C&I Leasing ESCO Business Model

AST Integrated Renewable Energy

C&I LEASING PLC
RC: 161070

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Background on C&I Leasing

- **C & I Leasing Plc was incorporated in December 1990 and commenced full operations in July 1991**
- **Listed on the Nigerian Stock Exchange in December 1997**
- **Current shareholders funds (Tier 1 +2) is in excess of N4.9billion (2012 Dec)**
- **17,236 Institutional & private shareholders including Abraaj Capital, Leadway Assurance & Custodian & Allied Insurance**
- **Staff (Core + outsourced) of 4,200**

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Our Business

- **Equipment Finance Leases - Corporate and Consumer**
- **Operating Leases – Cars, Marine vessels & Generating Sets**
- **Personnel Outsourcing Services (C & I Outsourcing)**
- **Fleet Management and Car Rentals (Hertz Car Rentals)**
- **ESCO – In conjunction with AST India**

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AST Integrated Renewable Energy

AST Company Profile

- Founded in 2009 and headquartered in New Delhi, AST is a managed renewable energy service provider with 2500 employees and contractor resources
- Market leader in Telecom towers sector with more than 2300 installations in remote rural areas. AST has over 70% market share with total installed solar panel capacity of 11 MWp
- Provide turnkey, highly reliable clean energy solutions by integrating the latest technologies to reduce an customer's operating costs associated with power as well as reduce carbon footprint
- Integrate all elements of an energy solution using in-house power controller into a fully managed service
- Managed energy services utilizing both off grid and grid tied solutions as per the customer needs
- AST has equity finance from BVP, IFC & Capricorn, leading clean technology funds in USA
- Our customers include blue chip companies such as Bharti Infratel, Indus, Idea Cellular, American Tower Company, and Bharat Petroleum
- Our clients have received major "Green" awards for AST installations
  - Bharti Infratel – Annual GSMA Green Mobile Award for Best Green Product/Service or Performance: Green Towers P7 Project
  - Indus Tower – Voice and Data Magazine Awards 2011: Green Company of the year
  - BPCL – First Runner up in Ideas 2011, National Level Innovation Competition of APM for Green RO

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Electricity Challenges and Solution

- Zero grid / Poor grid sites
- High cost of DG operation
- Noise and pollution by DG operation
- Site down time due to DG failure
- Overall high site OPEX

- Loss of Reputation of Brand, Image
- Customer dissatisfaction
- Reduced productivity level
- Inefficient utilisation of Infrastructure
- Unpredictable energy costs
- Social issues due to noise and pollution

Solution

Dependable, Clean and Cost Effective Energy Source

AST Integrated Renewable Energy Systems using Solar PV

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Drivers for use of renewable energy solution

S.N.	Description
1	Non availability of Grid / poor grid
2	Reduction in OPEX
3	Revenue enhancement
4	Customer satisfaction
5	Brand image
6	De-risk business from increase in energy costs over long period
7	Community / people issues due to noise and pollution

AST Value Proposition	
✓ Proven robust solar energy solutions	✓ Best in class & consistent service delivery
✓ Latest technology and best-in-class components	✓ Solutions customized to customer needs
✓ Centralized performance monitoring & control	✓ Scalability – ability to execute large projects

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AST Solar Energy system functionality

AST has developed a very sophisticated and proprietary hybrid energy solution to provide reliable DC electricity to power base transmission stations (BTS). Conventional diesel based power is supplemented by renewable solar energy at the site, and battery utilization is optimized to ensure that the diesel generator is run for no more than 9 hours a day (8 hours a day for 1 or 2 BTS systems). The control algorithm allows the solution to interact with all the power system components at site.

- Site instrumentation (PIU or PSU)
- DG instrumentation and hardware (battery, solenoid, starter, fuel level sensor)
- AST's Centralized Data Management Centre (ASTDMC)
- Vendor access and Customer NOCs (National Operating Centres)

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AST Solar Hybrid System Components

Solar Panels:

- PV panels of 3-10 KWp capacity with mounting structures, circuit breakers and junction boxes.
- Mono / Poly Crystalline, Silicon, High efficiency PV modules compliant to IEC standard. Panel rating 250 Wp.

