BayWa r.e. Services

Paris, 7th of November 2017
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Head of Services France
Today: an Allround Service Provider for Solar and Wind

Technical Management
Commercial & Asset Management
Control Center Monitoring
PV On-Site Field Service
Rotor Blade Repair Service
Technical Consulting

Continuous transformation as the key to sustainability and success

Over 3,000 megawatts operated by BayWa r.e.
Old contracts - initial status

Context:
- High feed-in tariff
- O&M done by project developers and/or EPC providers
- No standard of PV plants design (e.g. monitoring)
- Lot of subcontracting
- O&M providers not professional
- Lack of technical knowledge / expertise
- Lack of return of experience

Standard contract:
- High price (range from 25 to 40€/kWp)
- Full scope
- Standard contract not adapted to each PV plant
- Long term (5 to 20 years)

Consequences

- High O&M costs
- No cost optimization needed for O&M providers
- Scope of maintenance not adapted to PV plant
- Low quality of services:
  - Bad reporting
  - Lack of advisory to owners…
Old contracts – status after few years of operation

First trend:
No professionalization of the O&M Provider

- Technicians not trained and not qualified
- Bad communication
- No adapted tools
- Bad quality of the reports
- No concern about health and safety
- PV plant maintenance not performed correctly

Bad status of the asset (e.g. corrosion)
Lost of production due to:
- Lack of expertise (e.g.: inverters knowledge)
- Low reaction time
- Redondant failures

Think about cost and benefits to leave the O&M provider on a long term perspective
Old contracts – status after few years of operation

Second trend: „Good“ O&M provider

- Technicians trained and qualified
- Good quality of the reporting
- Adapted tools
- Good reaction time
- No concern about health and safety
- PV plant maintenance performed correctly

View of the owner:
- Good quality of the services but price too high
- Scope of services not adapted to the owner expectation or standard approach

View of the O&M provider:
- No short term interest to renegotiate due to high remuneration
- But high cost due to not adapted scope of services

Initiate negotiation:
Possible to find a way to satisfy each party
Contracts renegotiation – owners expectations

- Full scope including inverters maintenance, modules cleaning, green cutting…
- Control room
- Risk support by the O&M provider (availability, spare parts)
- Availability warranty
- Monthly reports…

- No availability warranty but often reaction time
- No contract with inverters manufacturers
- Spare parts invoiced separately if needed
- Monthly performance reports could be excluded

- Corrective and preventive maintenance additional services optional

- Owner control room inhouse
- On call corrective maintenance only

Increasing scope of work for O&M provider

Increasing risk on owner side

Continuous transformation as the key to sustainability and success
Best Practices
Data management & integrated IT systems

The BayWa r.e. Control Center

The Control Center provides Services to all European markets
- 24/7 Availability
- Multilingual Team (English, German, French, Spanish, Italian …)
- Clearly defined Interfaces between Project Management and Control Center

New Operations Management Software

The new software enables a professional and efficient monitoring of an increasing PV portfolio
- Online Monitoring
- Reporting
- Data / Performance Analysis

BayWa r.e. Service App

The Service App increases quality and efficiency of on-site inspections
- Replacement of paper protocols and cameras
- Greater quality of service reports
- Cost savings due to higher efficiency

Software, IT Know-how & Data Analysis are key for future business success ➔ Focus on standardized software
Certified international standards – professionalize your business

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Continuous transformation as the key to sustainability and success
Certified international standards – professionalize your business

Best practice in design and construction

VDE certified processes for
- planning
- design
- implementation

Standardized PV-Power Plant
acc. to VDE PB 0016
A; B; C; D; E; F; G; H;

2016: BayWa r.e. to receive the first VDE certificate for ground mounted standardized photovoltaic plants

Raising standards for Solar PV O&M starts at the power plant construction

Best practice in other industries: ISO & OHSAS standards

Established standards from other industries can easily be transferred to the Solar PV O&M.
- ISO standards for quality management systems
- OHSAS standards for Occupational Health & Safety Assessment

BayWa r.e. Services is certified for single countries and will further roll-out these standards globally

Continuous transformation as the key to sustainability and success
Best practice – learning from the wind industry

The Solar PV Industry can benefit from learnings in other areas like the wind power industry.

- BayWa r.e. Services operate to the WTSR - Wind Turbine Safety Rules
- Rotor Blade Repair Service certified by Germanischer Lloyd Wind since 2000
- SCC-certification (Safety Certificate Contractors) of technicians
- Safety trainings according to GWO-standard
Defining best practices in Solar PV

BayWa r.e. is happy to contribute to the Task Force for O&M Best Practices Guidelines in order to:

- Create a first version of important industry-led guidelines
- Identify minimum requirements for O&M – quality benchmarks
- Clarify roles and responsibilities of different stakeholders
- Highlight this business relevance
- Increase consensus – create standards
- Professionalize the O&M industry