

# Battery Racks and Engineering



**passoni**  
alpha



## COMPANY PROFILE

The beginning of Passoni Company dates back to 1909 when Paolo Passoni founded a factory in Brugherio, in the east of Milan, where steel products were manufactured.

In 1946 the factory took the present Company name, began to produce iron frames for wooden boxes for truck starter batteries, for the first traction batteries and, later on, rubber coated steel boxes.

In the second half of the Fifties after the beginning of plastic coated steel trays, plastic coated steel racks were launched on the market.

The sale of these products focused principally on the Italian market and then when the export began, it was extended to the international market.

Owing to this expansion in 1981 a branch **alpha industrie bedarfs gmbh** was founded, now located in city of Worms-Germany.

The original setting up and sale of products manufactured by Passoni on the German and European market has expanded to environmental services World-Wide.

Now **alpha** offers a complete range of services helping the customer solve problems, consultancies, construction planning and much more.



## SUPPORTS

Thanks to its flexible features, which meet any type of installation requirements, it is the most functional equipment on the market made of a folded steel plate.

It is interesting to note that the upper slots allow placing of the stringers along the whole length of the support shelf to which they will be fixed.

### Electrolyte protection

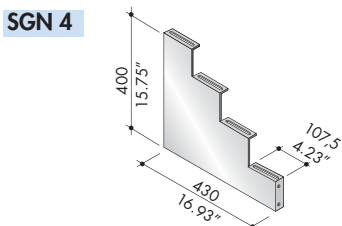
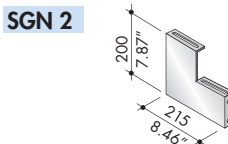
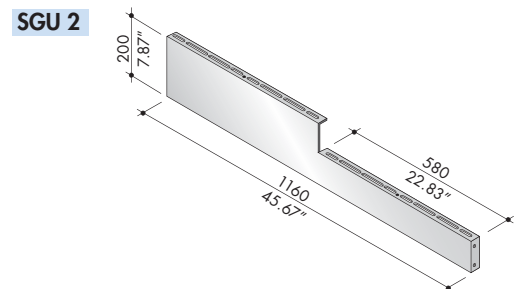
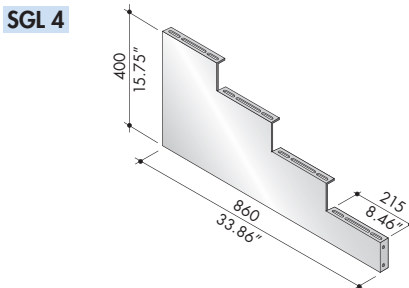
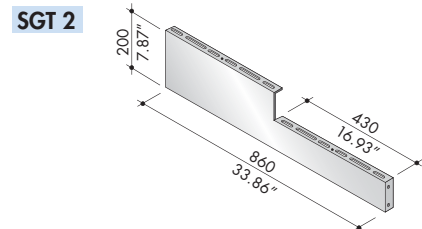
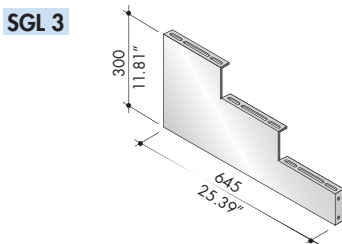
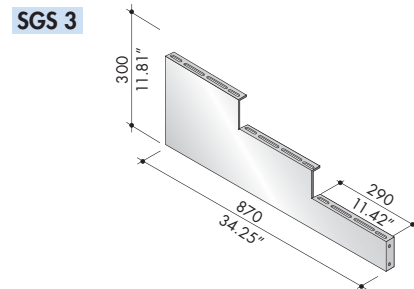
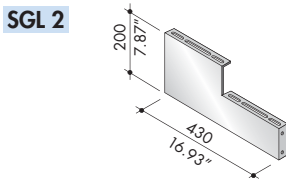
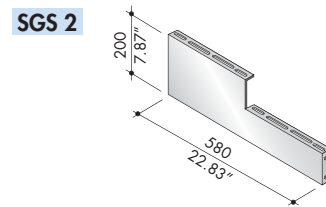
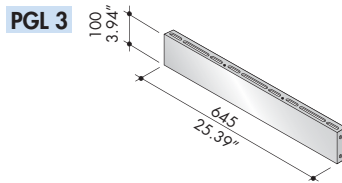
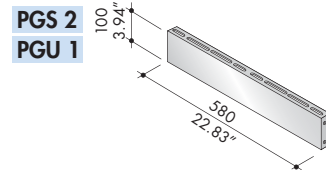
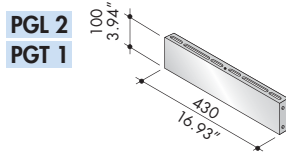
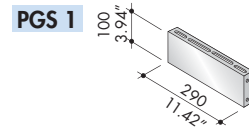
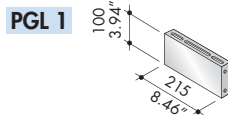
The supports are totally coated with white epoxy powder.

