Why do Hybrids Fail in Africa



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GE Transportation
Energy Storage

GE Proprietary Information.

The Nigerian Challenge (Case Study)

Operator	MTN	airtel	etisalat	glo
No. of Subscribers (m)	42	18	10	20
No. of Towers	7000	5000	2000	6000
OPEX on Diesel/month (m$)	15.5	10.5	9.5	14

+$620m is being spent yearly on the purchase of diesel to power over 20,000 base stations belonging to four major telecoms operators in the Nigeria.

Source:

THISDAY LIVE

http://www.thisdaylive.com/articles/telcos-eye-alternative-power-spend-n8-4bn-monthly-on-diesel/111240/

imagination at work

Initiatives for Diesel Opex Reduction

Current Trend

Hybrid

Cons

- Theft of hybrid components.Batteries,panels etc.
- Sabotage of hybrid systems by Diesel suppliers
- Lack of proper support in the field.
- Durability of hybrid components pose huge challenges to the TCO & ROI

Tower Sharing Collocation

Cons

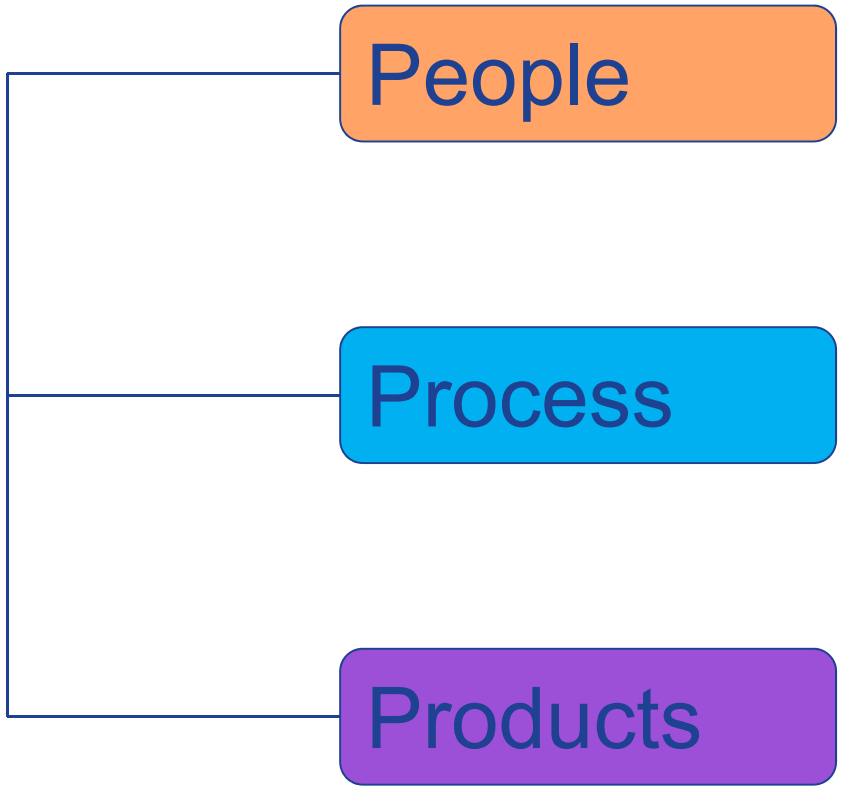
- Transfers cost of diesel to Towerco but doesn't solve opex challenges
- Towerco don't have the capital to rollout as aggressively as required by Telco's
- Larger operators don't want to share towers as they loose there coverage advantage

Future Trend

Outsourced power

- Company delivers power to Telco and charges them a fixed monthly amount
- Monthly charge to reflect a reduction on current monthly cost
- Signs SLA on power availability
- Offers Site maintenance as part of the total package
- Both Telco and Towerco companies will eventually adopt this model as power generation and maintenance is not there core competence

3 Reason Why Hybrids Fail



People

- Sabotage
- Limited Solution understanding
- Theft

Process

- No Maintenance contracts
- Conflict between hybrid vendors and service vendors
- No proper performance monitoring system
- Bundled Passive and active contracts

Products

- Not suited for the African Market
- No Product Expertise locally
- Not Scalable
- Not suited for the application

Genesis of GE Energy Storage Technologies

GET Hybridization Program Launch
2001



Battery Chemistry Evaluation
2002 - 2006



Beta Acquisition & NaMx Development
2007 - 2008



Business Launch
2009

GE Energy Storage Technologies

NaMx



Jeff Immelt
Chairman & CEO

Durathon™ … Advantages



Suitable for Extreme Temperatures

Performance unaffected by external temperatures (-40C to +65C)



Minimal Maintenance

No maintenance needed

Remote Monitoring



Long Life

Cycle life > 3500* cycles

Fast recharge

Float life > 15 years

Indefinite shelf life

* Cycle life estimated @80%DoD



>99 % recyclable

No toxic or hazardous materials



Designed for High Reliability

BMS prevents overcharge

Cells in a string fail short



High Energy Density



Small Footprint

Energy density (150-200Wh/L)

½ Volume & ½ Weight Vs Lead acid

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Space / Weight Efficiency







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Total Power Solution



- IP55 Outdoor cabinet with ΔT < 10ºC
- 12kW DC Power and Battery space
- Space for 18U, 19” for Tx Equipment
- Up to 4 operator Load distribution
- Maximum Mains power utilization using Lineage Power® ASLI™ technology, works from **3ø** or **2ø** or even **1ø** input
- Fuel Level monitoring
- Remote Locking system with Mechanical key override
- Integrated AC Distribution Panel for various loads (can be customized)
- Integrated Aviation lamp controller, Fire/smoke Alarm
- DCDG or Solar Converter integration in the DC bus
- Display of Mains and DG parameters
- GPRS modem for remote transmission of data to remote server with customer TOC
- Inventory management using RF ID tags
- *Event Log for last 1000 events with date & time stamp*
- Front access to RS232 port for programming the controller parameters
- Fire extinguisher mounting provision

Value Proposition

Rooftop Application



- Space & weight constraint on rooftop sites makes Durathon's '*high energy density*' property very attractive
- Easily scalable to support increasing load demands
- No need for cooling. Eliminates footprint for battery chillers

Hybrid Off-grid Application



- DGs on most sites run at <30% capacity utilization
- Durathon stores this excess energy and powers the site when DG is off.
- Constant cycling of the system in this mode brings about the expected savings
- DG run hours are then reduced from 24hrs to max 12hrs per day.

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