Independent outdoor testing of commercial perovskite & tandem modules

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Si module evolution

2015 Pre-PERC module (16%)

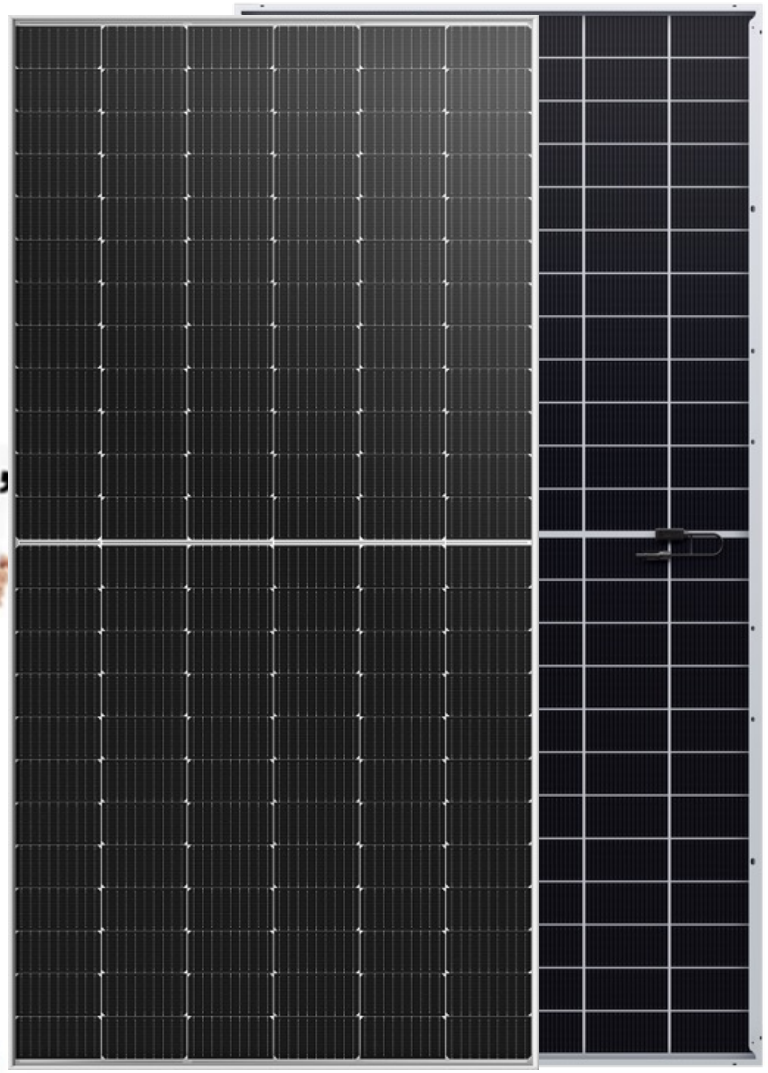


~1.0 m

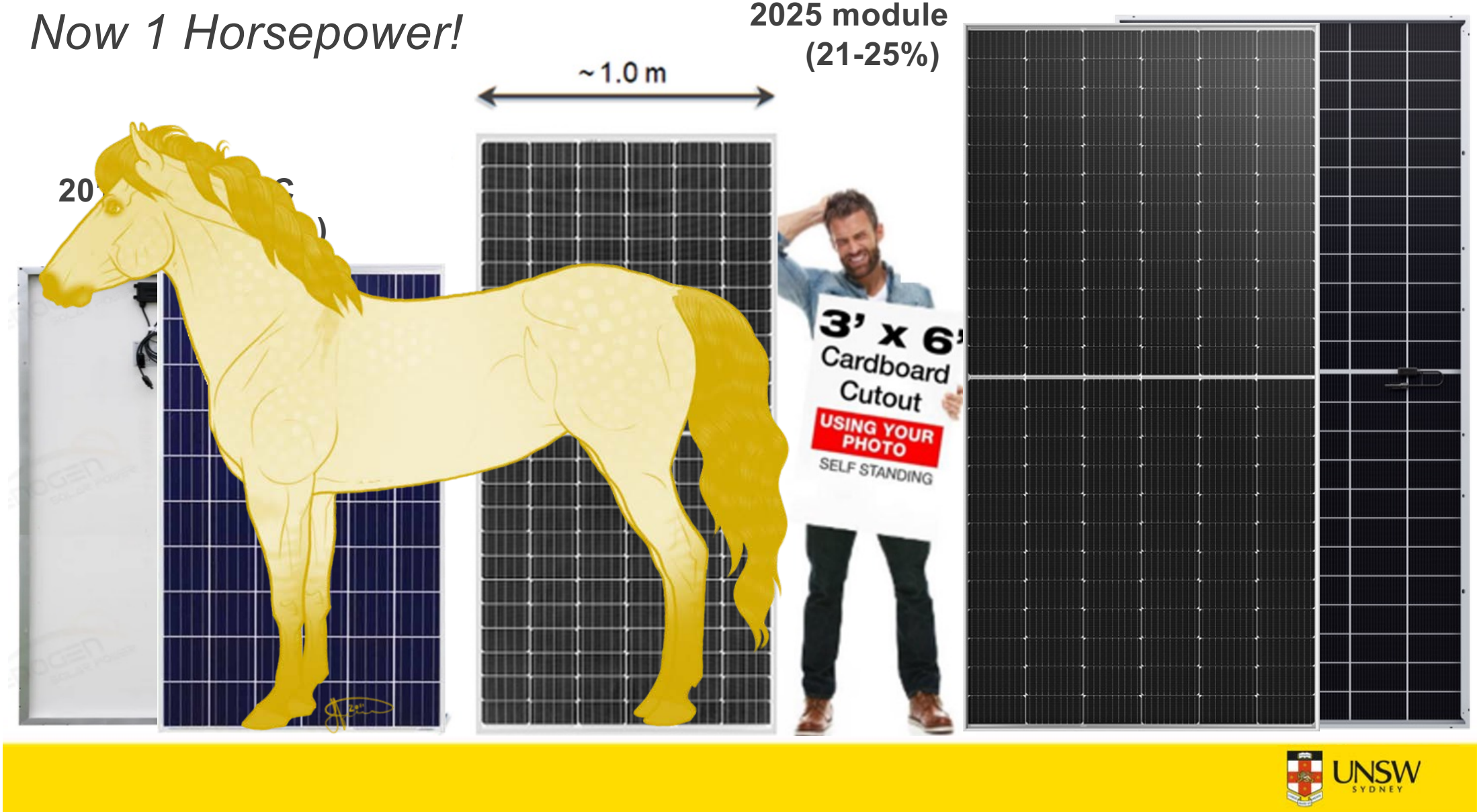


2025 module (21-25%)

