

MRH

CERTIFICATE OF SEISMIC QUALIFICATION BY ANALYSIS

EARTHQUAKE RACKS FOR STATIC BATTERIES MANUFACTURED BY

Passoni Paolo e figli S.r.l.
Via Aristotele, 32
20047 Brugherio (MI) – Italy

Alpha Industrie-bedarfs gmbh
Niedesheimer Str. 26
DE-67550 Worms - Germany

The earthquake battery racks produced by Alpha-Passoni are hereby seismically certified for compliance with the following Building Codes:

2015 International Building Code – IBC 2015

2016 California Building Code – CBC 2016

These battery racks are hereby seismically qualified when properly installed for their structural adequacy in areas with the Risk-Targeted Maximum Considered Earthquake (MCE_R) Design Spectral Acceleration Parameter at a short period of $S_{Ds} \leq 0.88g$ as defined by the above codes. These battery racks shall be located at or below grade with $z/h=0$. These battery Racks shall be used with Risk Categories I, II & III, on Site Classes A, B, C & D, and in structures assigned with Seismic Design Categories A, B, C, D & E. Other limitations and modifications of this qualification are included in our seismic qualification report dated April 23, 2014. This qualification is based on a thorough review of the report entitled “static calculations of racks for earthquake battery installation” produced by:

Kühne BSB GmbH, Mina-Rees-Straße 5A, 64295 Darmstadt - Deutschland

And investigation and collateral seismic stress analysis performed by our engineers.

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CERTIFICATE OF SEISMIC QUALIFICATION NOTES AND LIMITATIONS

1. Racks shall be located ONLY at or below grade ($z/h=0$).
2. Racks shall NOT be located above grade (any floor above ground level) or roof.
3. Racks shall be located in areas with $S_{DS} \leq 0.88g$ as determined per Section 11.4.3 of ASCE 7-10.
4. Racks shall NOT be used when the Seismic Design Category is determined to be "F" per Section 11.6 of ASCE 7-10.
5. Racks shall NOT be used when the Risk Category is "IV" per Table 1.5-1 of ASCE 7-10.
6. Racks shall NOT be located in Site Classes "E" & "F" per Sec. 11.4.7 and 11.8 of ASCE 7-10.
7. Racks shall NOT be subject to any impact, shock or vibrating forces.
8. Racks shall NOT be located at exterior and non-dry conditions.
9. Racks shall NOT be used within the jurisdictions of DSA, OSHPD and in nuclear facilities.
10. Racks shall be positively and rigidly anchored at all anchor points.
11. Racks shall not be supported by vibration isolators.
12. Racks shall be anchored using the following parameters: $a_p=2.5$ (min), $R_p=2.5$ (max), $I_p=1.5$ (min) and $\Omega_o=2.5$ (min).
13. Racks shall have a minimum all-around clearance of 6 inches from any other object (walls, columns, other racks, etc).
14. Batteries shall have restraints in all directions per Section 13.6.4, item 3 of ASCE 7-10.
15. Racks shall be positively and rigidly anchored at all base plates and anchor points. Anchorage and anchor bolt design is by others. For anchorage to concrete, Section 13.4.2 of ASCE 7-10 shall be satisfied.

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