### Coding and packing

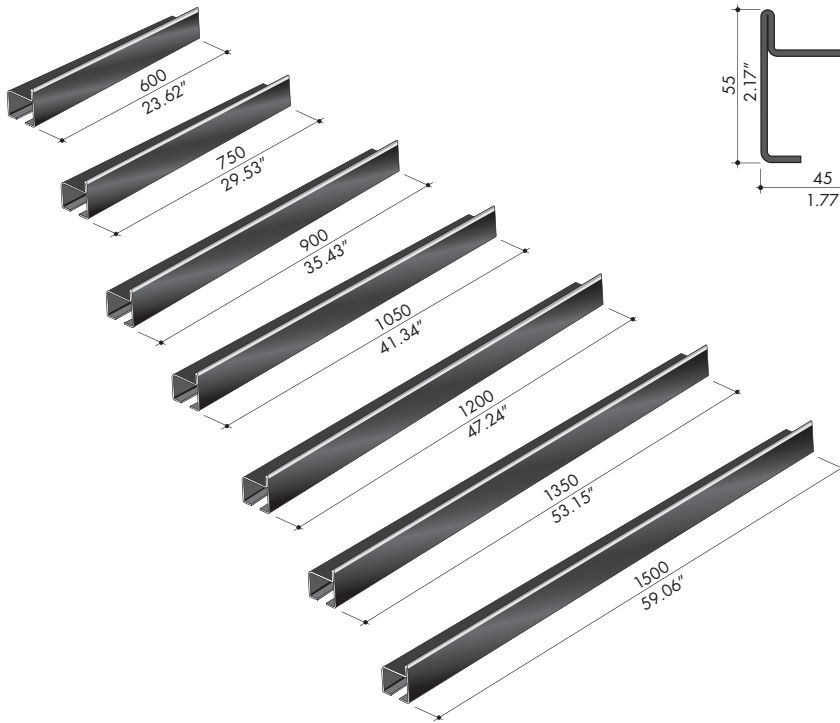
The supports are packed inside easy to identify boxes with codes corresponding to the configuration on this page.

Each box has 2 supports, left and right, 4 isolators of ABS/GF.

Four laminated shims are included in the box. They can be used for the shelf in case the floor is not perfectly flat.



## STRINGERS



### "h" type standard stringers

These are made of cold shaped steel sections.

The sections have dimensions ranging from 45x55 mm. (1.77"x2.17").

The upper profile of the stringers permits the alignment of the elements during installation of the battery and it also avoids any incidental lateral displacement.

The lower slot allows easier longitudinal and transversal pairing of the supports.



### "C" type additional stringers

The section has a dimension of 45x40 mm. (1.77"x1.57") and a flat upper support surface.

These stringers can be placed in parallel between the standard pairs if you need to increase the support surfaces and capacity of the rack.

### Coating

Electrolyte protection and electrical insulation: black polyethylene.

### Packing and coding

The stringers are packed into boxes. Each of the four lengths is packed in 4 or 6 pieces; fastening material are included. Codes are given according to the length and quantity of each box. Example: code n°906 identifies a pack of 6 stringers having a length of 900 mm. Therefore, the first 2 No's of the code indicates the length, the last one the quantity.

