REpower Service Strategy

Full Service Contract

Service Organization of REpower
Full Service Contract

ISP Integrated-Service-Package

- Contract duration: 5 Years up to 15 years
- Fixed Price
- Guaranteed Technical Availability
Terms of ISP-Contract:

- **Maintenance**
  - professional maintenance; regular intervals in accordance with the valid maintenance specifications

- **Monitoring**
  - monitor incoming messages, using its remote monitoring system, 24 hours a day and 365 days a year

- **Repairs**
  - undertake immediately all proper and professional repair measures needed for the operational readiness of the WEC
  - to keep available, on its service cars or at the service-support bases, all conventional spare parts, and to procure large components (rotor blades, gears, generators) without undue delay

- **Availability**
  - guarantees an technical availability rate as averaged over all WECs (park availability)

- **Cooperation of the client**

- **Cost Payable by Repower and Fee Payable by Client**

- **Duration of the Contract**
REpower Service Strategy

Full Service Contract

Service Organization of REpower
REpowers Service Organization

Senior VP Global Service

VP Onshore Operations
- Country organization Onshore Operations
  - OP
  - TS
  - CR
  - LOG
  - FA

VP HQ tasks (Onshore and Offshore)
- Wind power plant management
- Technical Support
- Customer Relation
- Logistics and Procurement
- Finance und Administration

VP Offshore Operations
- Operative Organization Offshore Operations
  - OP
  - TS
  - CR
  - LOG
  - FA

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Full Service Concept of Repower

- Offshore Logistic
- Maintenance Service
- Monitoring Service
- Repair Service
- Onshore Logistic
- Performance Guarantee

Full Service
REpower Service centers follow REpower wind turbines

- Service centers at strategic locations to cover regional areas (e.g. Germany, UK)
- Service centers at the locations of large projects (e.g. USA, Canada)
- Local contact for customers
- Short travel time for technicians to the project site
- Secured spare parts delivery on site
Introduction to service

Service level

*Level 1:* Scheduled Maintenance

*Level 2:* Unscheduled and scheduled fault clearance; maintenance of special components

*Level 3:* Commissioning

*Level 4:* Special inspections

*Level 5:* Major overhaul
Maintenance Service = scheduled

- Ensuring the nominal condition
- Visual, functional testing
- Various inspections (bolt connections, substances and consumables, lubricants and filters etc.)
- Minor technical adjustments
Monitoring Service

- 24 hours
- 7 days a week
- 365 days a year
- Check data connection (3x a.d.)
- Hotline/email for queries
REpower Repair Service = unscheduled

- Online rectification
- Repair or replacement of all components
- Delivery of large components
- Availability of spare parts, consumables and trained personnel
- Exceptions of the obligation to perform Repair Service e.g. Force Majeure, terrorism etc.
REpower Trouble shooting

- REpower advanced technicians

- Resource scheduling 100 hours/WEC/year

- Payment of expenses for support and trouble shooting based on actual use
  - Technician
  - Electric Expert
  - Electric/mechanic Engineer
  - Support/Software Engineer
REpower Technicians Qualification

- Specific REpower Wind Turbine maintenance training
- Training in REpower in house training center, including component specific training and fault simulation
- Validation of training by assessment scheme
- Multi-level training concept adapted to the requirements of the running turbine fleet
Field Support Strategy

Reaction level on failure notice

Level 1: Permanent Monitoring System (PMS)
Level 2: Remote Emergency Service (RES)
Level 3: on site emergency service (Operations)
Level 4: on site service (Operations)
Level 5: Technical Support (TS)

In case of failure, the turbine will automatically send an alarm message to PMS
Escalation levels for failure fixture on WEC:

- **WEC failure**
  - PMS REpower
    - Remote reset (1st Level)
      - Remote remedy (2nd Level)
- **local service team**
  - Fault analysis and fixture at WEC
- **technical support for windfarm**
  - Support of service teams
    - Further analysis
  - Systematic analysis
    - Support of county based structure
      - Further analysis
  - Integration of sub suppliers / REpower R&D
- **Technical support of AG**
- **RCA**
  - Immediate fixture / changing of parts
  - High availability
- **WEC improvement**