ChaninIk Wind Group

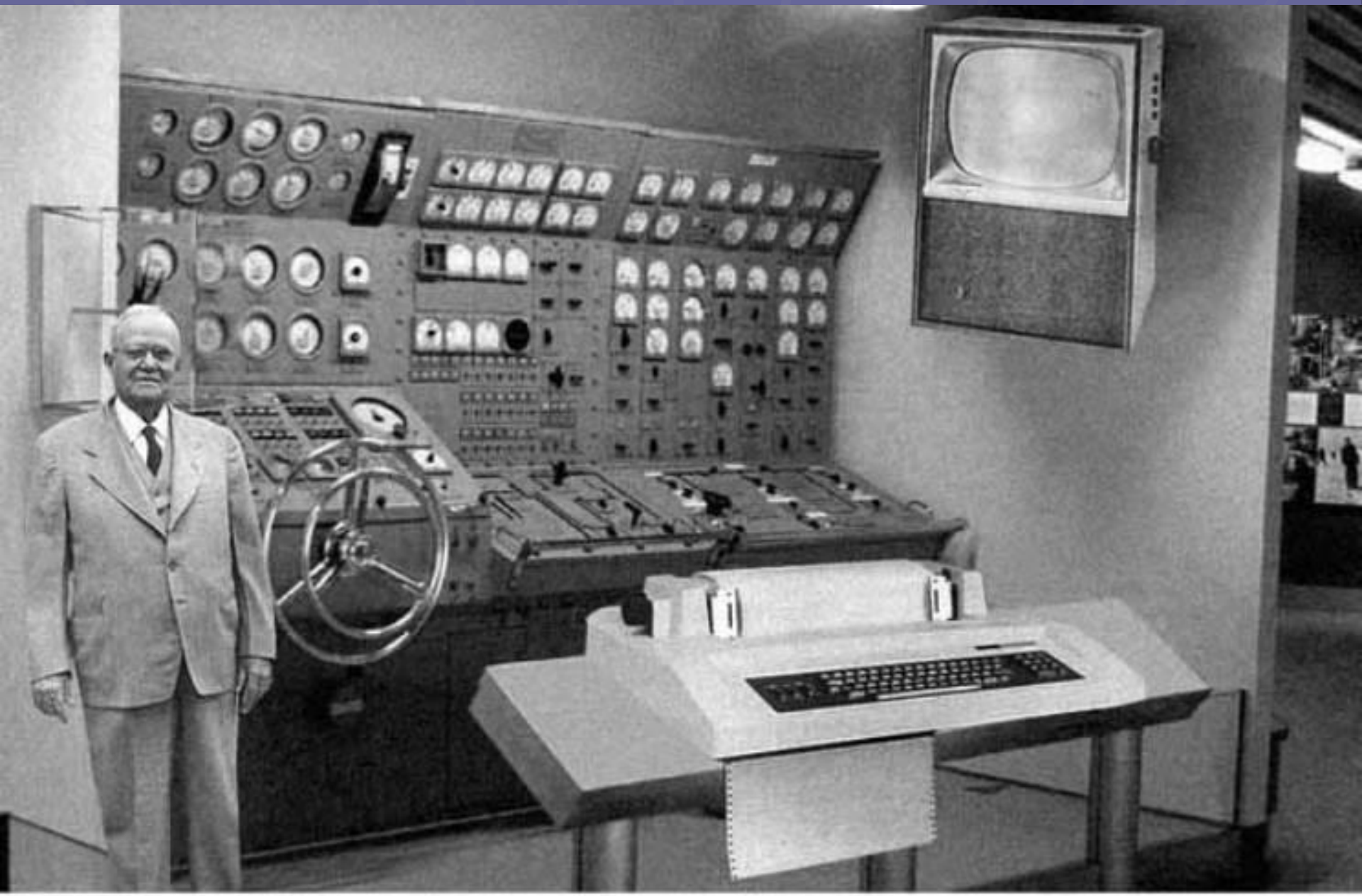
Pathway to Sustainability

Increasing the value of Wind-Diesel Technology

Presented by:

Dennis Meiners

Intelligent Energy System, LLC



Scientists from the RAND Corporation have created this model to illustrate how a "home computer" could look like in the year 2004. However the needed technology will not be economically feasible for the average home. Also the scientists readily admit that the computer will require not yet invented technology to actually work, but 50 years from now scientific progress is expected to solve these problems. With teletype interface and the Fortran language, the computer will be easy to use.

