

Planning for successful project implementation

Alaska Rural Energy Conference 2016

Moderator

Gwen Holdmann, Director, Alaska Center for Energy and Power



Ingredients for Successful Planning

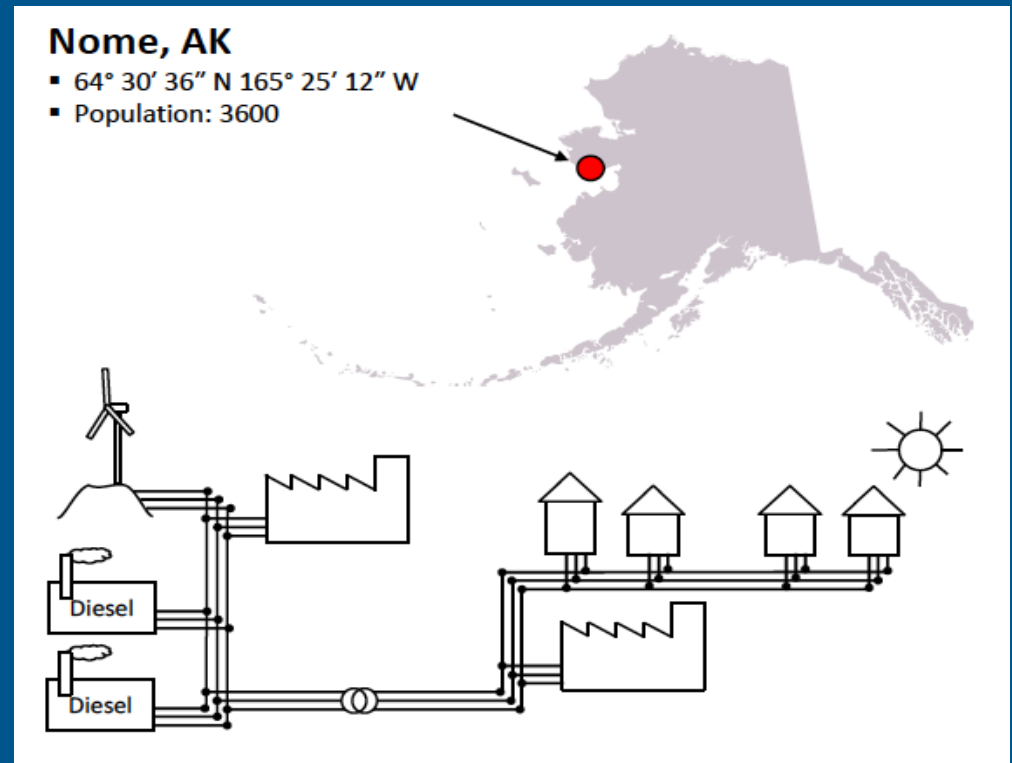
- What is the goal?
 - Specific targets
 - Measureable benchmarks
- How do we get there?
 - Deliberate planning
 - Long-term vision
 - Short term milestones
 - Manageable sub-projects



