

Diesel Generators and Energy Storage in Wind Power Systems

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ACEP
Alaska Center for Energy and Power



UNIVERSITY OF
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FAIRBANKS

Effect of ramp rate on diesel efficiency

Units under test



190 kW
Tier 4



320 kW
Tier 3

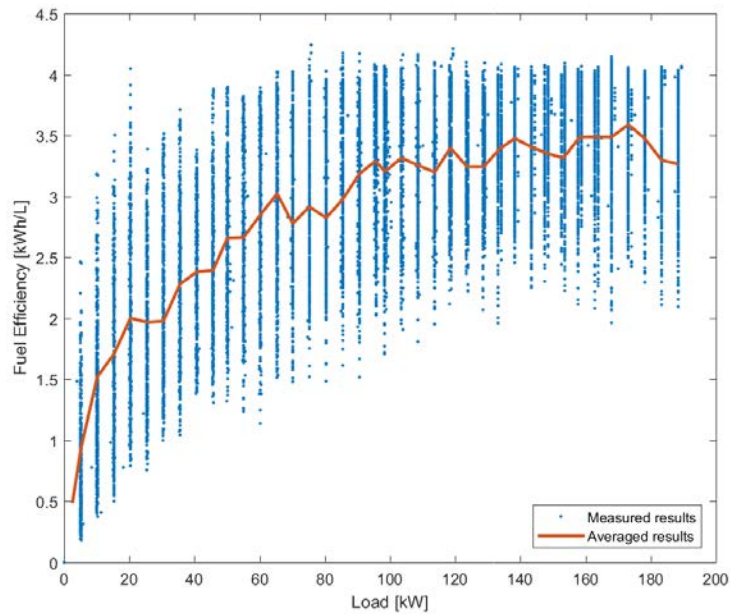


457 kW
Tier 2

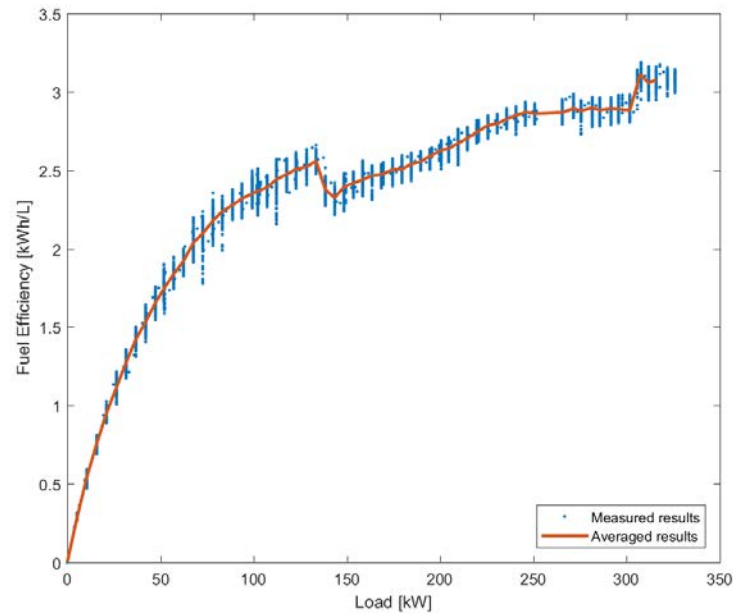


Effect of ramp rate on diesel efficiency

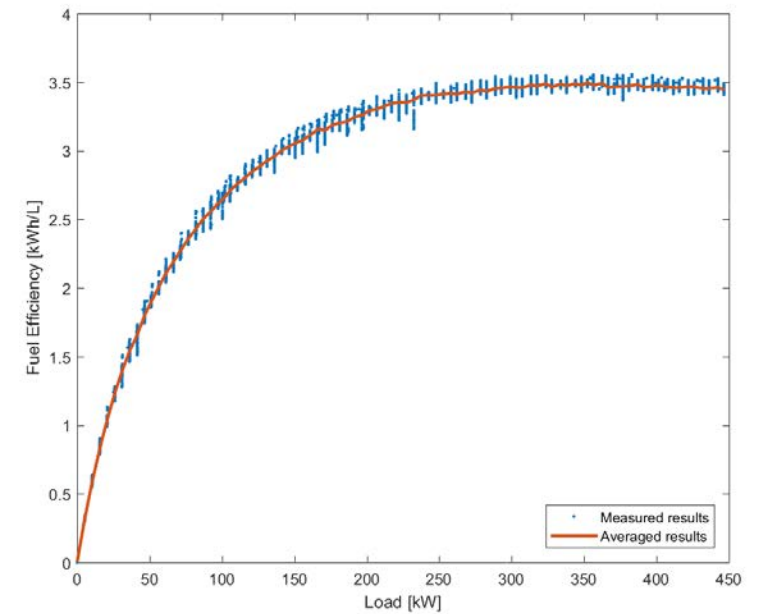
Steady state fuel curves



190 kW
Tier 4



320 kW
Tier 3

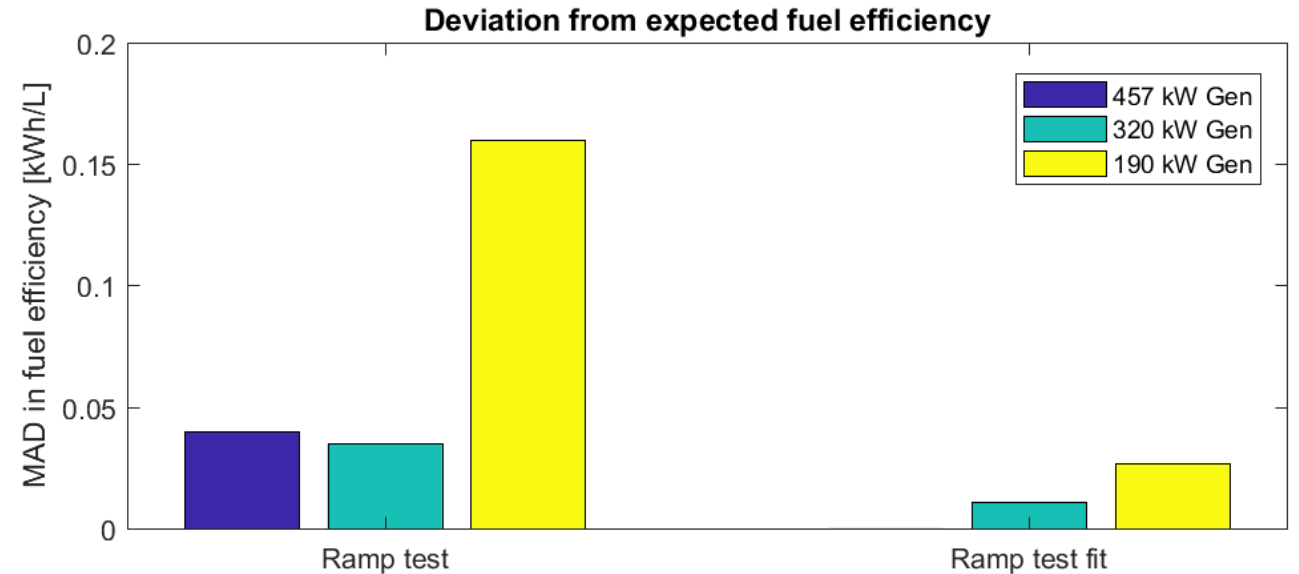
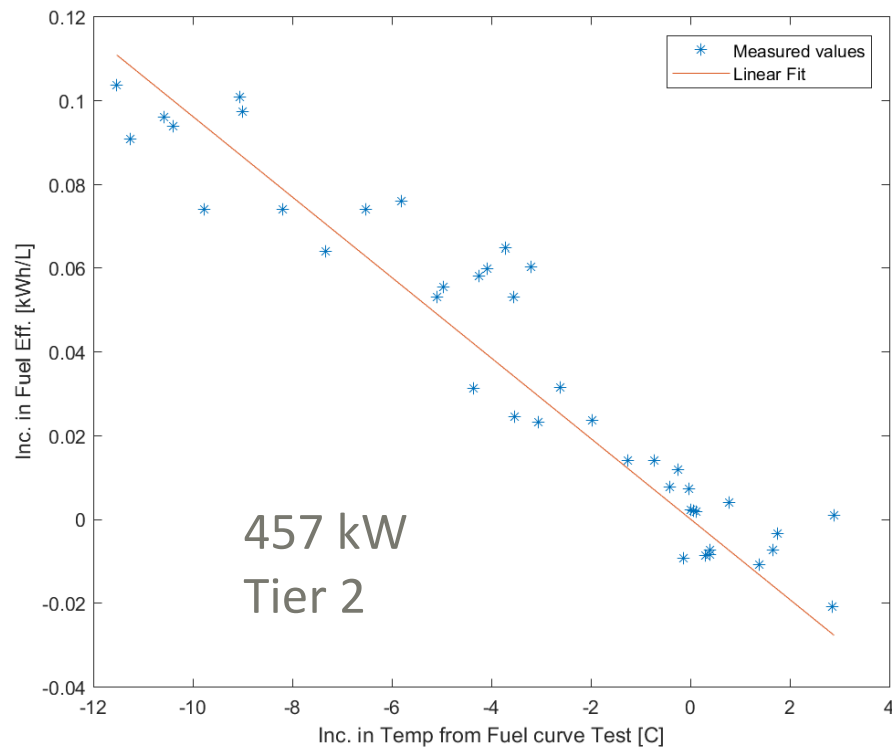


