



GL Renewables Certificate No.: **ZZ-GL-002A-2012**

Herewith it is certified that the measuring method

Matz-Erreka i-bolt® ultrasonic fastener system - Qualification Process

**Manufactured in licence agreement by
Matz Erreka S.Coop.
B° Ibarreta, s/n
20577 Antzuola (Guipúzcoa)
Spain**

**developed by
Load Control Technologies
3630 Horizon Drive
King of Prussia, PA, 19406
USA**

has been evaluated by Germanischer Lloyd Industrial Services GmbH, Renewables Certification (GL RC) on the basis of the „Guideline for the Certification of Wind Turbines”, Edition 2010, of GL RC. The evaluation is based on the assessment of the Qualification Process and witnessed tests in order to confirm the repeatability of the accuracy.

The calculations and other documentation examined as well as the conditions are listed in the following Certification Report:

74510	09.07.2012	Matz Erreka i-bolt® ultrasonic fastener system (Qualification Process)
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Considering the result of evaluation it can be stated that the assessed method can be regarded as part of a suitable technology for the application in wind turbines.

Changes in the software, hardware and the processes of the assessed technology are to be approved by GL RC; otherwise this certificate loses its validity.

Hamburg, 24th July 2012
Morb

Germanischer Lloyd Industrial Services GmbH *Rob*

ppa Mike Woebeking
ppa. Mike Woebeking

V. Andreas Kamleitner
i. V. Andreas Kamleitner

Germanischer Lloyd Industrial Services GmbH
Renewables Certification
Brooktorkai 18
20457 Hamburg, Germany

Annex

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Assessed Technical characteristics of the

Matz-Erreka i-bolt® ultrasonic fastener system

Production Bolt Qualification Process

During this process the thermal and load adjustment equations along with other general specifications for the bolted connection are determined and the part number record is created.

Exemplary test series on M33 bolts witnessed at Load Control Technologies

The tightening force in the bolts was measured with the herein assessed method. The results showed that the deviation between the measured load with the i-bolt® ultrasonic fastener system compared to the load cell value does not exceed +/- 5%.

End of Annex

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