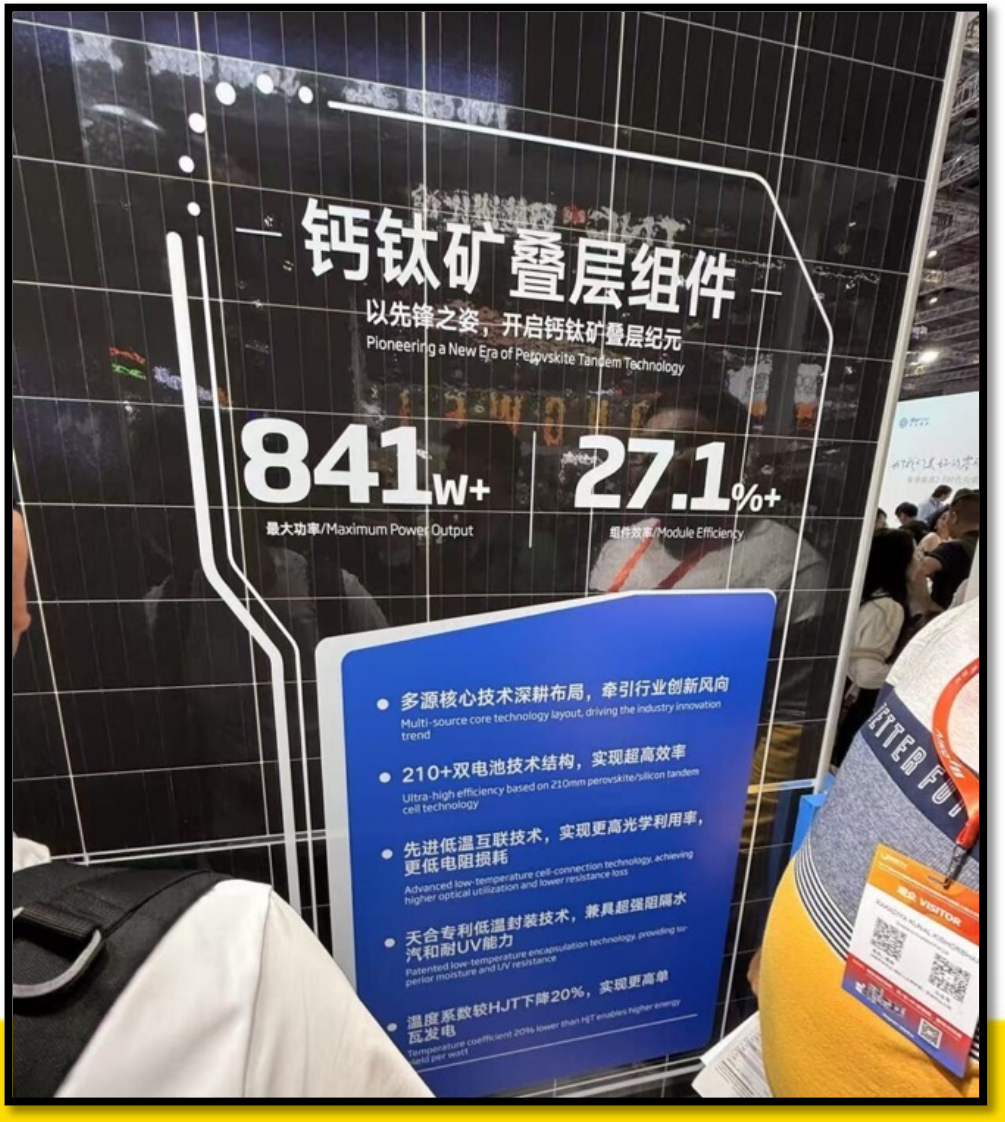


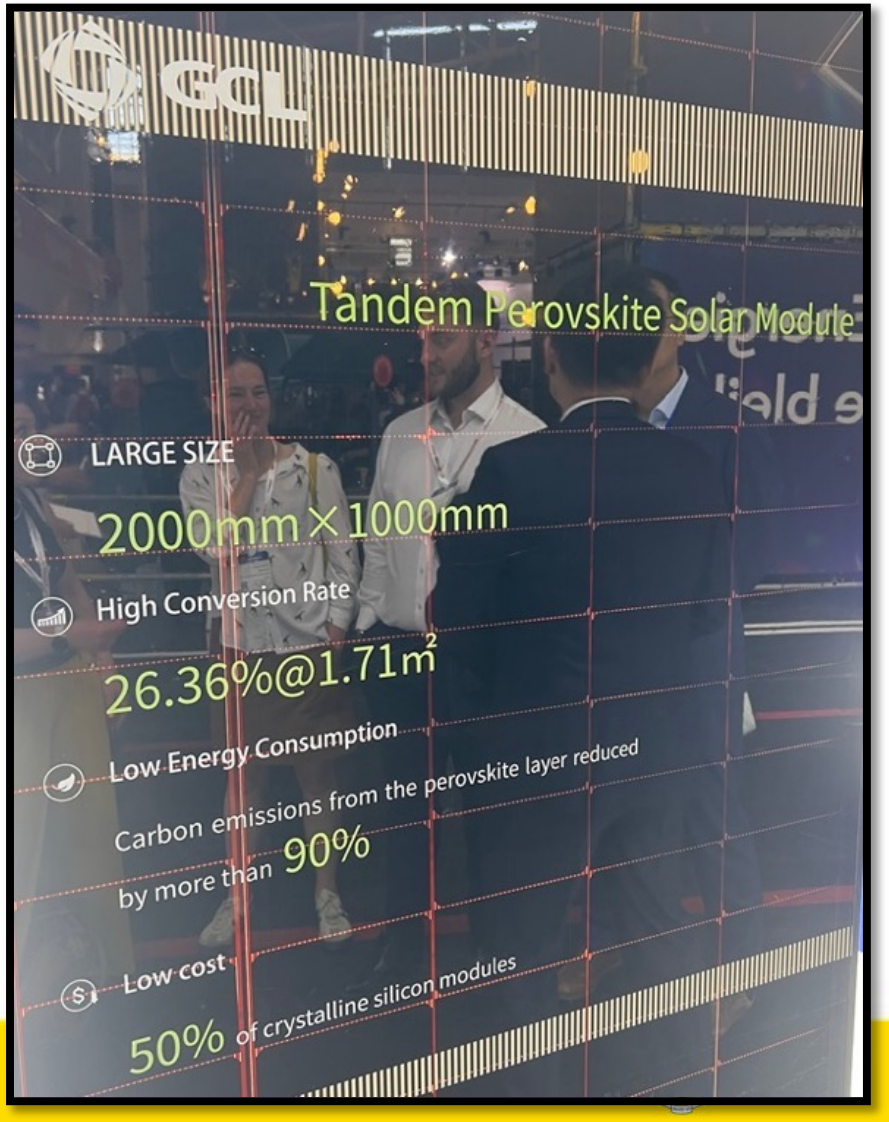


Now 1 Horsepower!