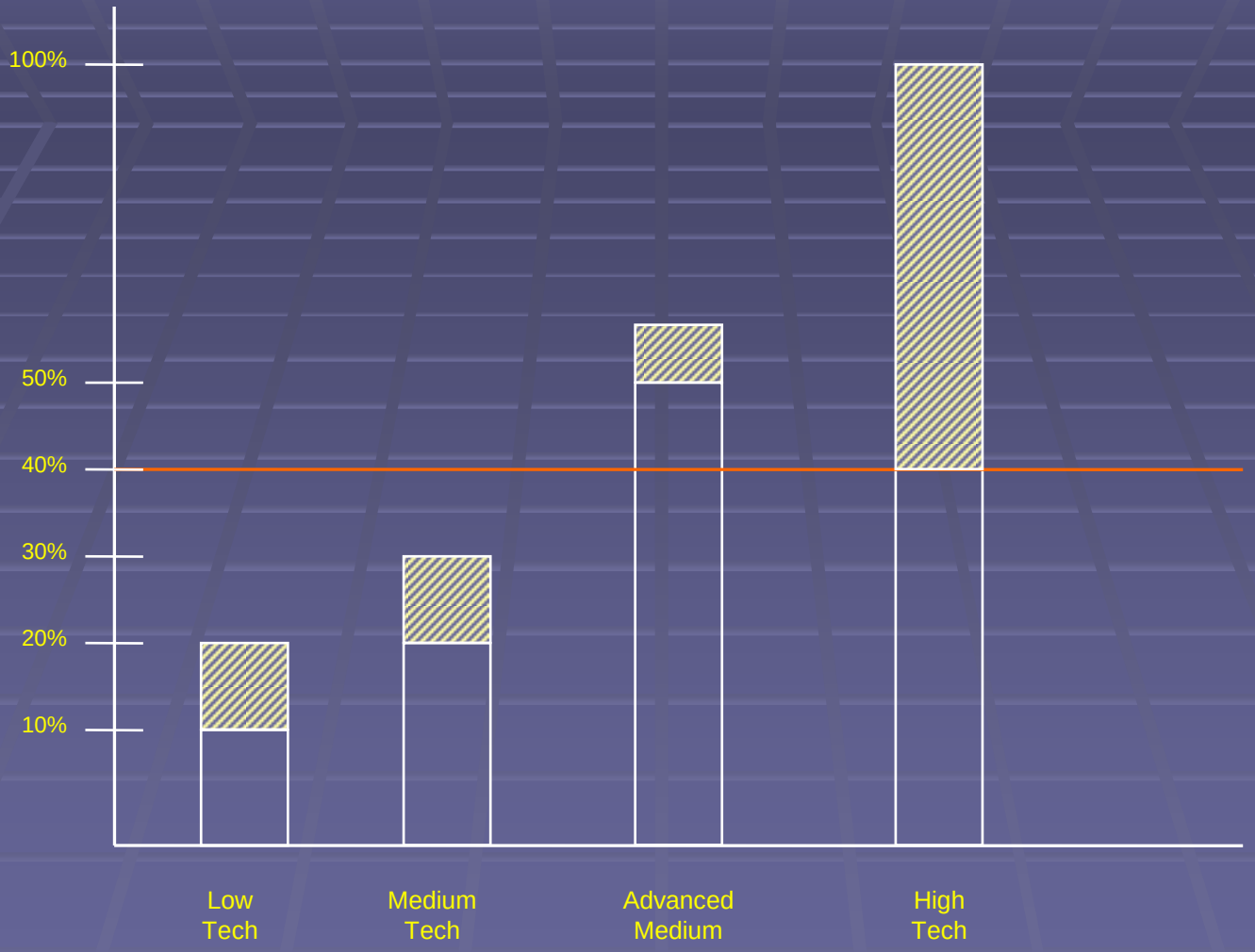
Sustainability with Renewable Energy

- All truth passes through three stages.
- First, it is ridiculed.
- Second, it is violently opposed.
- Third, it is accepted as being self-evident. **Arthur Schopenhauer**

