EMPOWERING THE DEVELOPING WORLD

Sustainable Development Goals for World Development Conference
United Nations (New York), August 26, 2016
At a time when the developed world consumes so much energy, it requires government/utility incentives to reduce its demand…

- 1.3 billion people lack access to electricity
  - Almost half from sub-Saharan Africa, half from Asia
  - Balance from Mid East and Latin America

- “Energy for Life” is more than a tag line
Power produced/used at the “village level”

- Profound positive impacts on
  - Clean water supply
  - Food supply and preparation
  - Medical/health
  - Education
  - Communication
  - Commerce
  - Socio political

- Advances UN Sustainable Development Goals:
  - 100% renewably powered
  - Resilient
Aris/Airsynergy Mission Alignment with SDG’s

1. No Poverty
2. Zero Hunger
3. Good Health and Well-Being
4. Quality Education
5. Gender Equality
6. Clean Water and Sanitation
7. Affordable and Clean Energy
8. Decent Work and Economic Growth
9. Industry, Innovation, and Infrastructure
10. Reduced Inequalities
11. Sustainable Cities and Communities
12. Responsible Consumption and Production
13. Climate Action
14. Life Below Water
15. Life on Land
16. Peace, Justice, and Strong Institutions
17. Partnerships for the Goals

Direct impact
Indirect impact
ADVANCED HYBRID WIND/SOLAR TECHNOLOGY
A VIABLE SOLUTION FOR VILLAGE POWER

**RPU**
Remote Power Unit
- Off-Grid 80w LED Lighting, and
- Off-Grid remote power for light duty applications
  - Cell phone, wifi
  - Camera
  - Other
- Eliminates wiring and trenching costs in areas near by the grid

**TES**
Total Energy Solution
- Grid-tied or Off-Grid
- Power sufficient for ~2x average American home (@5 m/s site)
- Efficient and economical:
  - $0.10- $0.12/kw-hr (5 m/s, + batteries)
- Reduces typical 5 m/s wind requirement to 4 m/s
- Available with integrated water purification/pumping module
RPU INSTALLATIONS

- ~12 Aris RPUs in US and Caribbean
- ~10 Airsynergy RPUs in Europe
- Growing adoption in market place
- Internet controlled and optional cell phone charging now
- “Microgrid – rural electrification connection”
“Aris Wind’s ‘Remote Power Units’ operating on the IIT campus today, as well as plans to deploy their larger advanced wind products support our vision of advanced microgrids as a means to rural electrification in the developing world.”

- Dr. Mohammad Shahidepour, Director of the Robert W. Galvin Center for Electricity Innovation at the Illinois Institute of Technology

RPU’s, internet connected and with cell phone charging, at the IIT/Chicago campus, one of the most advanced islanded microgrids in the US.
PROPOSED "LOANER" RPU’S FOR UN NYC CAMPUS

Shrouded wind turbine, solar panel, LED light

Banner, with replaceable message/image for different events

RPU’s along riverwalk and potentially 1st Ave

[Images and diagrams related to proposed RPU designs]
TES/Total Energy Solution

• Broadly applicable, cost effective small wind for the small user needs

• Hybrid wind/solar system has synergistic effects with energy storage function

• Airsynergy operating 5 units in Europe

• Aris implementing grid tied TES in US/Caribbean later this year at multiple sites

• Early adopters in action, growing market interest and traction
The wind blows
The Sun shines
Generators produce power

4kW output
1.5kW output

Off-Grid
Security
Water Pumping
Water Harvesting
Water Filtration
Car Charging Points
Grid Connected
FIT Payments
Lighting Projects

TES/Total Energy Solution - APPLICATIONS

The Energy POD
Multiple Battery Size and Capacity for Storage Option
TES TECHNOLOGY EXPANDS APPLICABILITY TO LOWER WIND REGIONS – AFRICA EXAMPLE

More economically addressable land mass = More people potentially empowered

Source: Vaisala, 80m data

Source: Washington Post
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