457 kW
Tier 2



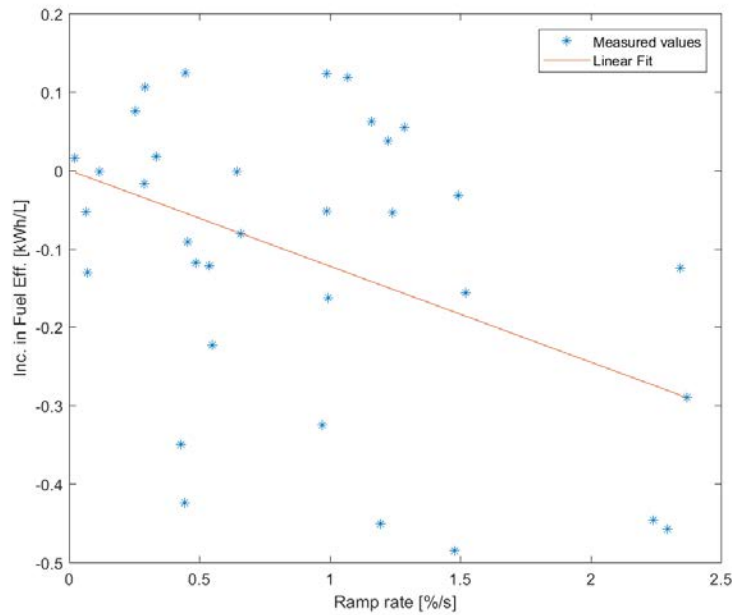
Effect of ramp rate on diesel efficiency