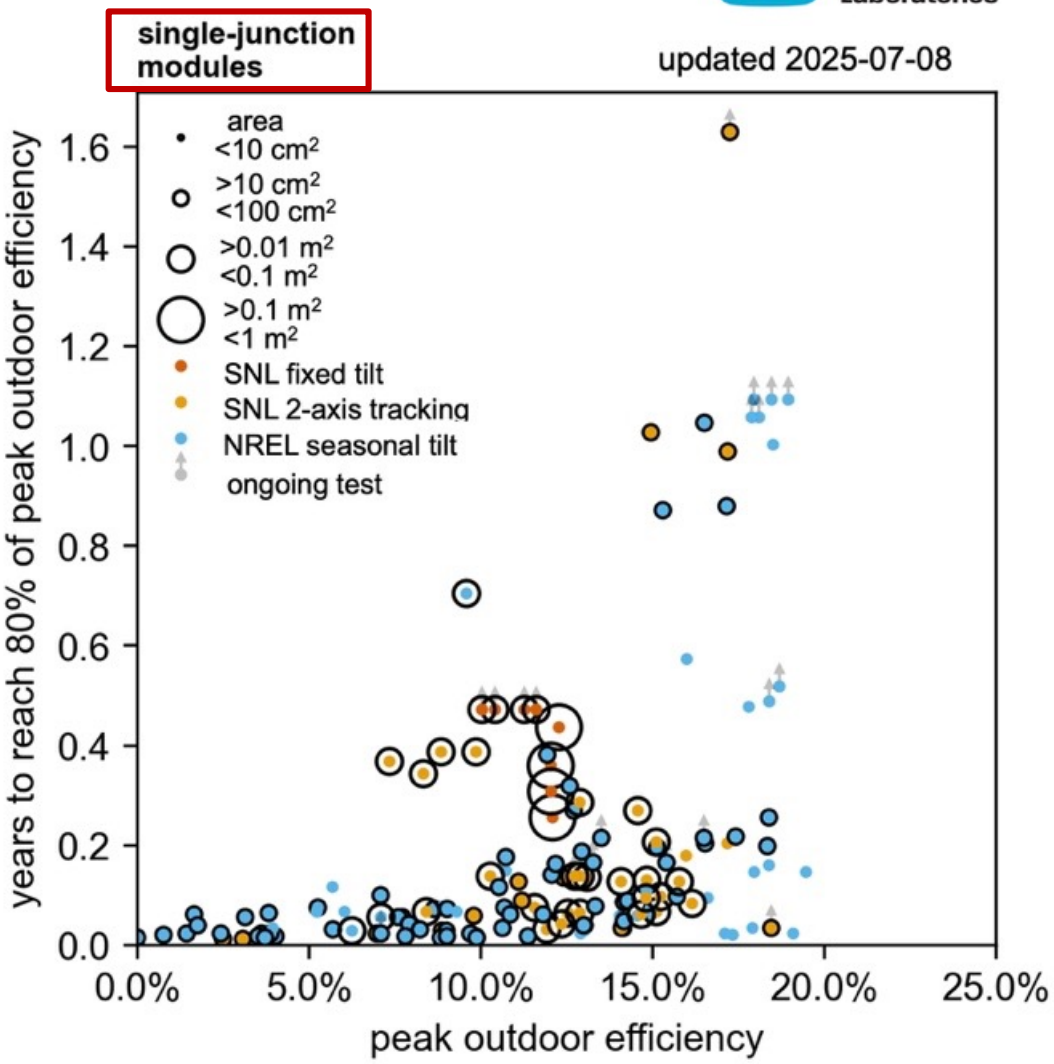


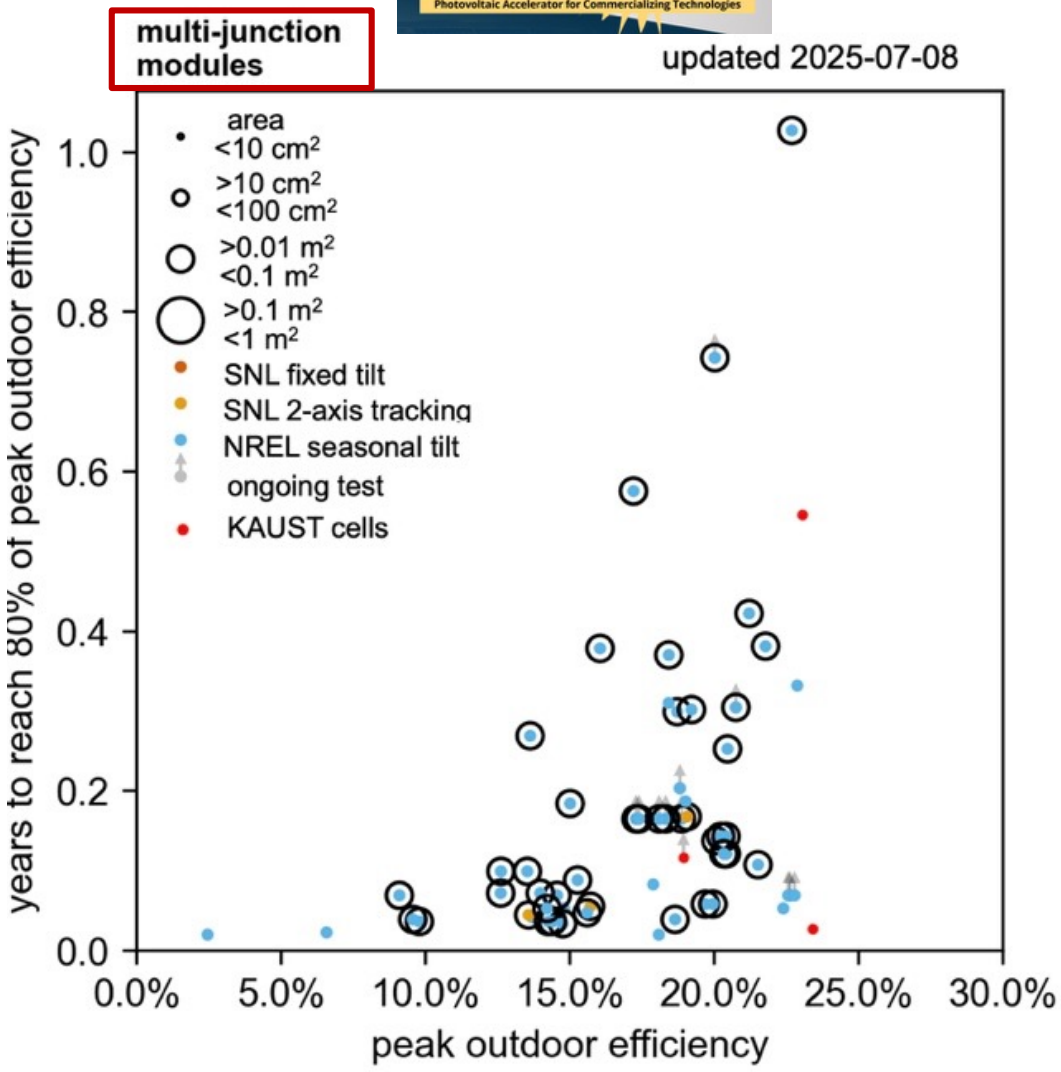
Many companies now announcing product (SNEC 2025)



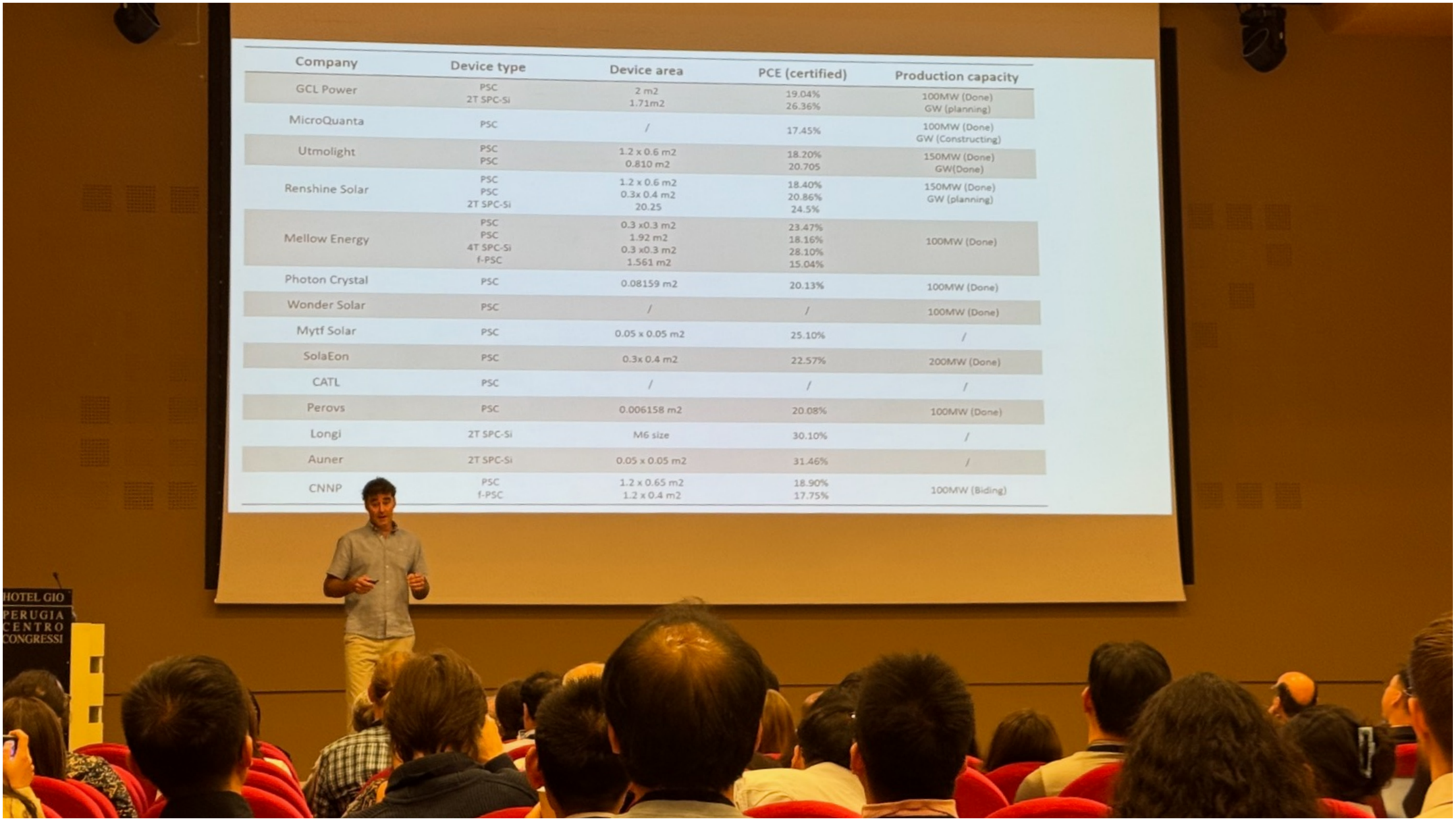


Perovskite? Stability?