Local Renewable Resources

- Stabilize and lower costs,
- Reduce dependencies
- Foster new opportunities

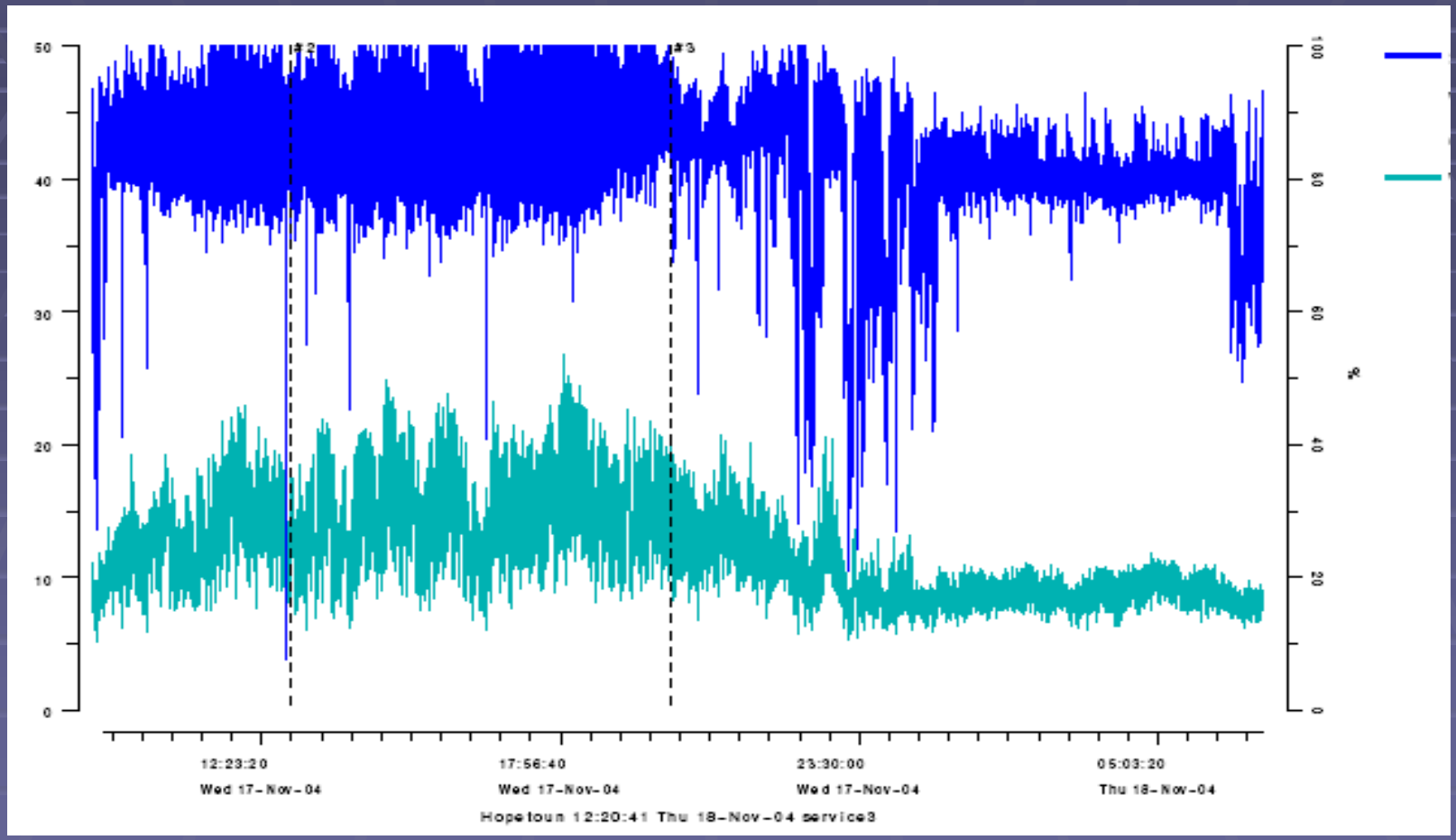
Overall Fuel Displacement



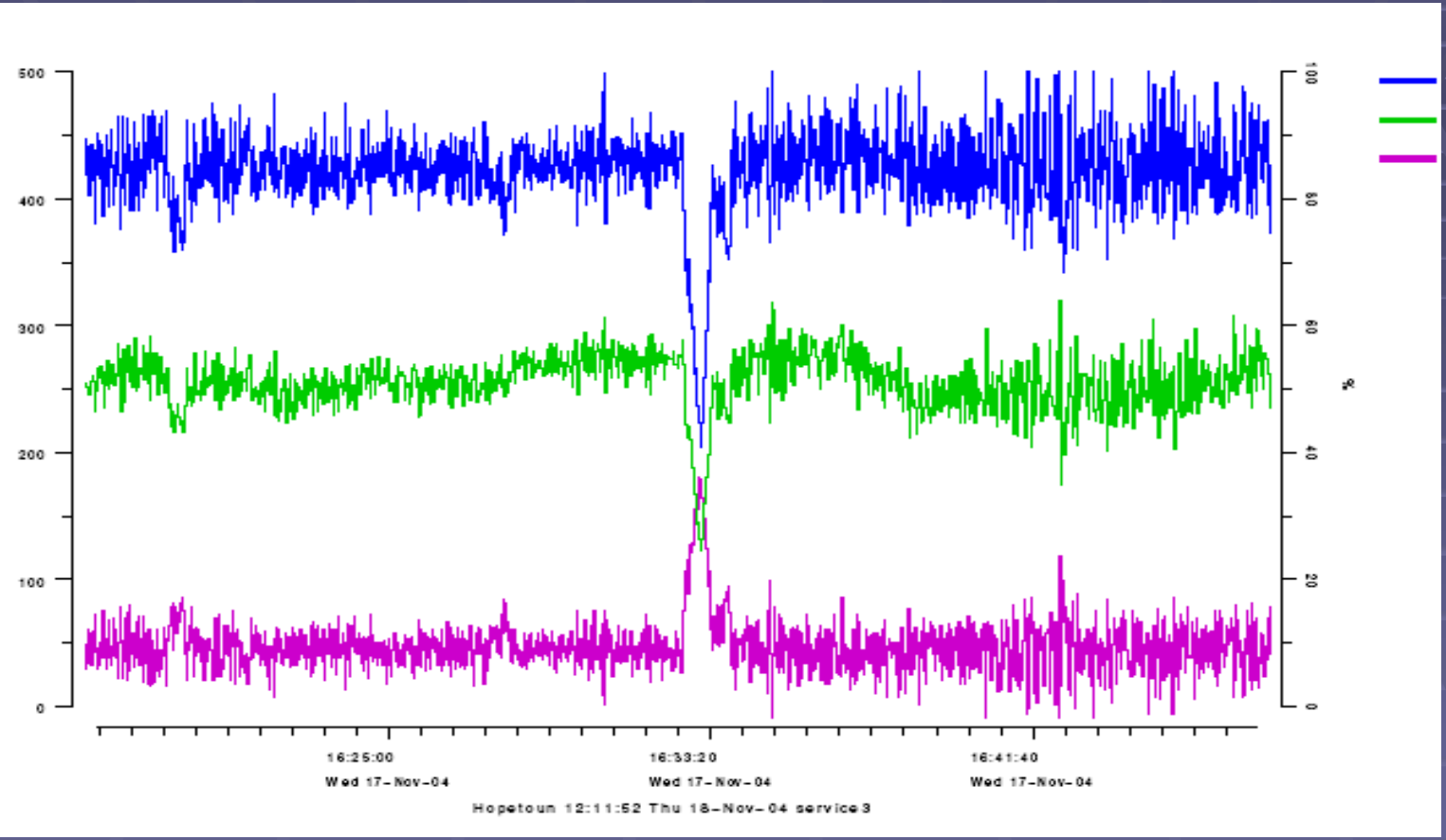
Wind Diesel System

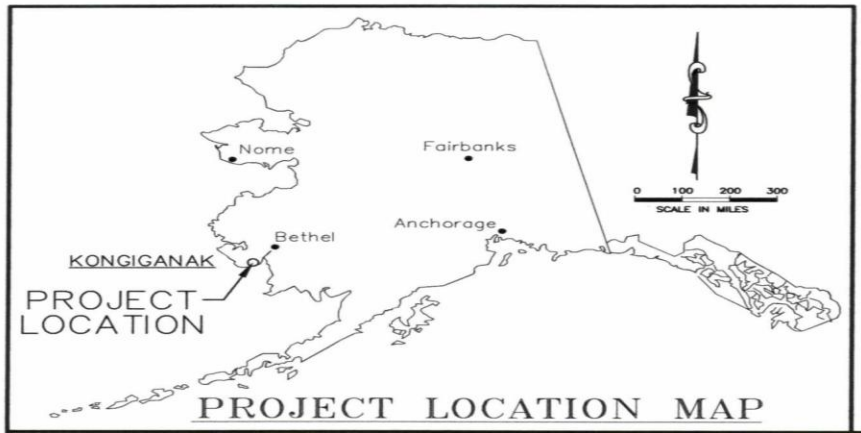
Denham and Albany, Western Australia