## ONE TIER RACKS

These racks have been designed for all types of stationary battery models. In designing these easy-to-use racks, all main requirements, such as, strength, flexibility, acid-proof protection have been considered. These racks are light, small and easy to move and store.

Furthermore, these racks are available at anytime because they are always in stock.

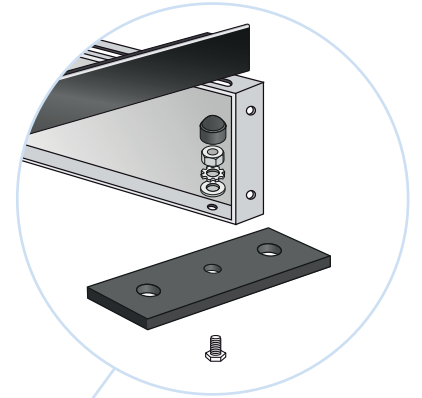
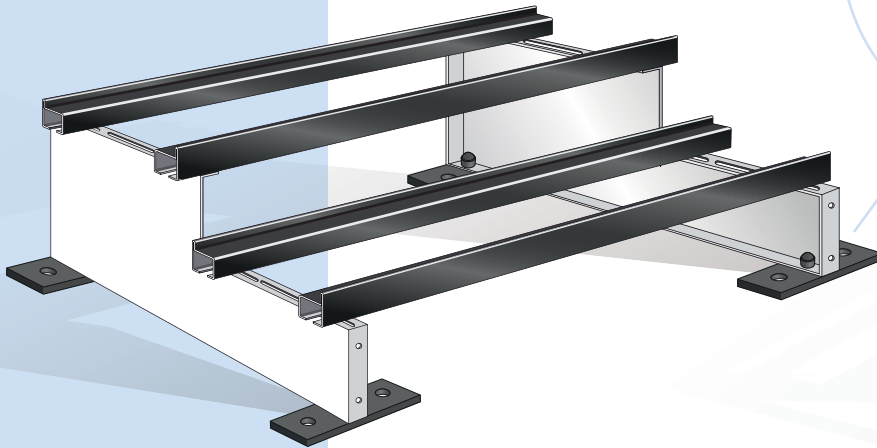
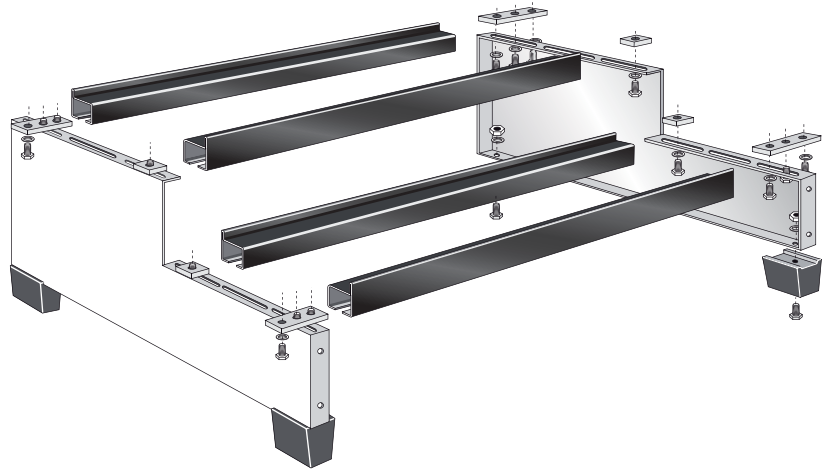
These racks can be totally disassembled and assembled by using screws and plates.

The main parts consist of stringers and supports.

To anchor the rack to the floor are available:

FIX001 kit for one tier supports

FIX002 kit for tubular multi-tier supports.





## TWO TIER RACKS

The two-tier rack is the extension of the single-tier rack, whose components, stringers and supports can be used with special additional sets coded 1002.

Additional sets are necessary in order to permit overlaying the two tiers.

The upper support can be mounted at an appropriate height for the battery to be installed.

