08:39:25 From Kristen Fletcher to Everyone:
As a reminder, if you're sharing your own slides, please have them ready to go. I'll ask you to share your screen when we get to your group.
09:19:01 From Saniya LeBlanc (GWU) to Everyone:
Here is my contact information: Saniya LeBlanc sleblanc@gwu.edu
09:23:04 From Saniya LeBlanc (GWU) to Everyone:
@Dan: We use two reliability metrics: probability of failure (expected number of time intervals where system operates at a deficit) and average failure magnitude (sum of energy deficit divided by the total energy). We use this resilience metric: probability of recovering from failure (percentage of time intervals in which the system, previously operating in deficit, is then meeting demand).
09:26:11 From Saniya LeBlanc (GWU) to Everyone:
Our objective function are based on our mode: cost minimization over a time horizon, including cost components for each technology and load shedding, and an emergency mode objective function over a time horizon, including cost components for each technology, critical load shedding, and lack of storage penalty. This was developed in a DOE project, so cost was an important part of our objective functions and payback time in the technoeconomic framework.
09:28:49 From Dan Nussbaum (NPS) to Everyone:
thank you, Saniya
09:44:29 From Ron Giachetti to Everyone:
https://microgrid.nsetti.nps.edu/
09:47:19 From Ron Giachetti to Everyone:
We are porting our design tools to the website above to disseminate it broadly within the Navy
10:10:30 From Paul DeSario to Everyone:
What is the approximate proportion of energy usage for propulsion vs. hotel load?
10:18:20 From Bob Warren to Everyone:
Kristen, was trying to stay on to present the Siemens Energy overview, but have to leave for another deadline. If you/Mark want to discuss off-line I am available later.
10:23:08 From Paul DeSario to Everyone:
Prof. Mustain have you looked at the possibility for the fuel cells to supplement mechanical propulsion (I understand the propulsion system would look radically different)? Or only as an input for auxiliary systems?
10:24:48 From William Mustain to Everyone:
Paul - Yes, this is an interest area of ours for the electrical load. The propulsion load is likely too high, but having SOFCs that replace the 1.5-3 MW diesel and gas turbines seems quite possible
10:28:35 From Bryant Fuller to Everyone:
Energy storage systems using lithium ion batteries are more simple and straight forward for augmenting propulsion loads. ESS has been incorporated in commercial ship propulsion systems for a decade. Siemens Energy is currently the power & propulsion system integrator for a Scripps Institute research vessel that will incorporate fuel cells for limited propulsion requirements.
10:28:40 From Amory Lovins to Everyone:
True, William…but better hullform, propulsors, etc can contribute to an easier tradespace on propulsion power.
10:32:09 From Bryant Fuller to Everyone:
Providing hydrogen for a fuel cell is a challenging task for ships. Hydrogen must be stored as a compressed gas, liquified gas, as a hydride or reformed from methane or ammonia. All of these hydrogen auxiliary systems add to propulsion plant cost, complexity, volume and weight.
10:32:14 From William Mustain to Everyone:
Good point, Amory. I think that hullform needs to be carefully considered as it not only acts to hold fuel, but also to help the ship to survive an impact. Another part of your presentation - about streamlining piping - really does need to be thought of. Maybe from the ground up with ship design. Some piping is there for redundancy/survivability, but there are likely gains there.
10:34:21 From William Mustain to Everyone:
Good point, Bryant. It should also be considered that H2 has a much lower volumetric energy density. There are also issues with how/where to store gases. Same with ammonia. F-76, JP-5, etc are stored in almost every available nook and cranny. These require specialized tanks with given form factors.
10:36:21 From William Mustain to Everyone:

Amory - I agree with you that design can be a 6.2 activity here. Maybe we call it "Technology Integration". That allows legacy and new technologies to both be considered given the space/energy restrictions.

10:36:40 From Amory Lovins to Everyone:
Diagram doesn't show using heat to create cooling.

10:44:07 From Kristen Fletcher to Everyone:
https://www.maritime.dot.gov/innovation/meta/maritime-environmental-and-technical-assistance-meta-program

10:45:53 From Sang Hee to Everyone:
Dear Mark,

10:46:17 From Sang Hee to Everyone:
Do you have any opinion how the industry partners would participate in this 6.2 effort?

10:51:13 From Kristen Fletcher to Everyone:
Reminder: website is at: https://www.nps.edu/web/eag/decarb

10:56:28 From Kristen Fletcher to Everyone:
March 9 – Noon – 2:30 ET (virtual)

10:59:53 From Saniya LeBlanc (GWU) to Everyone:
I can arrange for meeting space at GW on March 24th.

11:00:21 From Dan Nussbaum (NPS) to Everyone:
thank you!