Battling forces, wind speed, penetration and load vs. economics



Stability and Duration Matter





PROJECT LOCATION MAP

KONGIGANAK WIND ENERGY PROJECT

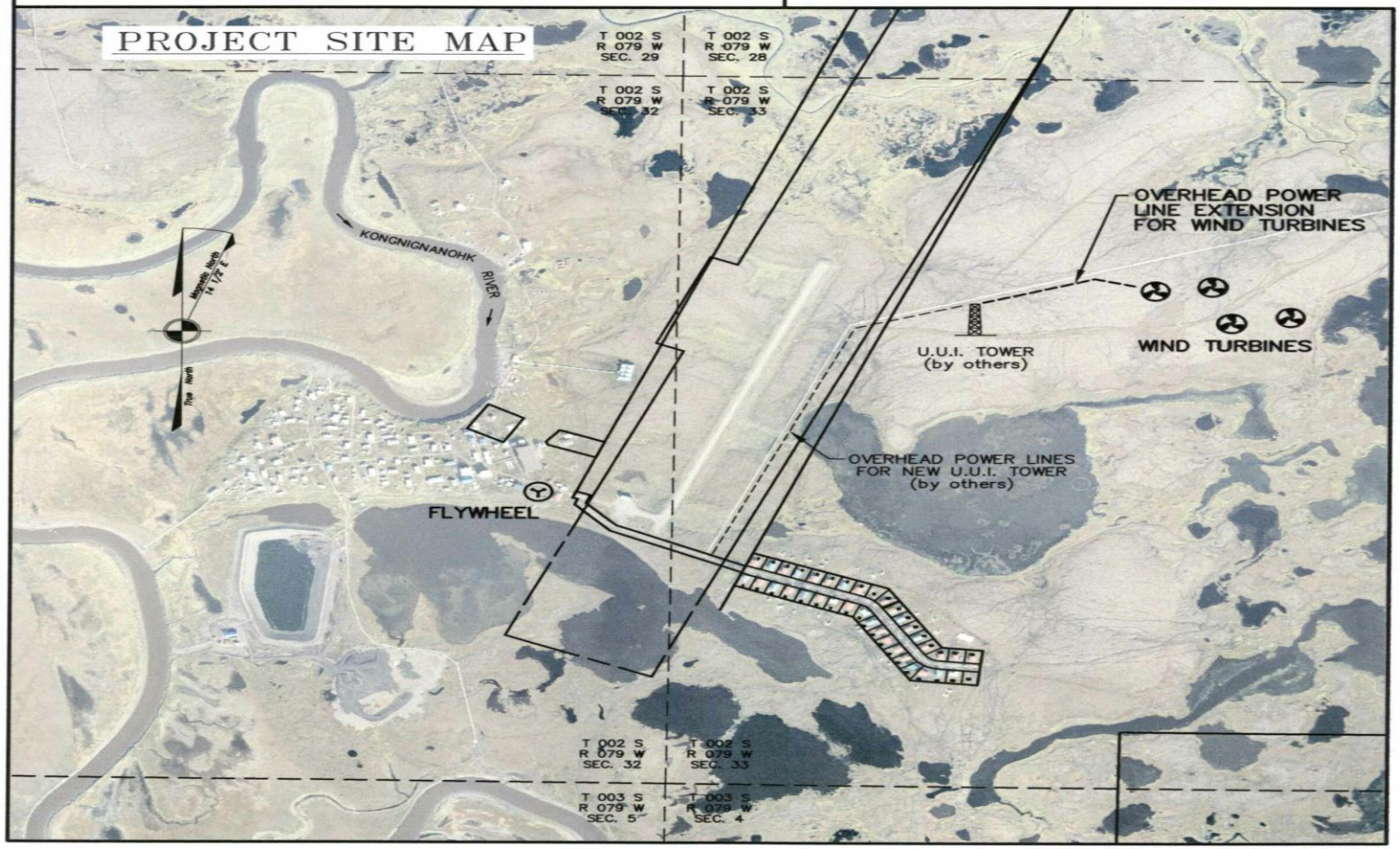
65kW E-15 WIND TURBINES

HIGH PENETRATION WIND-DIESEL w/ FLYWHEEL ENERGY STORAGE

U.U.I. TOWER (by others, 2006)

