OPTIV ENERGY

ASSET MANAGEMENT & OPTIMIZATION

2024

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ABOUT OPTIV

We earn your trust one project at a time. Our goal is to maximize the value of your assets.

We’re an independent service provider in the Renewable Energy industry

We’re committed to delivering on Quality to earn customers trust. We’re in this business for the long-term.

We service Owners, Equipment Manufacturers, and General Contractors through the development, construction, and operational life of projects

We separate ourselves from others by only hiring the most talented, experienced, and innovative industry experts

GOALS OF AN ASSET OWNER

- Maximize Energy Output (MWh = $)
- Maximize the useful life of equipment
- Reduce Costs
- Reduce Risk

WHAT IS ASSET MANAGEMENT?

Asset Management is about coordinating and optimizing the management of an asset across its whole lifecycle, including selection, acquisition, development, maintenance, renewal and disposal processes

Asset Management comes down to balancing cost, risk, and performance

Ultimately, Asset Management ensures that as the owner, you have the PEACE OF MIND that your assets are properly taken care of and meet the expectations of your investment

GOALS OF AN OEM

As an owner, you need to protect your investment. As such, you buy reputable equipment from well-established OEM’s and secure warranties and service contracts. However, OEM’s have 4 primary objectives

Sell Equipment

Sell Service Contracts

Minimize LDs

Sell Out of Scope Services

WHY IS ASSET MANAGEMENT REQUIRED?

- Our Asset Management service ensures that your interests are protected and that the obligations of your warranties and service contract(s) are fulfilled

- Additionally, once warranties are expired, we continue to ensure industry best practices are implemented on all of your equipment

- We utilize our diverse experience to watch out for potential land mines that could severely impact your cash flow

- Coordinate and manage ISP’s for out-of-scope services

COMMONLY OUT OF SCOPE ITEMS

- Foundations – Inspection, maintenance, anchor bolt tensioning
- Collector – Inspection, maintenance (foliage), operation
- Substation – Oil sampling, monthly inspection and tests (visual, battery bank, charger), annual inspection and testing, HV Switching
- Roads – grading, ditches, snow removal
- O&M Building
- Hazardous waste removal

CASE STUDY I

- During project development, the specification for a filter circuit on the P&C battery bank was missed (~$150 cost)
- Additionally, the power supply for the protection relays was not upgraded to the minimum power supply available (125/250V DC)
- An inadequate inspection and maintenance program was developed for the P&C battery bank/charger
- A single cell in the battery bank failed open, thereby allowing the charger to act as the primary power source for the relays
- Roughly 10 years into operations, during a station trip and the subsequent automatic transfer over to aux power, a voltage spike destroyed all of the protection relays in the station, leaving the MPT in a temporarily unprotected state
- The result was only ~ 10 days of complete downtime waiting on new relays and programming, but could have been much worse

STANDARDS

Our review and recommendations take into consideration a long list of applicable industry standards, for both regulatory (CSA, ANSI, IEC etc.) and quality (ISO, IEEE etc) compliance.

We ensure that your operations conform to proven regulatory standards that are established benchmarks for the industry.

We have seen insurance and warranty claims rejected when standards weren’t either followed or specifically referenced in contracts - often simply because the owners weren’t aware of the significance and implications.

CASE STUDY II

- An OEM with a poor reputation from quality was selected to provide the GSU’s for a wind project
- An expiring warranty was quickly approaching and wasn’t properly prepared for. No previous inspection/testing/sampling
- A rush was placed to perform testing and inspection of warrantied equipment
- Results came back that GSU’s had high levels of dissolved gas
- A warranty claim was submitted, but was followed by over a year of arguing over the results due to no established standard being referenced in the warranty contract (IEEE C57.104)

WHERE DOES OPTIMIZATION COME IN?

Ensuring your assets are well looked after to meet their expected obligation is a necessity, but what about extracting more energy?