Company
Device type
Device area
PCE (certified)
Production capacity
GCL Power
PSC
2T SPC-Si
2 m2
1.71m2
19.04%
26.36%
100MW (Done)
GW (planning)
MicroQuanta
PSC
/
17.45%
100MW (Done)
GW (Constructing)
Utmolight
PSC
PSC
1.2 x 0.6 m2
0.810 m2
18.20%
20.705
150MW (Done)
GW(Done)
Renshine Solar
PSC
PSC
2T SPC-Si
1.2 x 0.6 m2
0.3x 0.4 m2
20.25
18.40%
20.86%
24.5%
150MW (Done)
GW (planning)
Mellow Energy
PSC
PSC
4T SPC-Si
f-PSC
0.3 x0.3 m2
1.92 m2
0.3 x0.3 m2
1.561 m2
23.47%
18.16%
28.10%
15.04%
100MW (Done)
Photon Crystal
PSC
0.08159 m2
20.13%
100MW (Done)
Wonder Solar
PSC
/
/
100MW (Done)
Mytf Solar
PSC
0.05 x 0.05 m2
25.10%
/
SolaEon
PSC
0.3x 0.4 m2
22.57%
200MW (Done)
CATL
PSC
/
/
/
Perovs
PSC
0.006158 m2
20.08%
100MW (Done)
Longi
2T SPC-Si
M6 size
30.10%
/
Auner
2T SPC-Si
0.05 x 0.05 m2
31.46%
/
CNNP
PSC
f-PSC
1.2 x 0.65 m2
1.2 x 0.4 m2
18.90%
17.75%
100MW (Biding)
HOTEL GIO
PERUGIA
CENTRO
CONGRESSI

New UNSW initiative!

- *Outdoor field-testing of commercial & pre-commercial perovskite modules*
- *Voluntary anonymised participation – most major players involved*
- *Quarterly reports on performance – anonymised data from whole field*
- *Contact me (m.green@unsw.edu.au) or Dr Jessica Jiang (yajie.jiang@unsw.edu.au)*