OVERHEAD POWER LINE FOR TURBINES

OVERHEAD POWER LINE FOR U.U.I. TOWER (by others, 2006)



Wind diesel approach

- Multiple Turbines
- Modern automation technology.
- Family of control/integration modules.
- Regionally support
- Remote support

Low Load Diesel

AC-DC-AC Interface

- Fast response
- Stablizes Grid
- Decouples wind turbine from from diesel
- Bridges diesel response

Wind Turbine

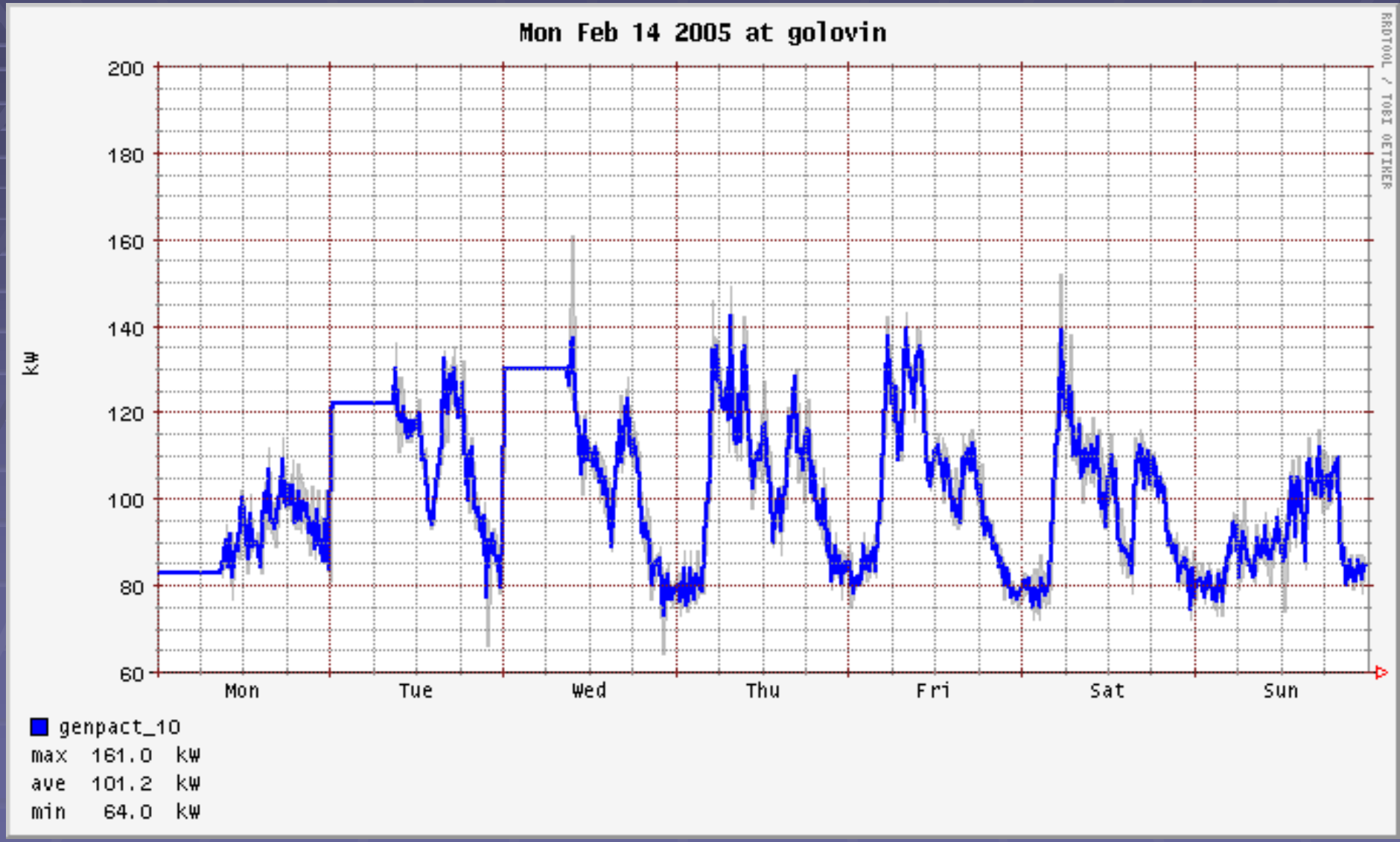
Benefits

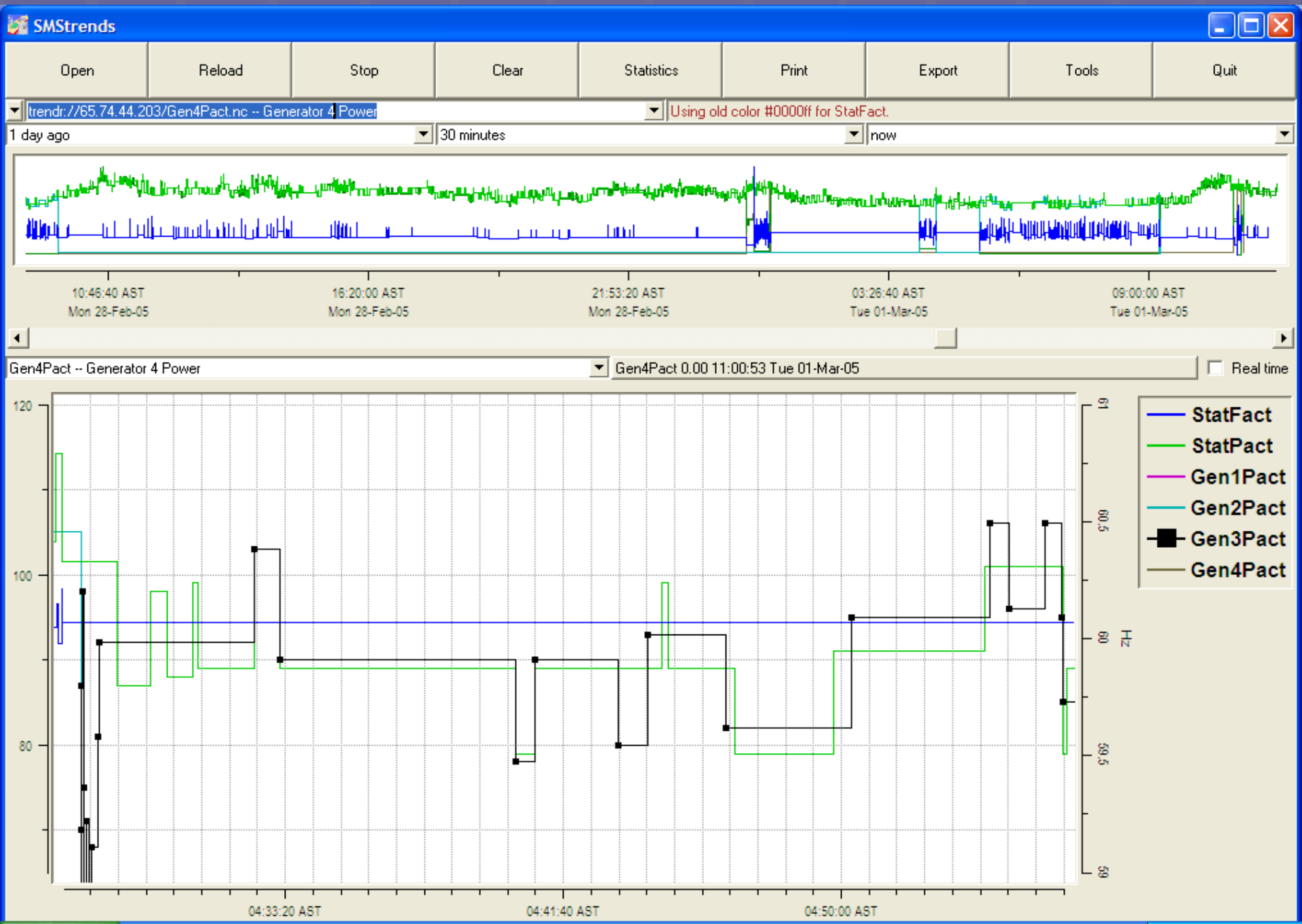
- Fuel savings
- Simple operation
- Scalability
- Flexibility
- Replicable

Sustainability

- LOCAL RESPONSIBILITY
- LOCAL CAPACITY
- REMOTE TECHNICAL ACCESS
- ECONOMICALLY VIABLE

Monitoring and Remote Access




SMStrends
Open
Reload
Stop
Clear
Statistics
Print
Export
Tools
Quit
trendr://65.74.44.203/Gen4Pact.nc -- Generator 4 Power
Using old color #0000ff for StatFact.
1 day ago
30 minutes
now
10:46:40 AST
Mon 28-Feb-05
16:20:00 AST
Mon 28-Feb-05
21:53:20 AST
Mon 28-Feb-05
03:26:40 AST
Tue 01-Mar-05
09:00:00 AST
Tue 01-Mar-05
Gen4Pact -- Generator 4 Power
Gen4Pact 0.00 11:00:53 Tue 01-Mar-05
Real time
120
100
80
61
60.5
60
59.5
59
Hz
StatFact
StatPact
Gen1Pact
Gen2Pact
Gen3Pact
Gen4Pact
04:33:20 AST
04:41:40 AST
04:50:00 AST
start
SMSview
Document1 - Micros...
SMStrends
SMStrends - tools
Y-axis limits
9:48 AM