Effect of ambient conditions

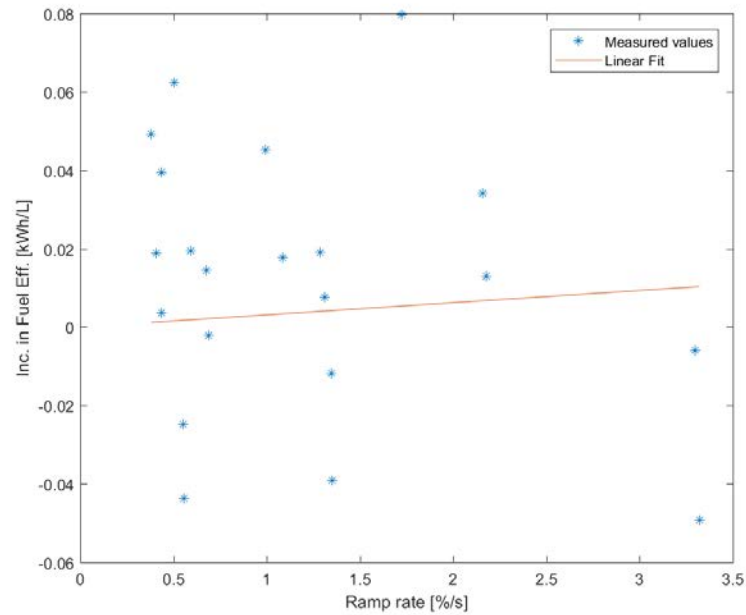


Effect of ramp rate on diesel efficiency

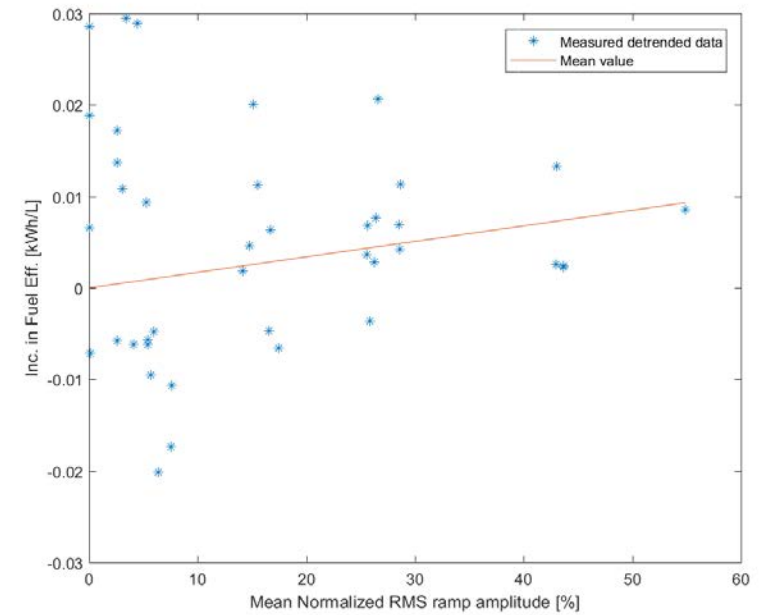
No statistically significant impact of ramp rate