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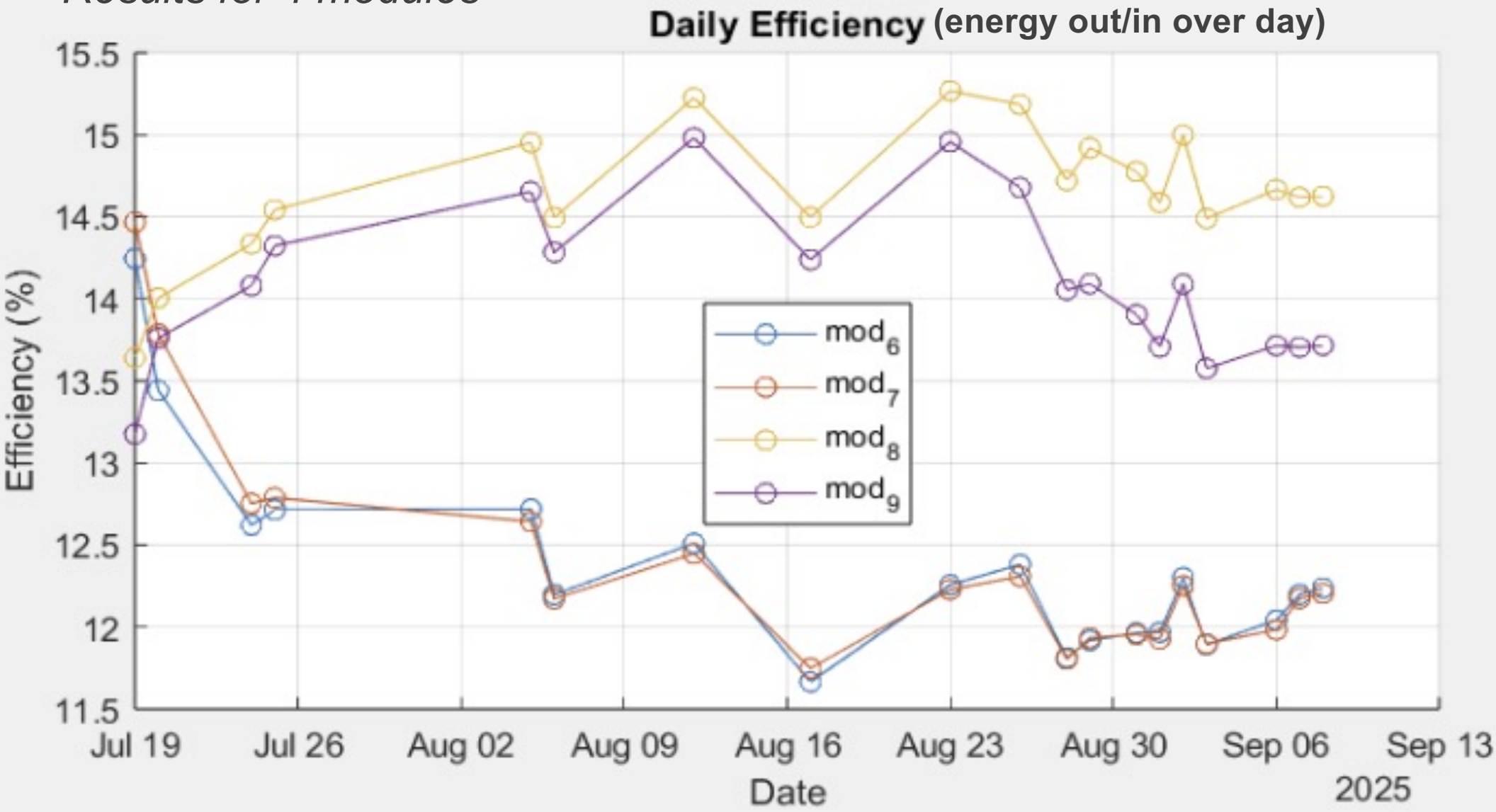