Energy Storage for Nome, AK

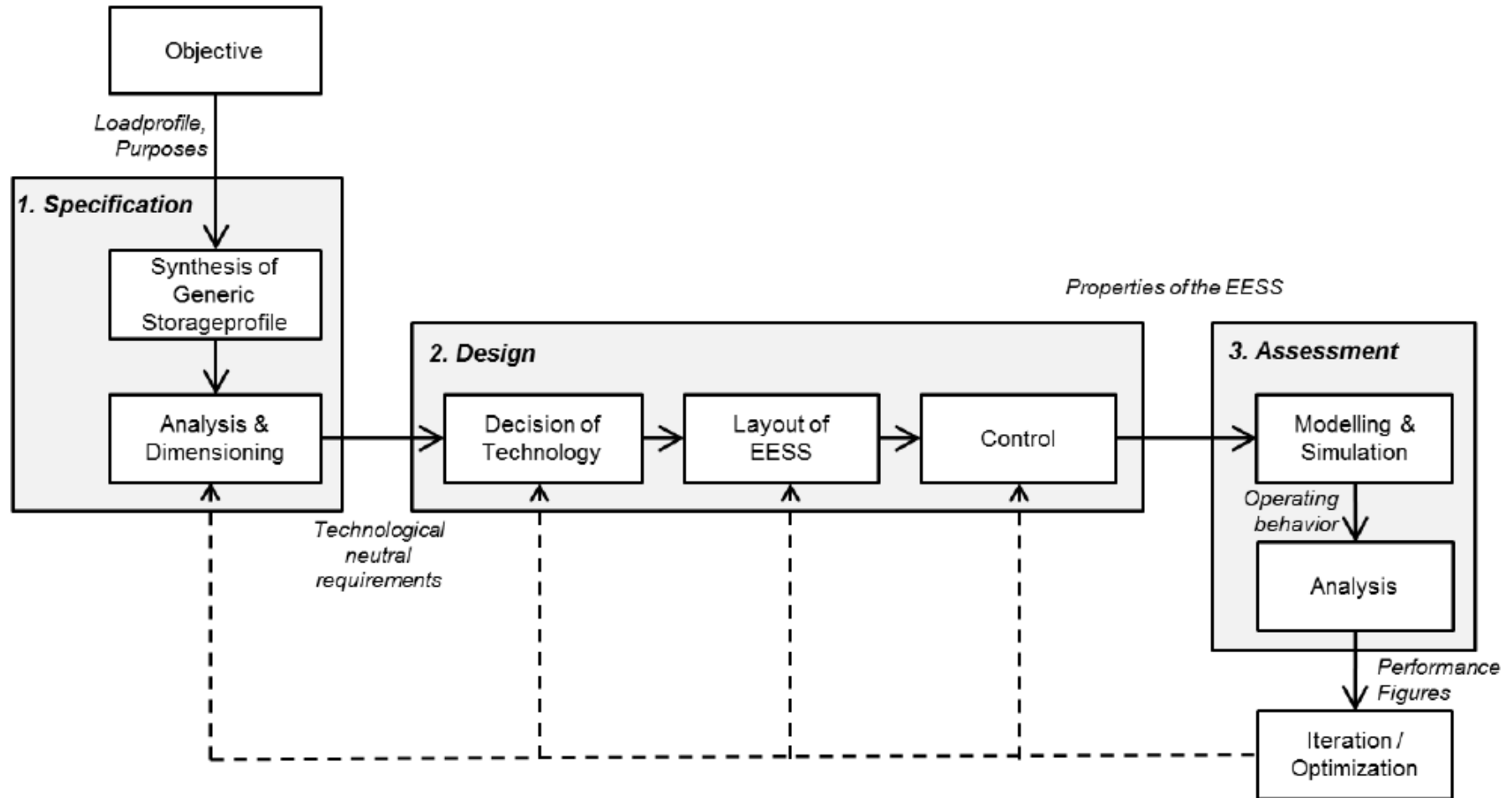
Objective: Avoid or delay diesel starts by providing spinning reserve capacity (SRC) with storage.

- Wind-diesel system
 - 4 MW average demand
 - 2.7 MW wind nameplate capacity
 - Diesels: 1.9, 3.6, and two 5.4 MW units
- Wind power diversion to boilers at times
 - Stability and minimum optimal loading issues

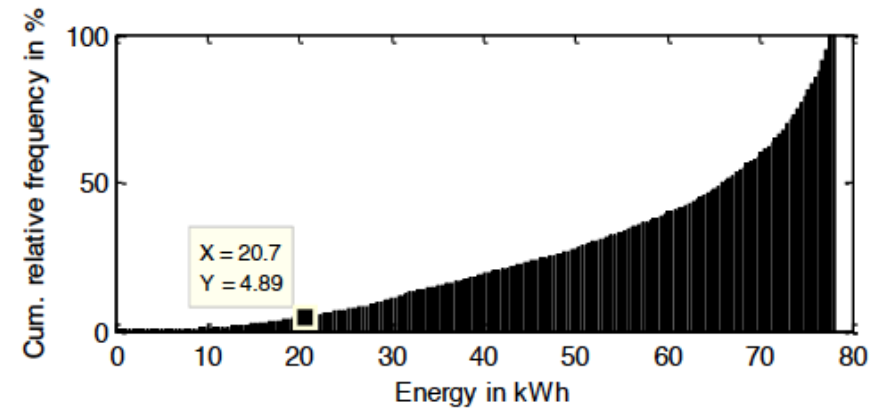
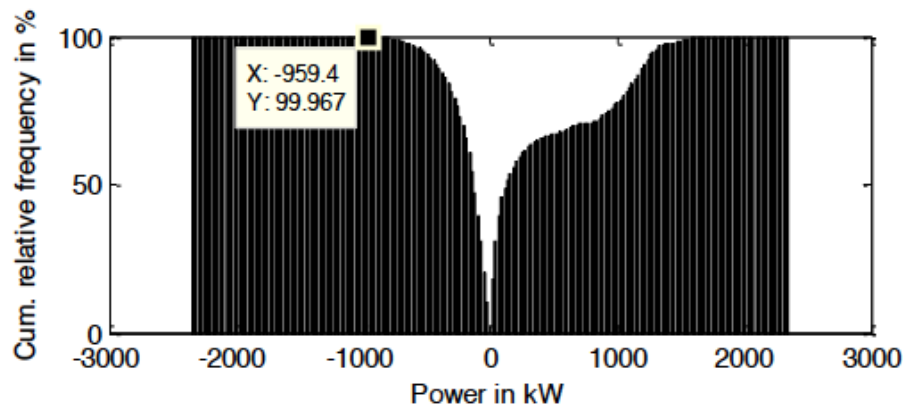
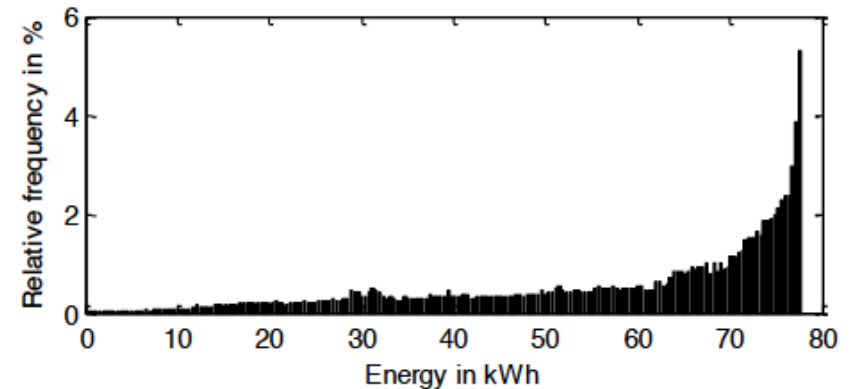
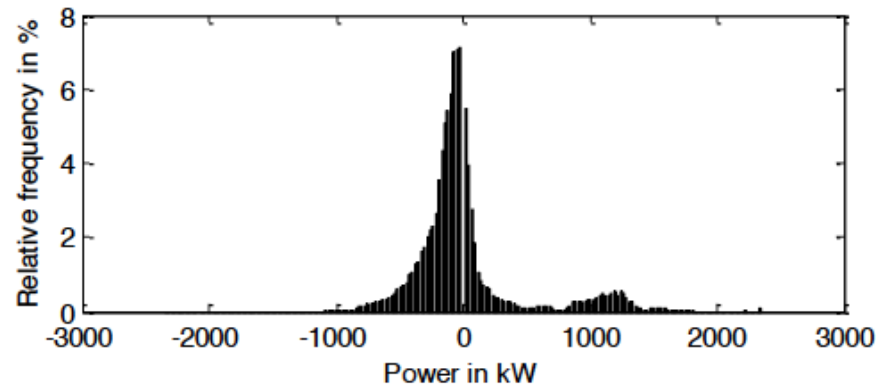