Data Analytics providers are abundant in the industry. However, they have a major deficiency...

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Typically, all they do is tell you that you have a problem!

They rarely provide solutions because they lack the technical expertise and experience to implement remedial measures.

Data Analytics are a great addition to the renewable space, but they are only one piece of the Optimization puzzle

OPTIMIZATION

We utilize our team of experts with hundreds of combined years of experience to provide pragmatic solutions to reducing your lost energy.

A simple example would be analysing MTTA, MTTR, and MTBF to optimize reactive measures.

INFLUENCED BY

- Time of Day
- Parts Availability
- Weather
- Responsiveness of Team

MINIMIZE

MAXIMIZE

INFLUENCED BY

- Quality of Repair
- Whether root caused was addressed
- Age of the asset

FAULT OCCURS

TIME TO RESPOND

TIME TO REPAIR

TIME BETWEEN FAILURES

TIME TO RESPOND

TIME TO REPAIR

FAULT OCCURS

INFLUENCED BY

- Technical Ability
- Experience
- Parts Availability
- Tooling on hand
- Working Conditions

MINIMIZE

PROCESS

Examples of Simple Optimization Solutions

ANALYZE KEY PERFORMANCE INDICATORS

1

After analyzing your performance within these KPI’s, we would develop a practical system for improving in the deficient area(s)

IDENTIFY SOLUTIONS

2

For example, perhaps your MTTA could be improved with a remote monitoring service and staggered shifts

IDENTIFY SOLUTIONS

3

Or your MTTR could be improved by providing Technicians with better tools and/or training

IDENTIFY SOLUTIONS

4

Maybe your short MTBF is due to lack of focus on RCA techniques to determine the underlying cause of recurring issues