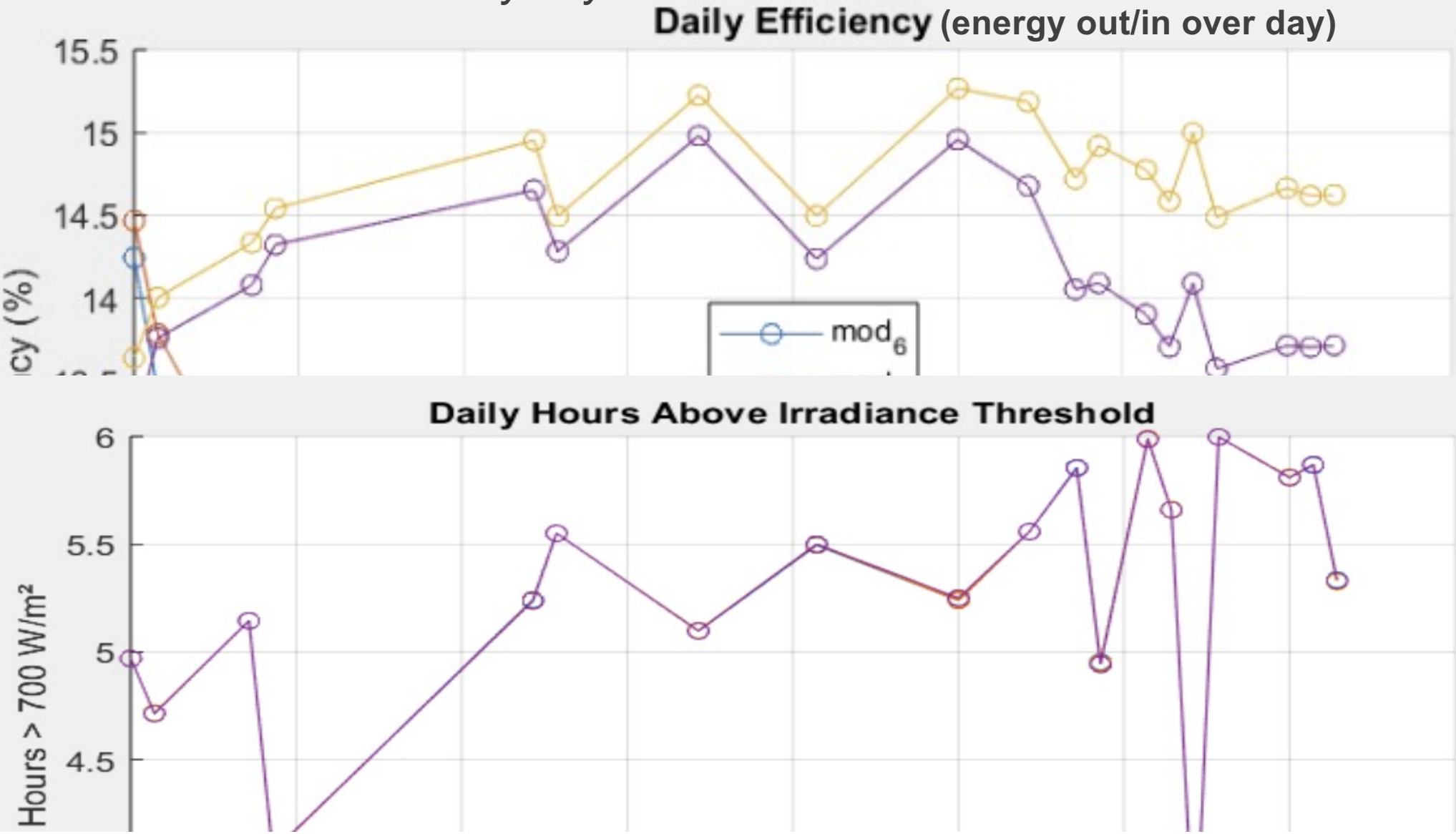
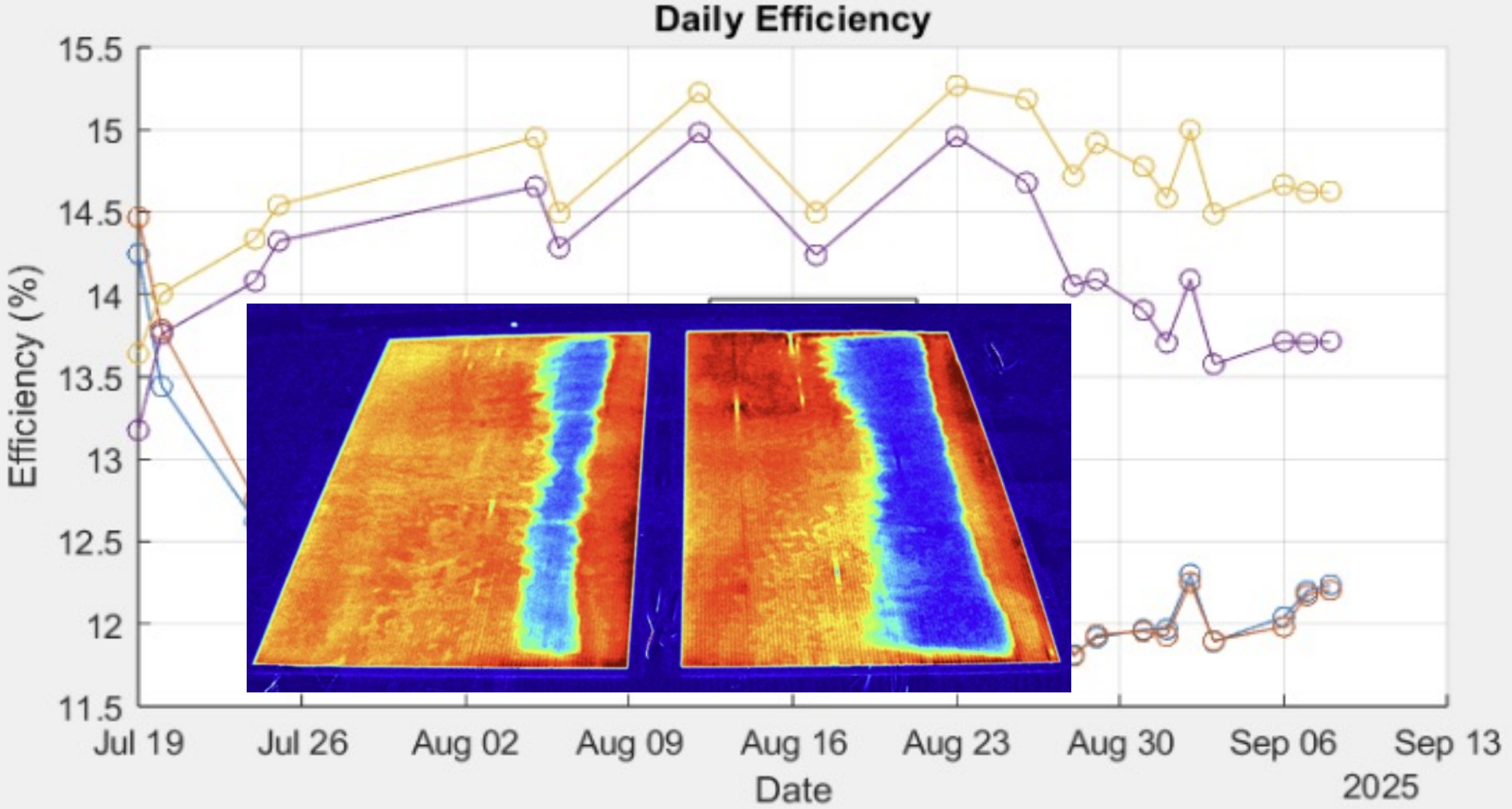
Results for 4 modules