VRLA Batteries:

- Typical battery capacity is 600 Ah-1200 Ah.
- Conventional VRLA batteries in banks of 600 Ah configurations are used.

Hybrid Solar Controller (AST-HSC):

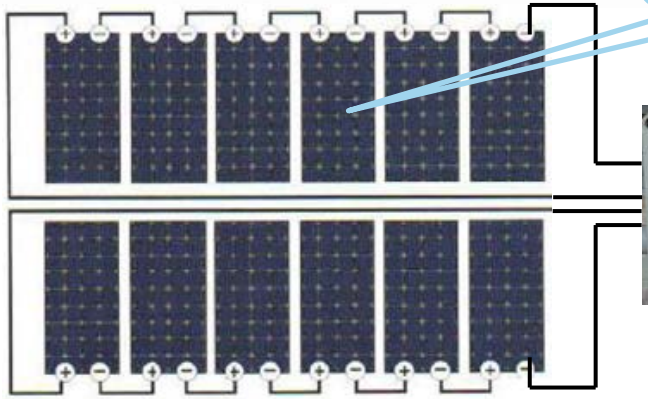
- Proprietary and sophisticated controller to control solar energy, diesel operation, battery charge and discharge, and communication with centralized Data management Centre.
- Primary communication with AST DMC is through GSM-GPRS with back up communication through SMS.

Data Management Centre (ASTDMC):

- ASTDMC functionality is similar to NOC / TOC used by telecom operators.
- AST controller is having 2-way communication with AST-HSC. ASTDMC receives site parameters from controller and facilitated parameter configuration in controller form central NOC.
- ASTDMC is web enabled and can be viewed from anywhere.

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Schematic of AST Solar hybrid system



Solar Panels
3 – 10 KWp



Junction box to combine DC energy from many PV modules



AST Control panel with Charge Controller and RTU



Battery Bank

SMPS
BLVD

DG with AMF
/ Grid

BTS
Equipment

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Site photograph with AST Solar Hybrid System



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Benefits of deploying AST Solar Energy Solution

- **24 X 7 Power availability with additional Solar Power.**
- **Reduction in diesel consumption and DG maintenance – reduced TCO**
- **Environmentally friendly technology supported by GSM Association**
- **Enhancement in brand image**
- **Improvement in customer satisfaction**
- **Improvement in asset productivity**
- **Resolution of community issues due to noise and pollution**
- **Contribution to environment protection**

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Nigeria's Energy requirement for Telecom

- Est. number of Telecom towers : 25000
- Avg. diesel consumption / tower / month: 2000 Ltrs
- Estimated diesel consumption / year : 600 MN Ltrs
- Est. Co2 emission / year : 1.584 MN Tons
- Renewable energy solution has potential to reduce the diesel consumption and there by Co2 emission by ~ 40% - 60%