### Supporting stand

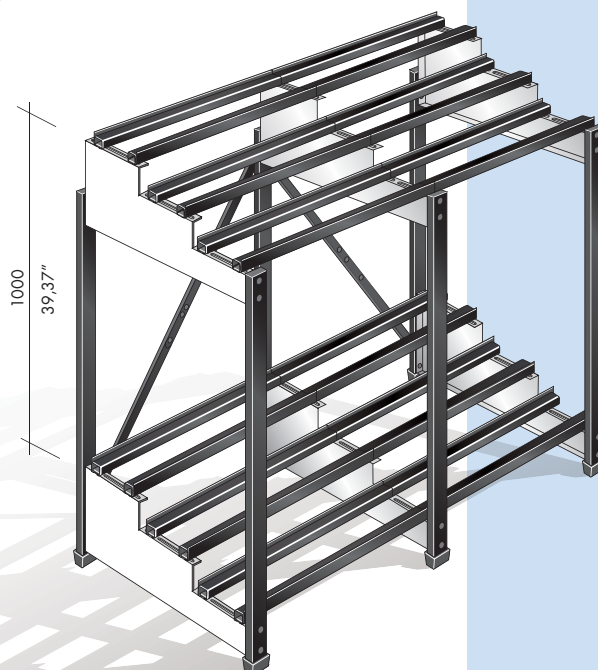
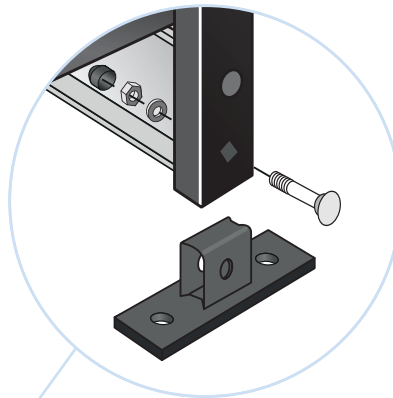
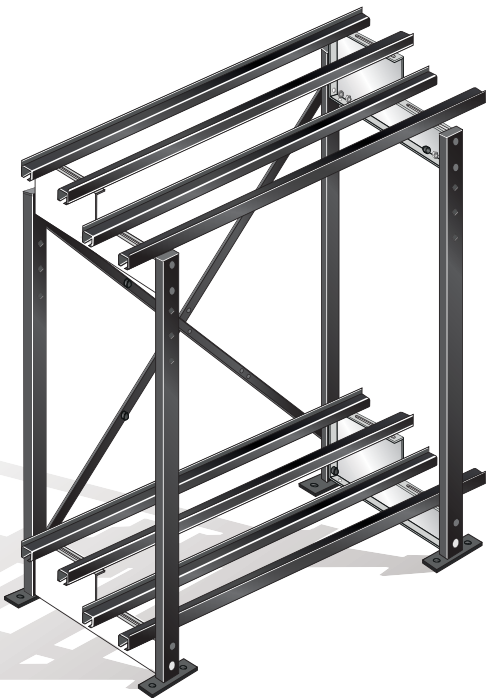
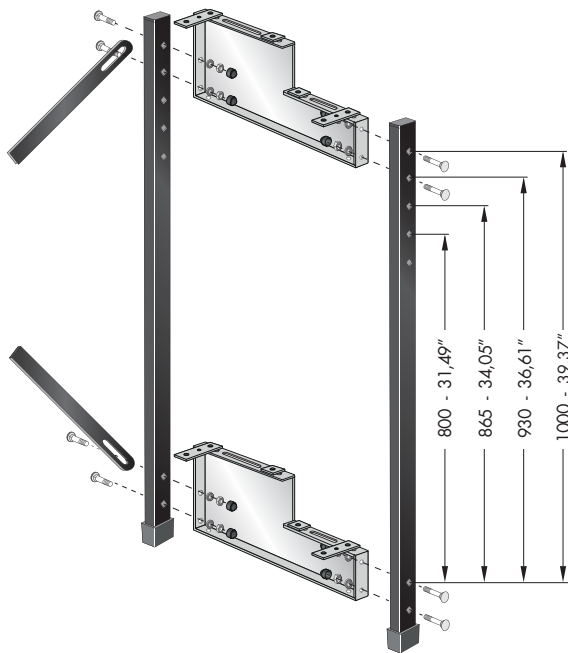
The profile is steel tube, the section is 50 x 30 mm. (1.97" x 1.18").

