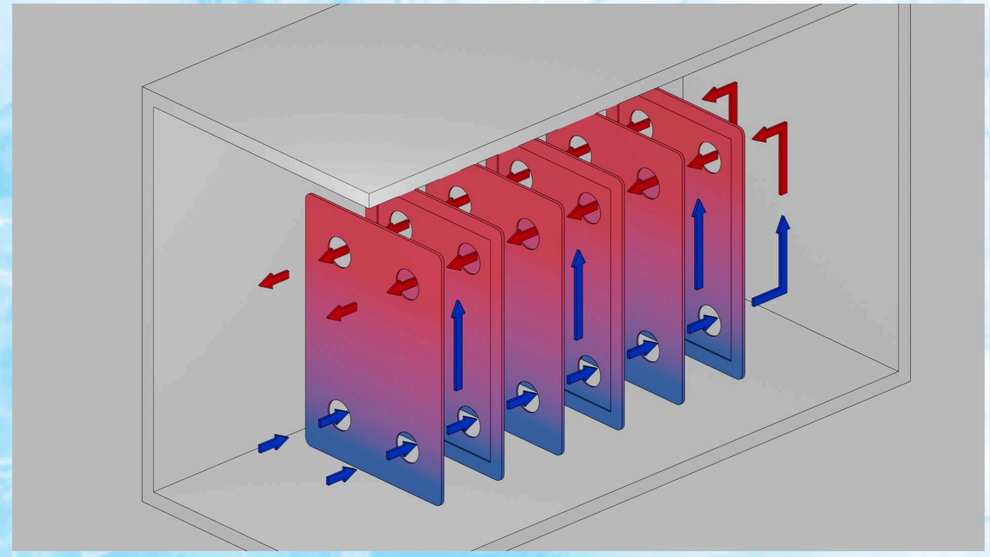
- 20cm x 30cm x 0.8cm plate
- 40,000cm^2 of surface area/plate
- 8kW$_{th}$ per plate output @ 700°C (est.)
- 3-6 plates enough to provide 8-16kW$_e$ on demand continuously for years on a small charge of H_2.
- Can provide all heating needs as well



Current Prototypes Under Construction

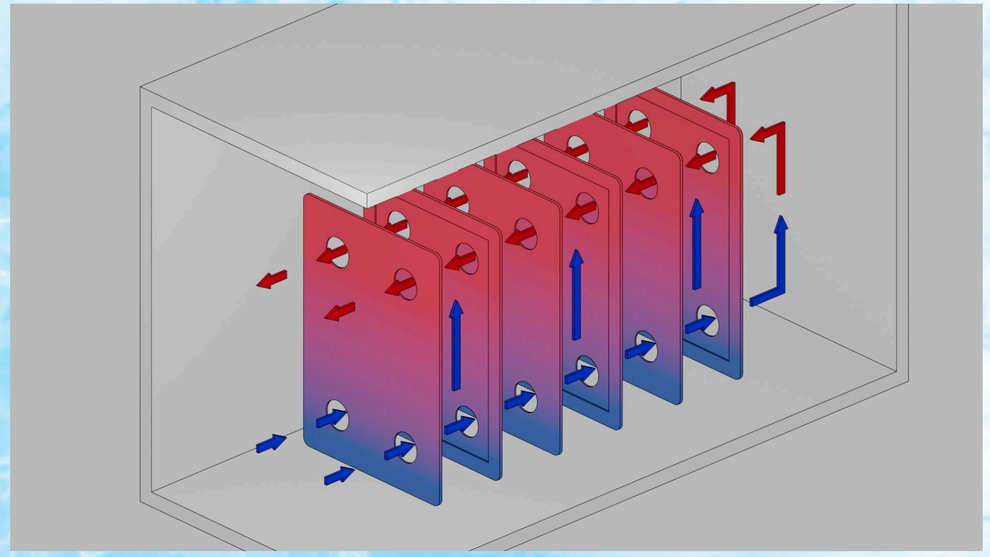
Why is it called Heat Amplifier?

- Other LENR/Fusion Technologies require significant electrical power
- COP becomes important when using electrical power
- MTI's Heat Amp Technology is a temperature dependent heat source
- Once it reaches operating temperature, excess heat can be removed for doing work



Unique Economics

- Years between Hydrogen Refueling
- NO PRECIOUS METALS REQUIRED
- Amenable to Mass Production
- Scalable from Centralized Generation to Private Home CHP
- Possible applications for automotive, trucking, ships, etc.



Summary

- Progress being made
- External validations ongoing
- Hypothesized area/exponential temperature dependency on heat output
- If proven true system will be easy to scale
- Challenges:
  - Higher Temperature Materials
  - More Controlled Production Methods
  - Hoping to make steam within 2022