190 kW
Tier 4



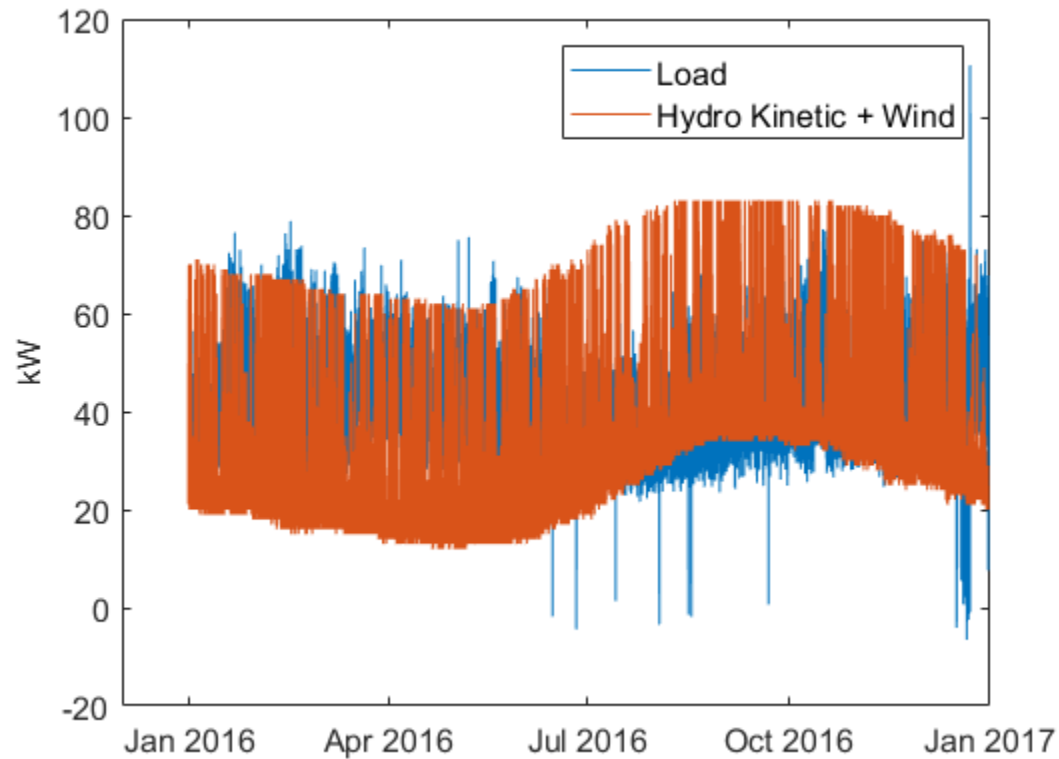
320 kW
Tier 3



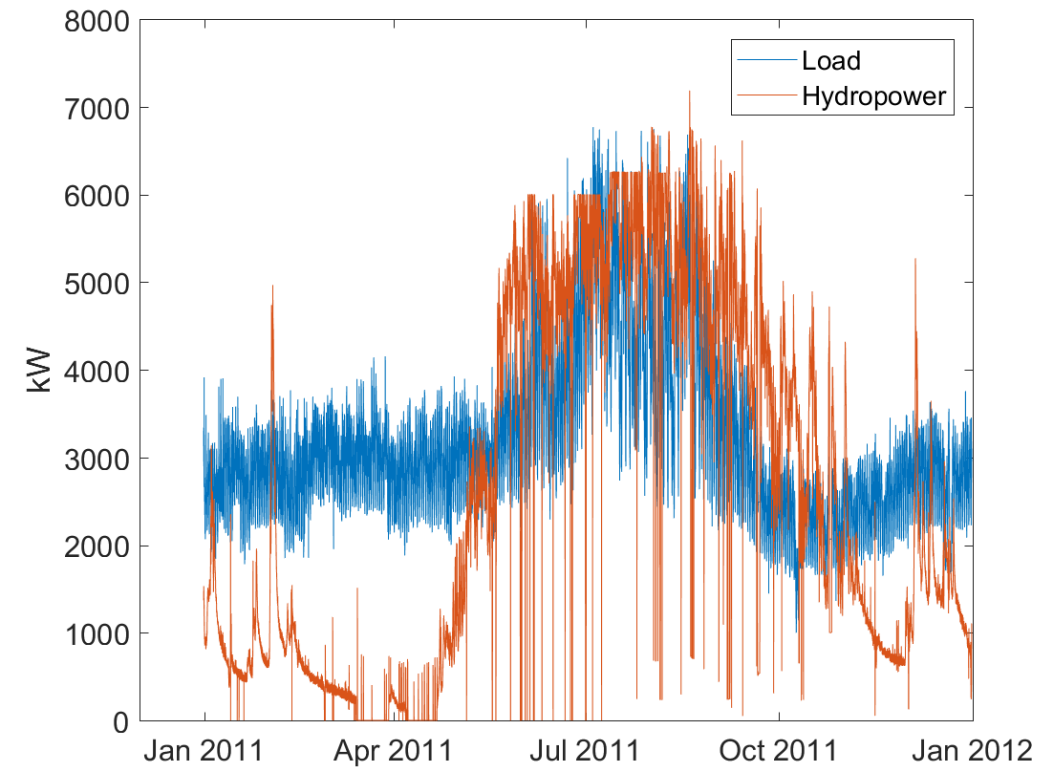
457 kW
Tier 2



Sizing energy storage systems



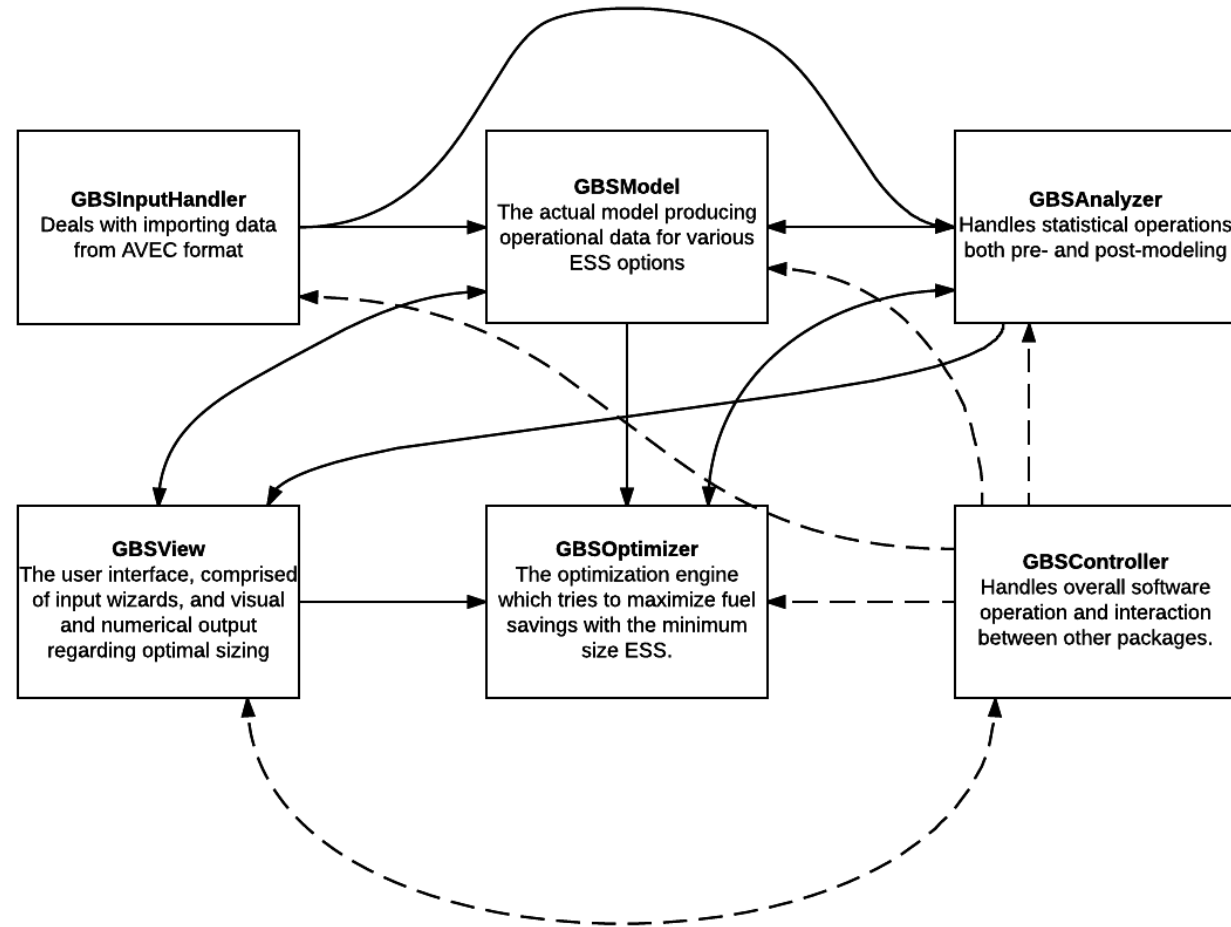
Igiugig: 40 kW Avg. Load
83 kW Nameplate Wind + Hydro
34 kW Avg. Wind + Hydro Avail.



Cordova: 3.2 MW Avg. Load (seasonal)
7.25 MW Nameplate Hydro
2.6 MW Avg. Wind + Hydro Avail.



Sizing energy storage systems



Thank you!

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