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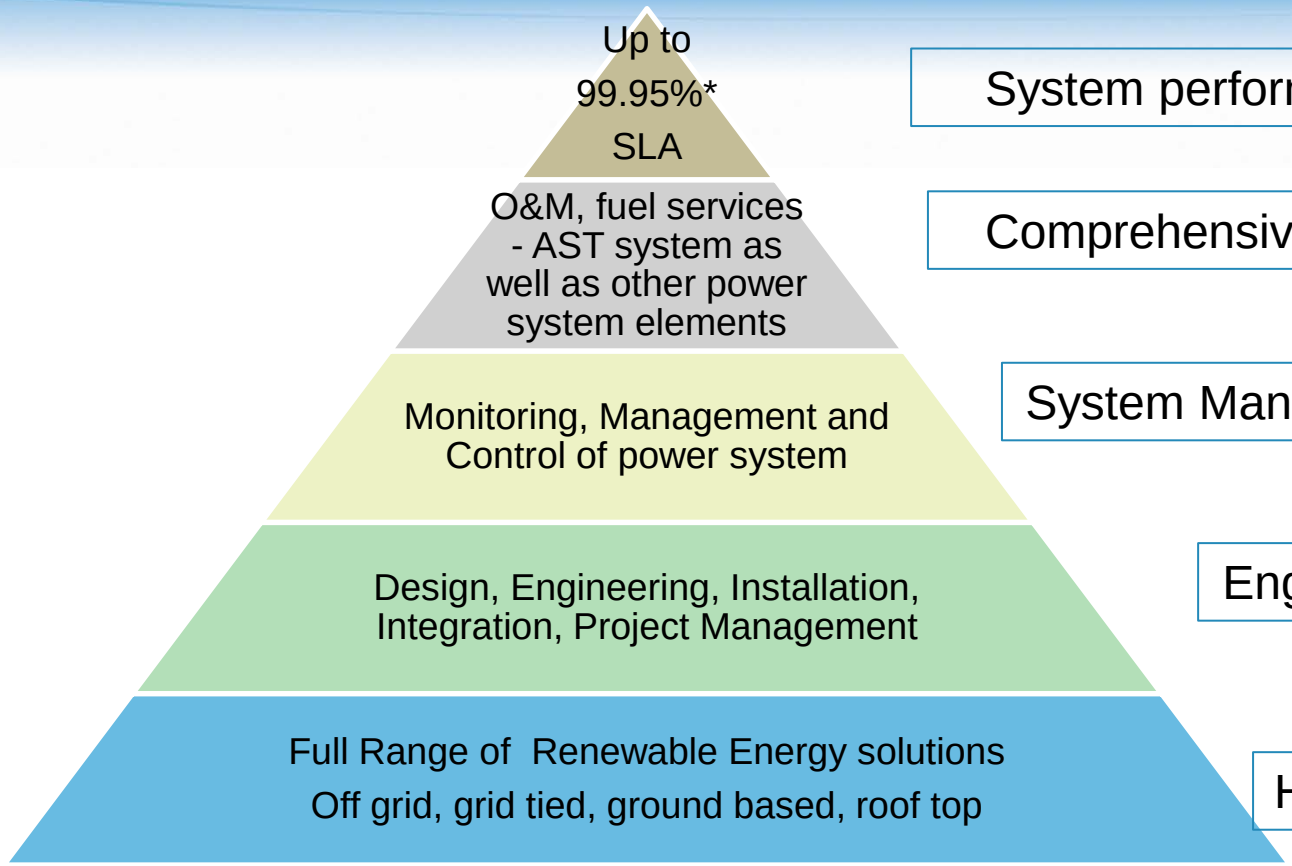
What is an ESCO?

Energy Services Company providing Renewable Energy & Energy Efficiency services using latest and commercially viable Technologies covering

- Feasibility Studies and Analysis
- Engineering Designs
- Providing or Arranging Financing
- Project and Construction Management
- Purchase and Installation of Equipment
- Training
- Maintenance of Efficiency Measures
- Monitoring of Project Performance
- Administration Services

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ESCO Services



Services customized to suit the customer needs.

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ESCO Business model

- Establish the Capital Equipment Cost
- Workout the quantum of energy to be saved
- Identify constraints & bottlenecks in the project
- Agree on Manpower requirements for performance and monitoring
- Also agree on O&M package incl. site control
- Agree on Equity contribution level
- Agree on energy fees & Duration of contract

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Advantages of ESCO business model

- Outsourcing / management of energy services by experts freeing customer to focus on core activity
- Reduction of Fossil Fuel consumption
- Potential for generating Carbon Credits
- Increases business profitability as well as brand image
- De-risking energy cost over long period of time

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Basis of ESCO business financing model

- Returns must be commensurate with Equity Investments
- High degree of commitment by three (3) parties –
  - Project Beneficiary (Industrial Company),
  - Technology & Capital Equipment Supplier
  - Service Provider (ESCO)
- A win-win scenario for all three (3) parties
- Biz Model well-proven in industrialized countries & now being introduced in Nigeria

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In-country Support Partner - Maintenance

- COMENERGY Ltd is a telecommunications power solutions and support partner to the networks. It introduced the first Africa wide Hybrid solution on the Zain network in late 2008 with an installed site base of 8,000 sites.
- COMENERGY has supported the solution in Nigeria for the past 6 years and is currently providing second and third line support to the over 3,500 sites installed in Nigeria.