Electrolyte protection: black polyethylene.

### Braces

Steel bars section 30 x 3 mm. (1.18" x 0.12").

Electrolyte protection: black epoxy powder.



## CERTIFIED EARTHQUAKE PROOF BATTERY RACKS

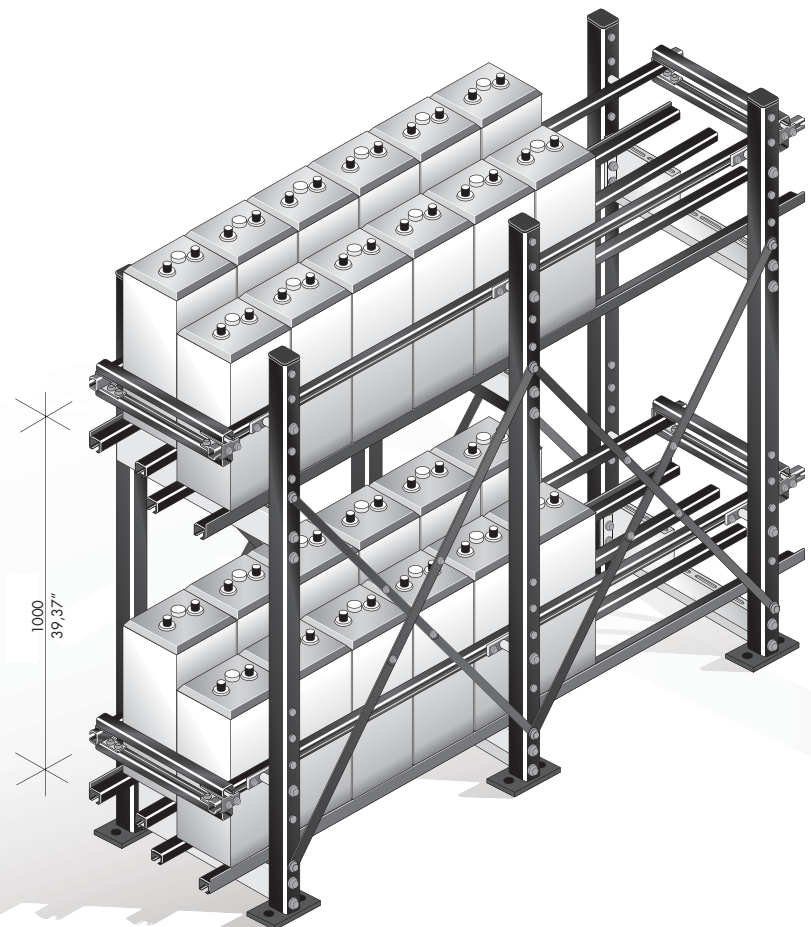
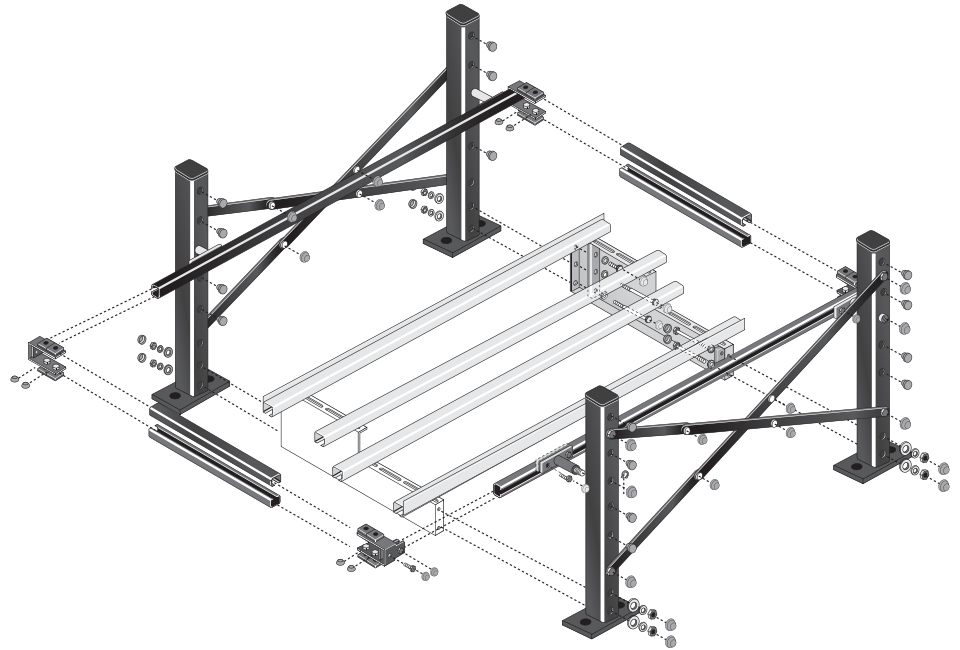
This modular rack system is based on the components of the standard rack system.