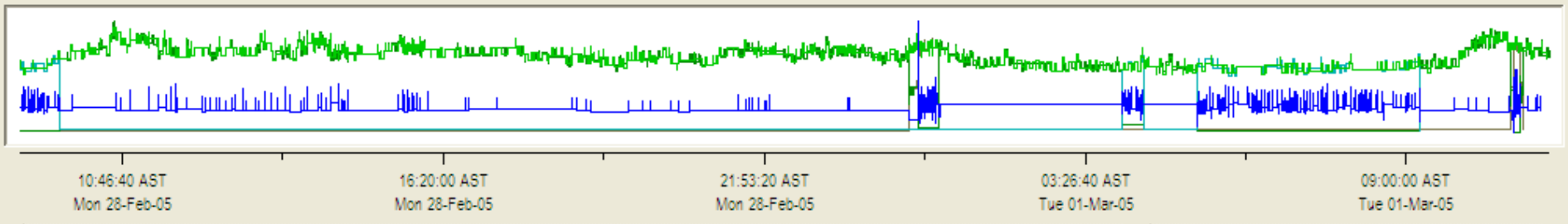
SMStrends

Open | Reload | Stop | Clear | Statistics | Print | Export | Tools | Quit

trendr://65.74.44.203/Gen4Pact.nc -- Generator 4 Power

Using old color #008c00 for Gen3Pact.