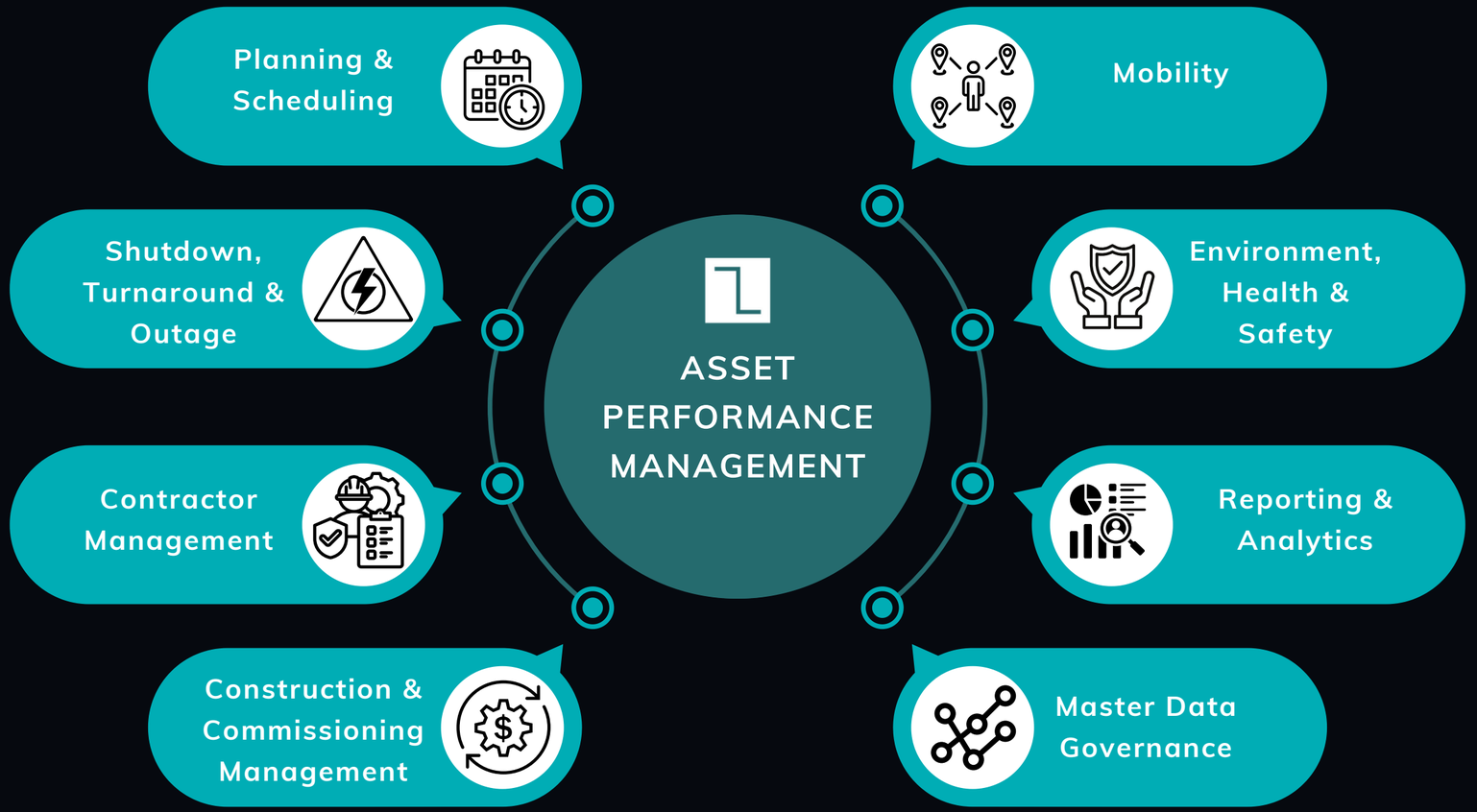
CASE STUDY III

- A wind farm with a long-term warranty and service agreement consisted of WEC’s with electric pitch and battery backup.
- A temp sensor in the battery box was causing intermittent trips and subsequent downtime, many times during high winds and after hours, leading to unnecessary downtime
- The OEM was only bound to repair or replace the component and therefore ate the downtime and performed minimum duty. Serial defect was not applicable for the minor component.
- Upon the expiration of the service agreement and the owner taking over repair and maintenance duties for the site, a replacement component was sourced that exhibited better performance characteristics. The components were proactively replaced during routine maintenance and virtually eliminated the related fault from the site.

EXAMPLE OPTIMIZATION OPPORTUNITIES

- Static yaw offset – Find the optimal offset to maximize output
- Improve availability - Better maintenance strategy – Proactive vs. Reactive
- Wake Steering
- Pitch optimization
- Icing loss mitigation
- Predictive analytics – identify faults before they occur
- Curtailment validation

ASSET MANAGEMENT OPTMIZATION SERVICES



ASSET MANAGEMENT SAMPLE SCOPES

- ✓ Ensure the obligations of warranties and service contracts are met – Look out for your interests with respect to all 3rd party contractors
- ✓ Track all critical assets and ensure PM’s are established, dispatched, and completed
- ✓ Generate Monthly and Annual reports that include all critical KPI’s
- ✓ Production vs. forecast, availability, resource, loss factors
- ✓ Review reports from third parties and provide feedback
- ✓ Interface with OEM on behalf of Owner
- ✓ Identify optimization opportunities based on data
- ✓ Provide dashboard with asset status and performance information
- ✓ Review OEM work orders and PM’s to ensure adequacy
- ✓ Review test results of critical equipment (oil samples, megger, doble, battery discharge, etc.)
- ✓ Periodic equipment walkdown audits to ensure adequate maintenance is being done
- ✓ Review OPEX and provide insight for areas of improvement
- ✓ Provide CAPEX guidance to ensure proper forecasting and modernization
- ✓ Monitor & review the condition monitoring system data
- ✓ Parts Management – ensure useful and adequate parts are stocked and lead times tracked

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THANK YOU

QUESTIONS OR COMMENTS?