By using of some additional components, such as stands, braces, telescopes and end holders it is possible to build a seismic rack.

Dependence on the battery size and at corresponding choice of the rack components, racks can be created with an earthquake safety according to the customer demands.

The complete range of the usual earthquake loads plus the demanded security factors can be covered.

The racks are appropriate for use as earthquake proof battery racks in USA, according to UBC and IBC.



## SEISMIC KITS

### Supporting Stand ES0602 - ES1602

An extra heavy design of supporting stands guarantees a sufficient strength for seismic loads. Two different heights of stands make the construction of one two tier rack possible.

### Brace EB0714 - EB0974

The braces guarantees a high stability in the lengthwise direction.

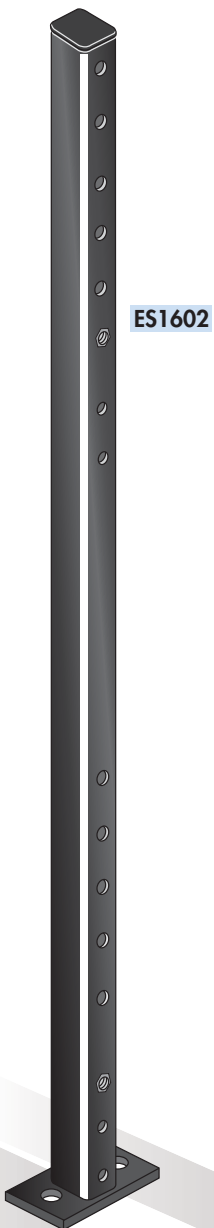
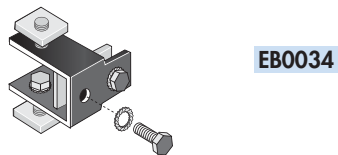
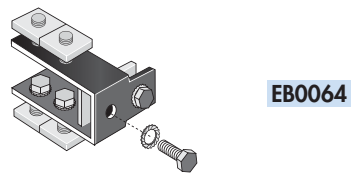
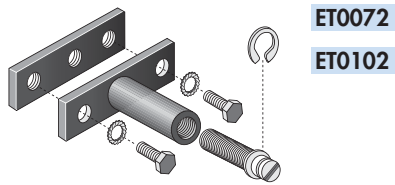
### TELESCOPE ET0072 - ET0102

The telescope has an adjustment range of 45 mm. ( 1,77"). It takes over the lateral support of the cells together with the railing.

### End holder EB0064 - EB0034

End Holders are adjustable and it takes over the lengthwise support of the cells package together with the railing.