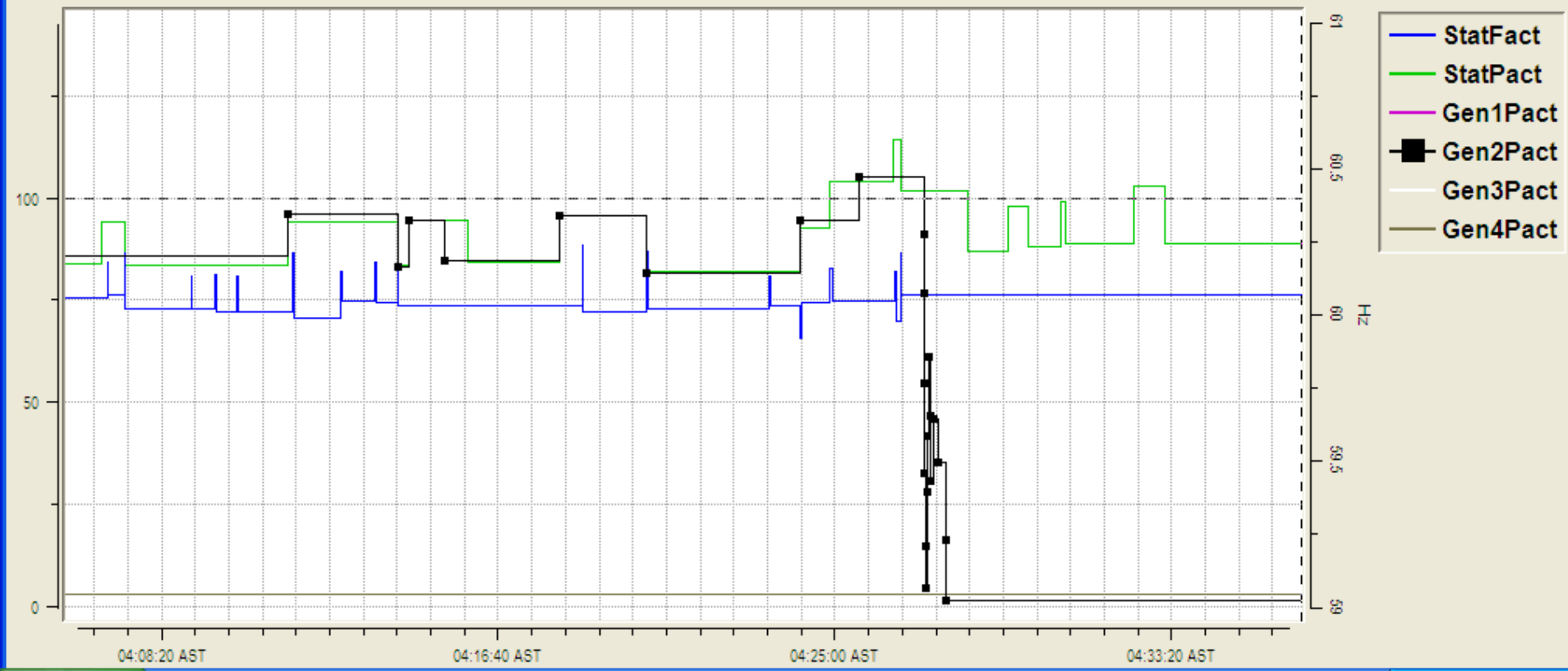
1 day ago | 30 minutes | now



Gen4Pact -- Generator 4 Power

Gen4Pact 0.00 11:00:53 Tue 01-Mar-05

Real time



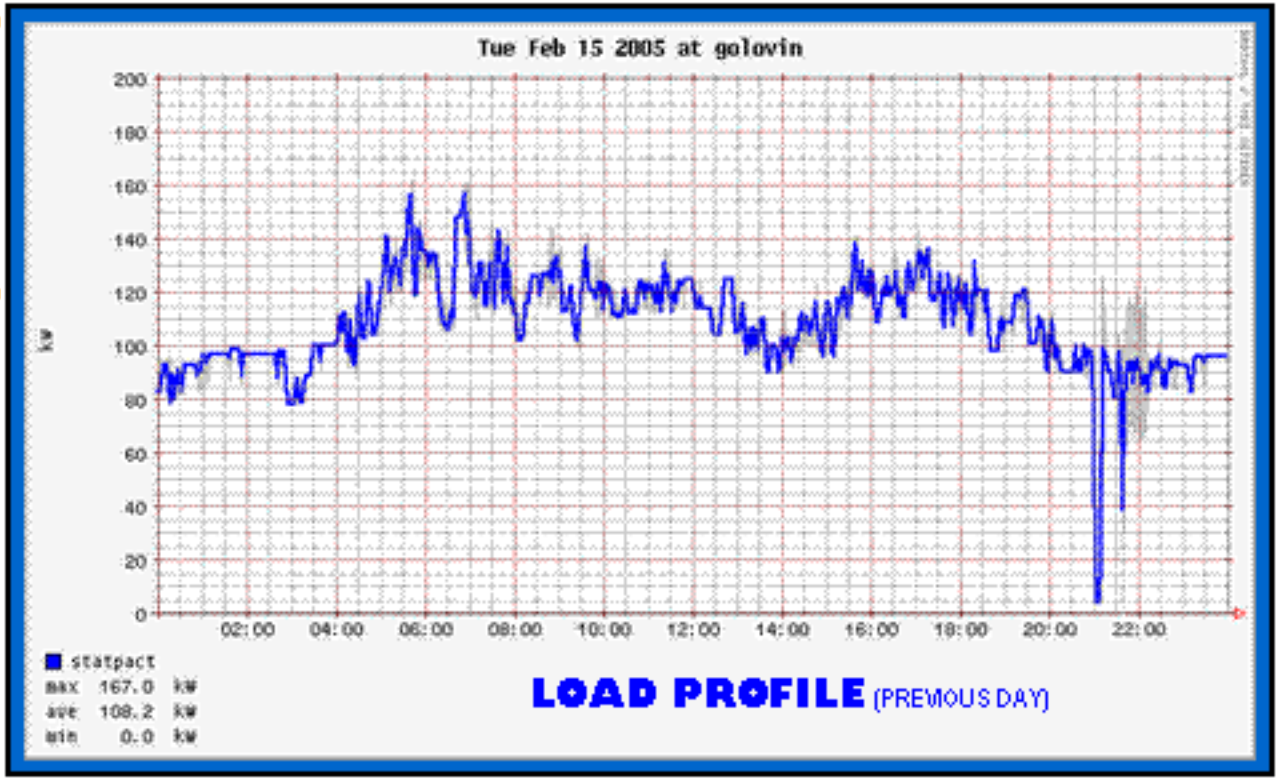
start | SMSview | Document1 - Microsof... | SMStrends | SMStrends - tools | 9:32 AM

GOLOVIN
Power Station

PHN	555-5555
STN OPR	JACK SKY

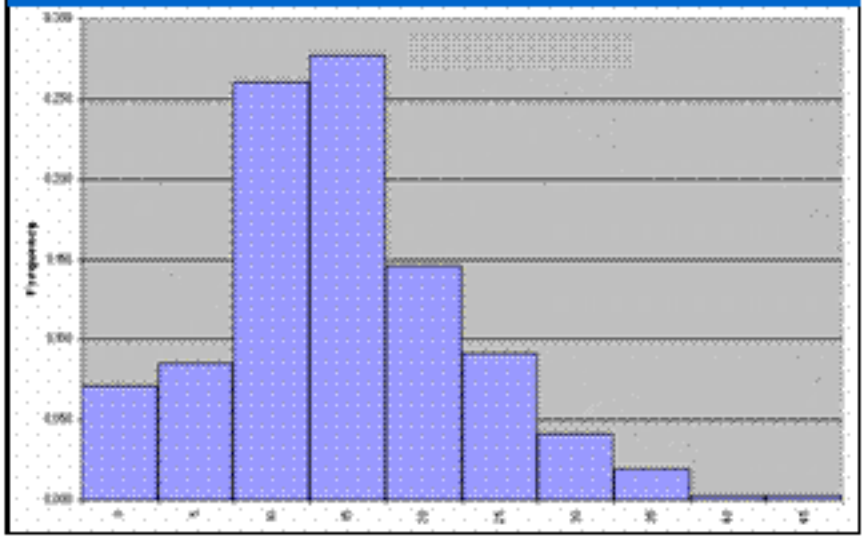
OUTAGE REPORT

#	DAY	DURATION
1	2005-02-15	25 secs
2	2005-02-16	1 mins
3	2005-02-17	11 mins



LOAD PROFILE (PREVIOUS DAY)

WEEKLY HISTOGRAM (kW Hrs)



PRODUCTION SUMMARY REPORT

GOLOVIN	GENSET 1	GENSET 2	GENSET 3	GENSET 4
TOTAL POWER	233 MW	233 MW	233 MW	233 MW
MAX POWER	300 MW	300 MW	300 MW	300 MW
AVG POWER	150 MW	150 MW	150 MW	150 MW
MIN POWER	150 MW	150 MW	150 MW	150 MW
Daily Fuel Total	18,000 L	18,000 L	18,000 L	18,000 L
kW Hr/gal	30	30	30	30
Engine Starts	20 starts	20 starts	20 starts	20 starts
Avg. Load Factor	200 MW	200 MW	200 MW	200 MW
Next Service Date	35,000 hrs	35,000 hrs	35,000 hrs	35,000 hrs

Our project

- Control and Monitor Diesel System
- Integrate wind
- Increase value of the wind
- Evaluate
- Use existing equipment to minimize cost.

Wind diesel is inevitable

- Improvements on turbine installation and supply
- Adaptive technology Increasing Value
- Fuel costs increasing