



## CERTIFICATE OF SEISMIC QUALIFICATION BY ANALYSIS

### ALPHA-PASSONI EARTHQUAKE BATTERY RACKS MANUFACTURED BY

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

Alpha Industrie-bedarfs gmbh  
Niedesheimer Straße 26  
DE-67550 Worms – Germany

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

**2021 International Building Code – IBC 2021**

**2022 California Building Code – CBC 2022**

The Alpha-Passoni Earthquake 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  $S_{DS} \leq 1.02g$  as defined by the above codes. These battery racks shall be located at or below grade with  $z/h=0$  and when  $I_p$  is 1.0. These battery Racks shall be used for Risk Categories I, II III, Site Classes A, B, C & D, and in structures assigned with Seismic Design Categories A, B, C, D & E. See page 2 of this certificate and our seismic qualification report dated January 1, 2024, for other limitations and modifications of this qualification. This qualification is based on a thorough review of the report entitled “Static Calculations of Racks for Earthquake Battery Installation” dated November 11, 2022, produced by:

Kühne BSB GmbH & Co. KG - Mina-Rees-Straße 5A - 64295 Darmstadt - Deutschland

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

**MRH Structural Engineers**

3400 Irvine Ave., Suite 101  
Newport Beach, CA 92660

Phone : (949) 690-2751

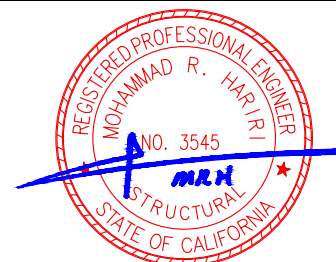
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**January 1, 2024**

**No. 23133**

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# MRH

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#### CONDITIONS & LIMITATIONS:

1. Racks shall be in sites with  $S_{Ds} \leq 1.02g$  as determined per Sec 11.4.5 of ASCE 7-16.
2. Racks shall be installed in “Non-Life-Depending” and “Non-Essential” facilities only.
3. Racks shall be located **only at or below grade ( $z/h=0$ )**.
4. Racks shall NOT be located above grade (any floor above ground level) or roof.
5. Racks shall be used when  $I_p = 1.0$  per Sec. 13.1.3 of ASCE 7-16.
6. Racks shall NOT be used for Seismic Design Category “F” per Sec. 11.6 of ASCE 7-16.
7. Racks shall NOT be used for the Risk Category “IV” per Table 1.5-1 of ASCE 7-16.
8. Racks shall NOT be installed in Site Class “E” & “F” per Sec. 11.4.7 & 11.8 of ASCE 7-16.
9. Racks shall NOT be used for DSA or OSHPD projects in California.
10. Racks shall NOT be subject to any impact, shock, or vibrating forces.
11. Racks shall NOT be located on the exterior, in corrosive, and non-dry conditions.
12. Racks shall be positively and rigidly anchored at all base plates and anchor points to a rigid base.
13. Rack anchor bolt design shall be provided by others. For anchorage to concrete, Sec. 13.4.2 of ASCE 7-16 shall be satisfied.
14. Racks shall be anchored using the following seismic design parameters:  $a_p=2.5$  (min),  $R_p=1.5$  (max), and  $\Omega_o=2.0$  (min).
15. Certificate of compliance for the seismic qualification of racks, supports and attachments shall be submitted to the building official in accordance with Sections 1704.5 and 1705.14.2 of IBC 2021 and CBC 2022.
16. Special inspection is required for installing racks & attachments per Sections 1704, 1704.5 of IBC 2022 & CBC 2022.
17. Racks shall have a minimum all-around clearance of 6 inches from any other object (walls, columns, other equipment, etc.).
18. Batteries shall have restraints in all directions per Section 13.6.3, item 3 of ASCE 7-16.
19. To determine the maximum allowable battery masses from the Khüne BSB report dated 11/11/2022, use **only** Min. 1.0g & Min 0.5g columns of the Battery Mass values from the Annex D Tables with and multiply them by **a reduction factor of 0.5** (Do not use values in the 0.3g columns).

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