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In-country Support Partner – Supply Chain

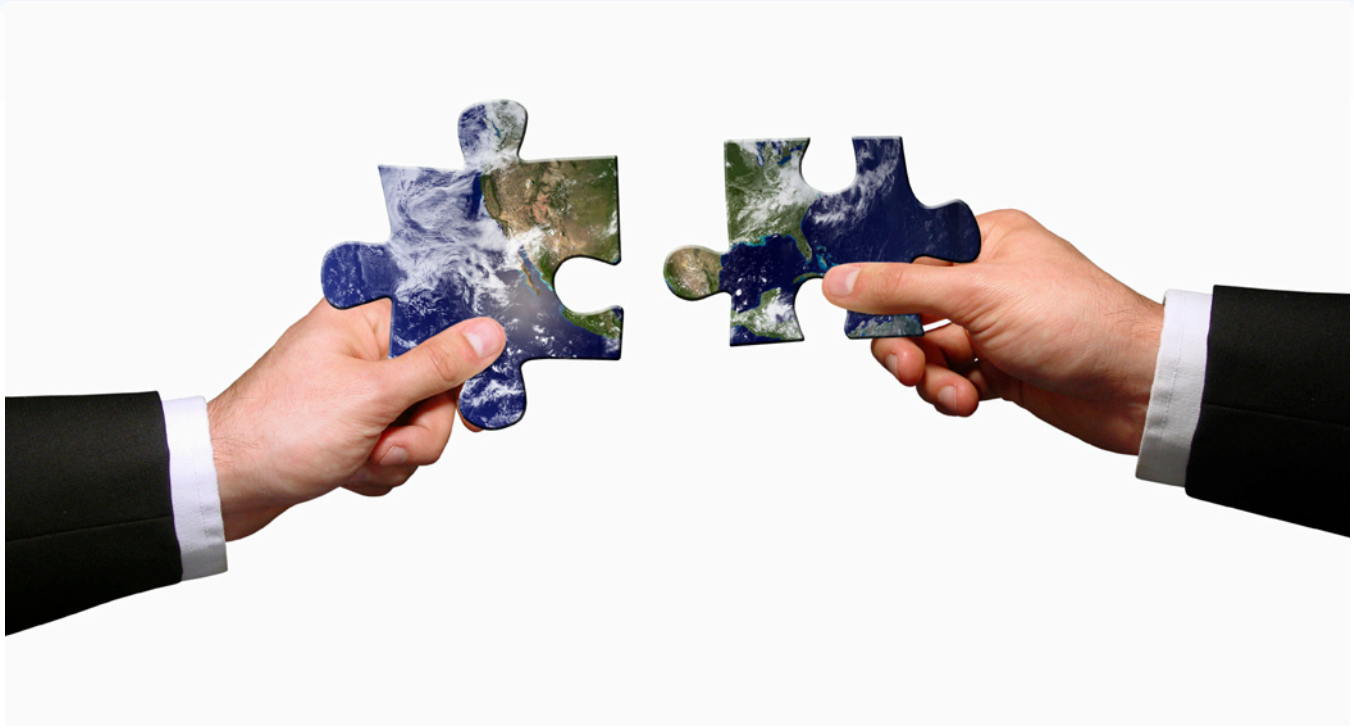
- Accat (Nigeria) Ltd is a telecommunications equipment distributor and stockist. It was started in 2001 in response to the needs and requirements of the GSM operators. Over 13 years, it has provided infrastructure equipment solutions to all the players in Nigeria's telecommunications revolution. The major products include BTS infrastructure items like towers, RF cables and power solutions for the operators sites.

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Our Expectations

- Telecom and Tower companies
  - Long term commitment
  - Capital if required
  - Land and other infrastructure
  - Minimum business volume
- Financial Institutions
  - Long term finance
  - Lending terms suitable for ESCO business model
- Government / Regulator
  - Incentive / drive for adoption of renewable energy
  - Tax incentives
- Infrastructure companies
  - Latest edge technology
  - Service support
  - Flexibility is business model

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Thank You

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