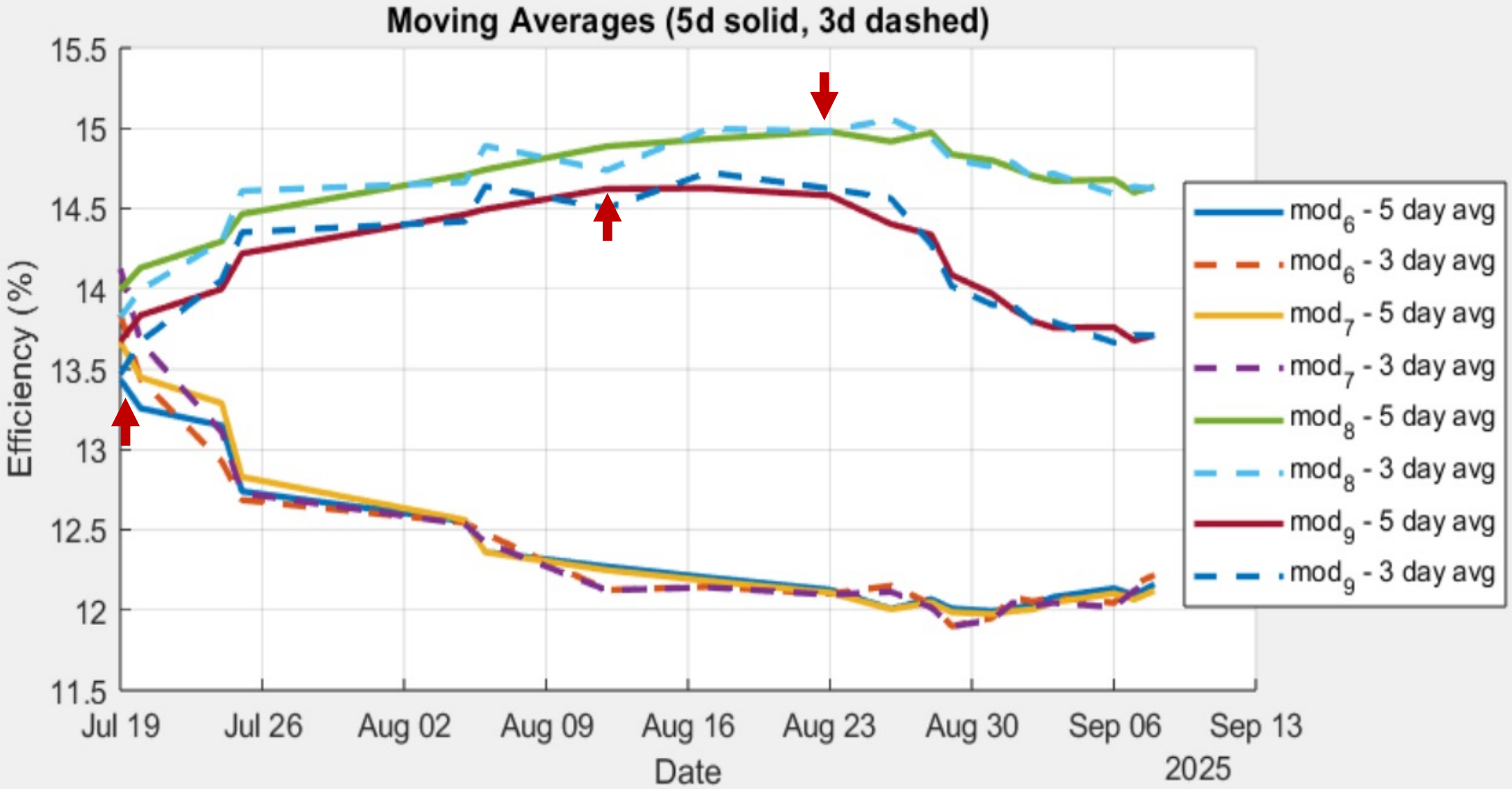
Anti-correlation with sunny days



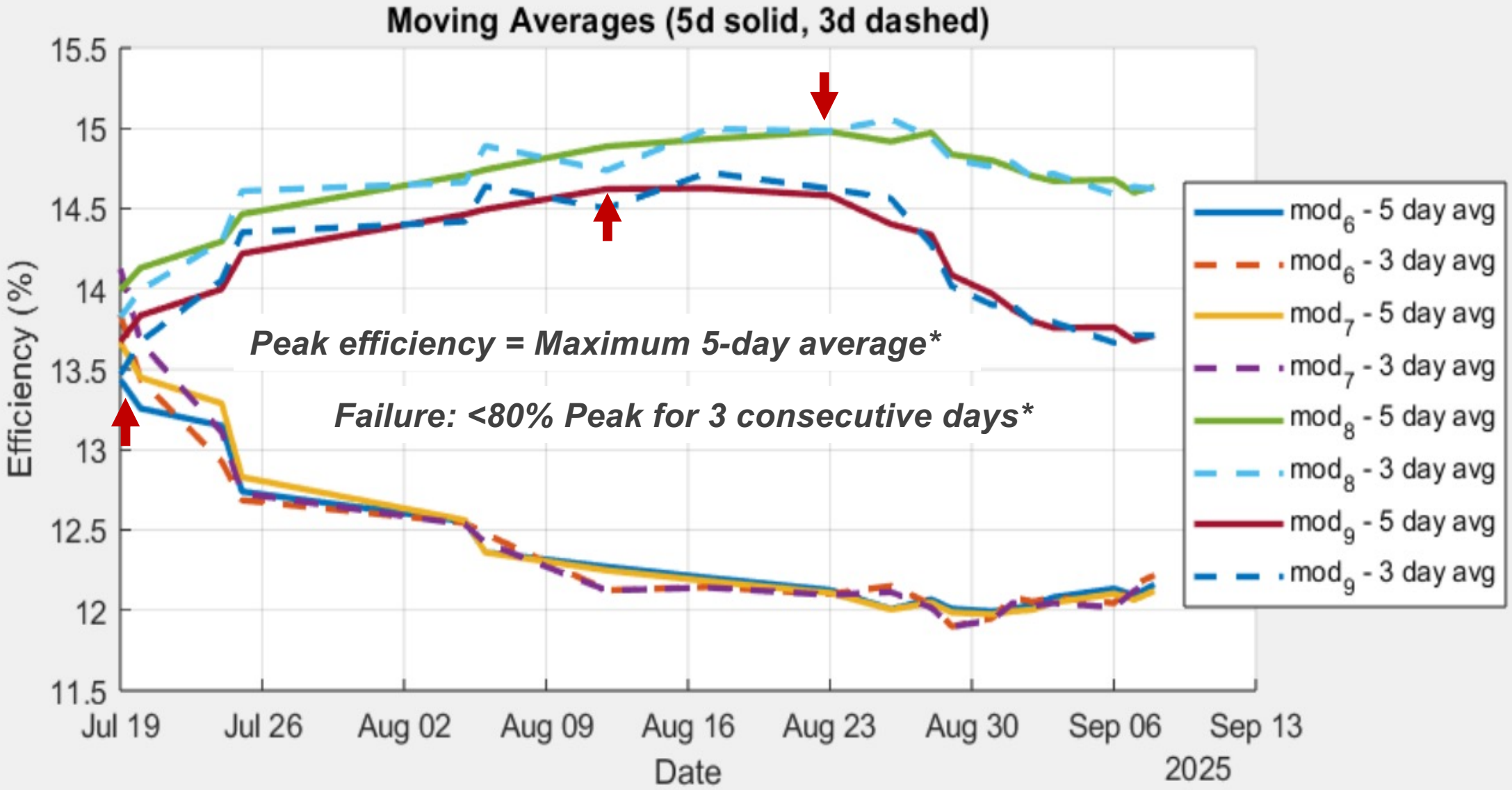
PL monitored

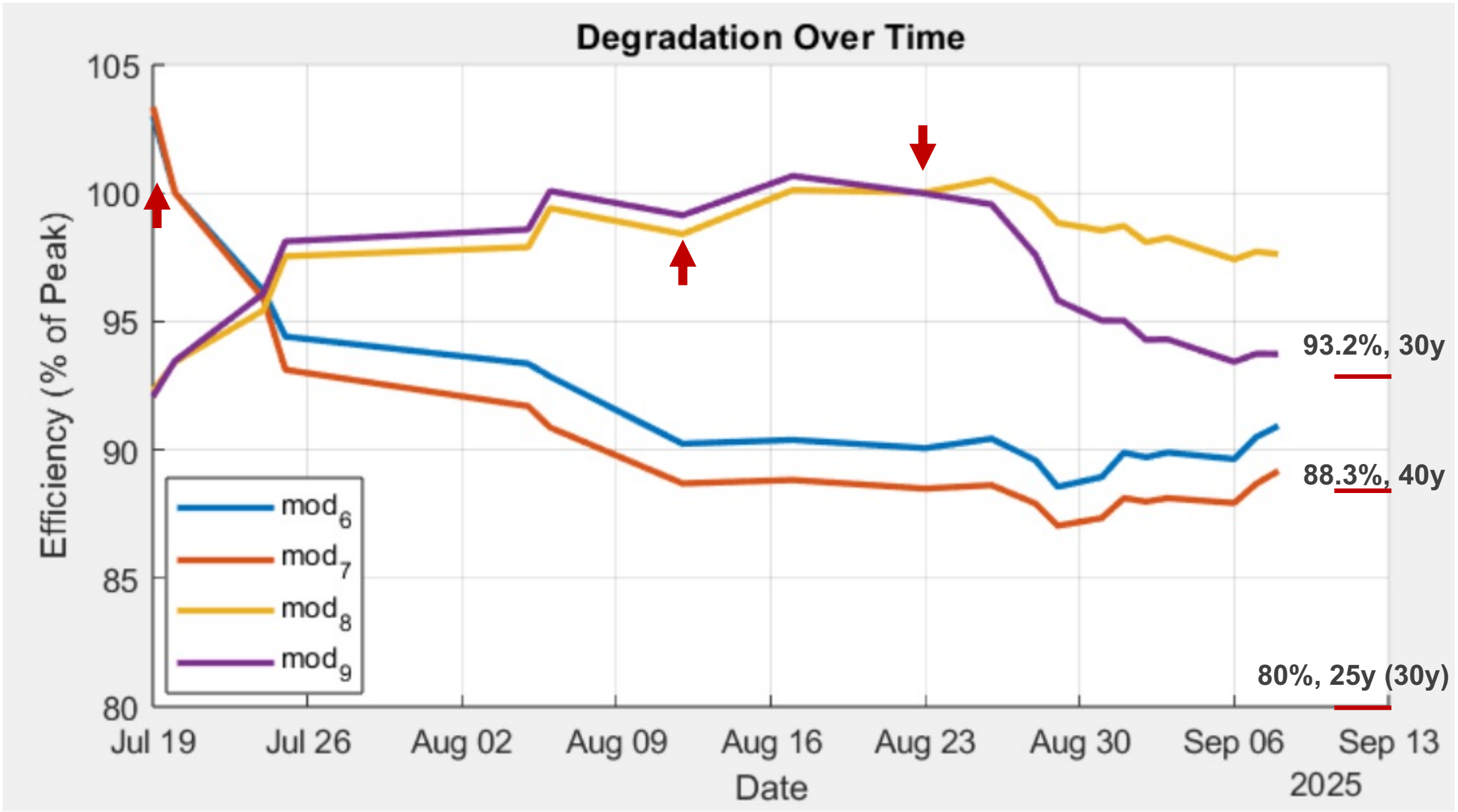


Peak efficiency & failure



Peak efficiency & failure




Degradation Over Time
105
100
95
90
85
80
Efficiency (% of Peak)
Jul 19
Jul 26
Aug 02
Aug 09
Aug 16
Aug 23
Aug 30
Sep 06
Sep 13
2025
Date
mod6
mod7
mod8
mod9
93.2%, 30y
88.3%, 40y
80%, 25y (30y)

Opportunity for free benchmarking!

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- *Voluntary anonymised participation – most major players involved*
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