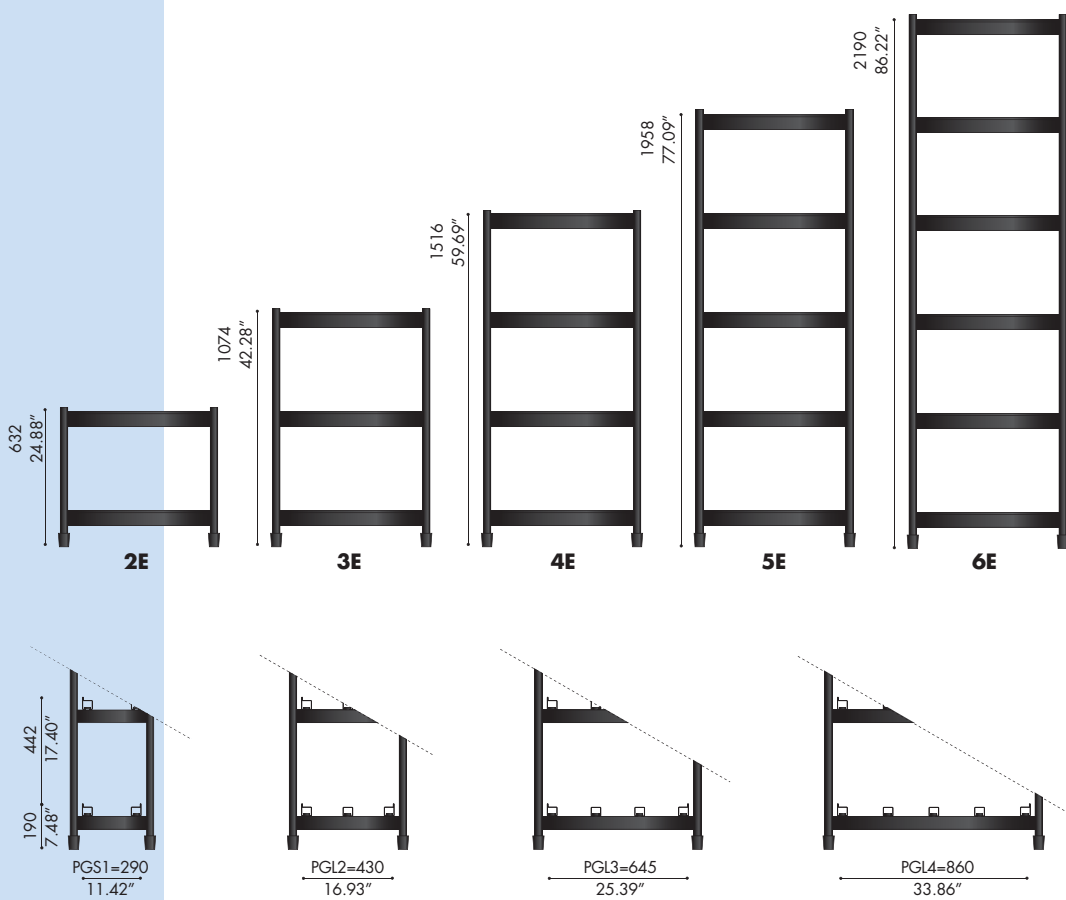
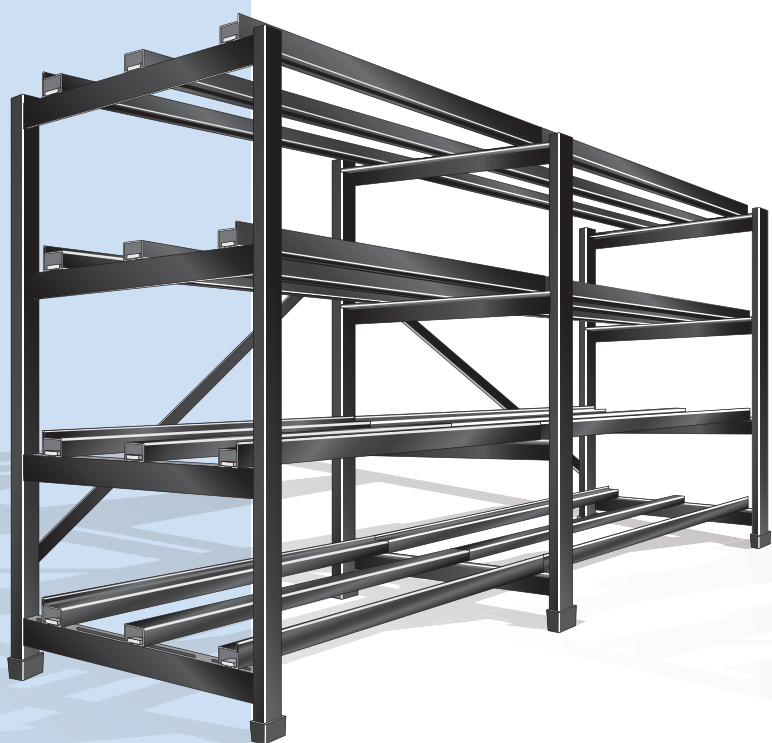
Stand, brace, telescope and end holder are coated with epoxy powder.



