



CONDITION MONITORING SYSTEM VIBGUARD IIOT

Certification Report

Condition Monitoring System

Fluke Deutschland GmbH

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1 EXECUTIVE SUMMARY

The condition monitoring system VIBGUARD XP was certified in 2016-05-18 according to GL-IV-4:2013. "Guideline for the Certification of Condition Monitoring Systems for Wind Turbines". Since that time, the condition monitoring system VIBGUARD XP was renamed in VIBGUARD IIoT. For the current recertification, the condition monitoring system VIBGUARD IIoT was assessed on the basis of DNV-SE-0439:2021-10 "Certification of condition monitoring". The condition monitoring system VIBGUARD IIoT complies with the requirements as listed in DNV-SE-0439:2021-10.

2 CERTIFICATION SCHEME

| Document No. | Title |
|---------------------|--------------------------------------|
| DNV-SE-0439:2021-10 | Certification of condtion monitoring |

3 SCOPE OF EVALUATION

The scope and interface of the evaluation covered by the report is the recertification of the condition monitoring system VIBGUARD IIoT.

The Appendix to this report comprises the detailed DNV evaluation which includes references to standards, list of documentation and the conclusion of the DNV evaluation.

4 CONDITIONS

No conditions.

5 OUTSTANDING ISSUES

No outstanding issues.

6 CONCLUSION

The condition monitoring system VIBGUARD IIoT complies with the requirements as listed in DNV-SE-0439:2021-10 "Certification of condition monitoring".

Any modifications to the condition monitoring system VIBGUARD IIoT will render the present report invalid, if they are not approved by DNV.

APPENDIX A

Condition Monitoring System VIBGUARD IIoT

Evaluation of the Condition Monitoring System VIBGUARD IIoT

Description of verified component, system or item

The condition monitoring system VIBGUARD IIoT allows the monitoring of the drive train of wind turbines. Main components are the data acquisition and analysis system and the accelerometers. The software allows the local monitoring and the global monitoring of wind turbines or wind farms.

Interface to other systems/components:

No interfaces.

Basis for the evaluation

Applied codes and standards:

| Document No. | Revision | Title |
|--------------|----------|---------------------------------------|
| DNV-SE-0439 | 2021-10 | Certification of Condition Monitoring |

Documentation from customer

List of reports:

| Document No. | Revision | Title |
|--------------|----------|-------|
| - | | |

List of drawings:

| Document No. | Revision | Title |
|--------------|----------|-------|
| - | | |

List of specifications/manuals/instructions:

| Document No. | Revision | Title |
|---------------|------------|---|
| LIT 78.222.DE | 01.10.2018 | VIBGUARD IIoT Bedienung |
| LIT 78.221.DE | 01.10.2018 | VIBGUARD IIoT Inbetriebnahme |
| LIT 78.220.DE | 27.03.2019 | VIBGUARD IIoT Installation und Betrieb |
| LIT 78.223.DE | 01.10.2018 | VIBGUARD IIoT Wartung |
| LIT 78.231.DE | 01.10.2018 | Inbetriebnahmeprotokoll für das CMS VIBGUARD IIoT |
| LIT 78.230.DE | 01.10.2018 | Installationsprotokoll für das CMS VIBGUARD IIoT |
| LIT 78.233.DE | 01.10.2018 | Wartungsprotokoll für das CMS VIBGUARD IIoT |

List of documents taken for information only:

| Document No. | Revision | Title |
|------------------|----------|---|
| 12 100 63620 TMS | - | Zertifikat Qualitätsmanagementsystem ISO 9001:2015, issued by TÜV Süd, valid until 2024-04-05 |

Evaluation work

The descriptions of the condition monitoring system were assessed to ensure operation, as defined in DNV-SE-0439:2021-10.

The operating instructions were examined for completeness and correctness.

The installation instructions were examined for due performance of all installation work required with a view to ensure safe operation.

The documents for the commissioning were examined for due performance of all commissioning work required with a view to ensure safe operation.

The maintenance manual was examined for due performance of all maintenance work required with a view to ensure safe operation.

The system test of the condition monitoring system was carried out on a wind turbine DeWind D8 (serial no.: 5007042-T2, wind farm no. 80048) in Japons, Austria, on 29.08.2013, according to GL-IV-4:2013. The independent functioning of the safety equipment was examined by the interconnection diagram and the system test. Since there are no technical differences between GL-IV-4:2013 and DNV-SE-0439:2021-10, the system test is accepted for the current recertification.

Before using these CMS on other types of wind turbines further tests for the sensor application might be necessary.

The evaluation is based on the following assumptions:

- The maintenance work listed in the maintenance instructions shall be properly carried out, the record shall be prepared and handed over to the operator/monitoring body.
- Each single condition monitoring system shall be set to work in accordance with the document for commissioning. The document for commissioning shall be handed over to the operator/monitoring body, together with the maintenance manual and the operating instructions.

Conditions to be considered in other certification modules

No conditions.

Outstanding issues

No outstanding issues.

Conclusion

The condition monitoring system VIBGUARD IIoT complies with the requirements as listed in DNV-SE-0439:2021-10 "Certification of condition monitoring".



Any modifications to the condition monitoring system VIBGUARD IIoT will render the present report invalid, if they are not approved by DNV.



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