Specification, Design, Assessment

SDA Process developed by our collaborators at TU Darmstadt, Germany.



Nome, AK: Specification

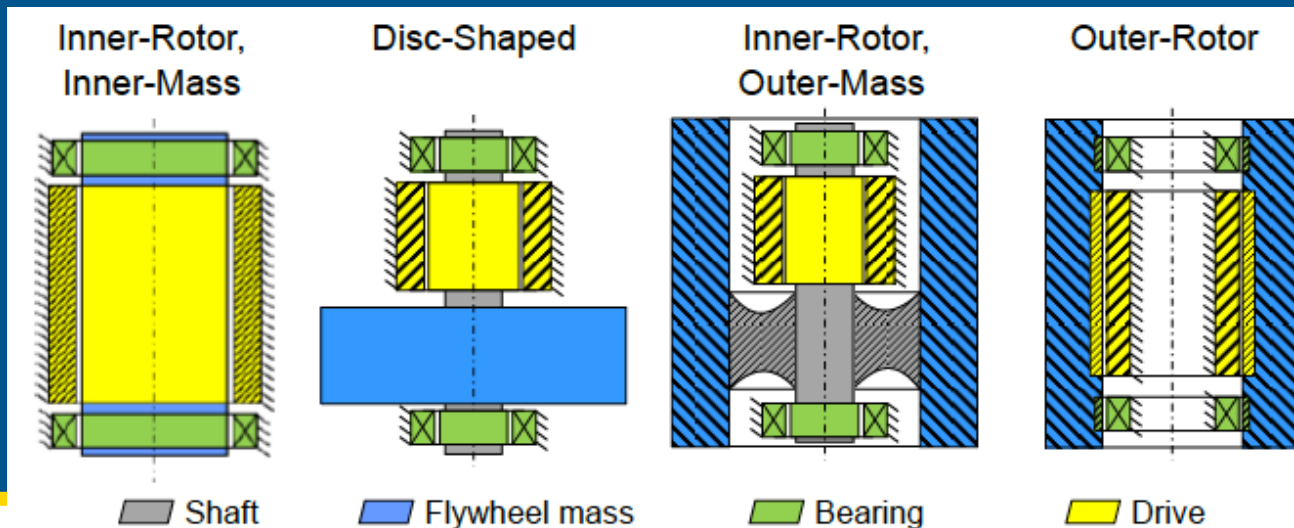


Nome, AK: Design

Required for meeting objective 99% of times:

- 959 kW power capacity
- 58 kWh energy capacity
- Later design decision required high cycle life -> flywheel

Power	140 kW const.
Capacity	8.3 kWh
Flywheel mass	665 kg
Outer rotor diameter	800 mm
Inner rotor diameter	360 mm
Height Rotor	900 mm
Min. rotating frequency	6000 rpm
Max. rotating frequency	12.000 rpm



Nome, AK: Assessment

- Fuel savings with primary objective only:
 - 430 to 1150 gal/week (medium to high winds)
 - Slight increase in fuel use for stand-by operation
- Potential value add:
 - Diesel demand smoothing