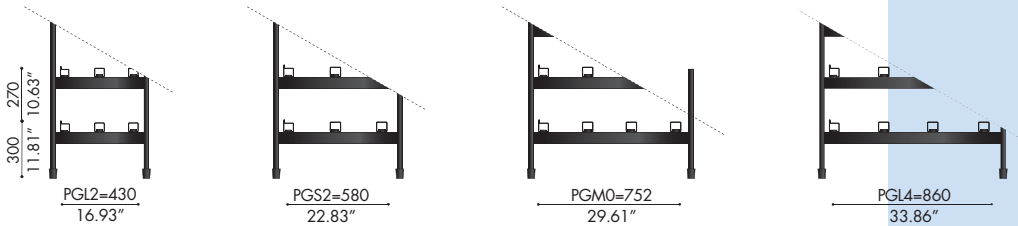
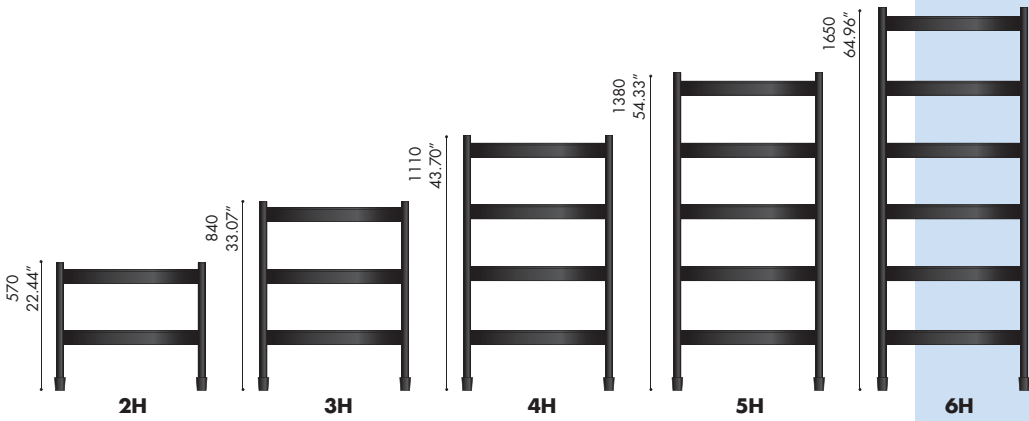


# STANDARD RACKS

RACKS FOR VRLA BATTERY INSTALLATION



RACKS FOR HORIZONTAL BATTERY INSTALLATION



## CLADED RACKS

The **passoni alpha** cladded racks systems have been designed for the main types of stationary battery models.

The basic module is our standard battery rack including the modular cladded panels.

The cladding parts are realised in a thermoplastic compound, based on the following characteristics.

- Shock resistance according to IK 10 EN 50102
- Dielectric strength 6 kV according to EN 60950 and EN 50272-2
- Fire protection UL 94V0/ISO 1210
- Ageing according to XP C 20-540
- Chemically stable against sulphuric acid
- Chemically stable against potassium hydroxide
- Colour: RAL 7035, Light Grey
- ISO 9001



## SOFTWARE SERVICE

The **AlphaSYS®** rack-sizing program features seismic and non-seismic battery racks.

You can easily search the program for a quality battery rack that will meet the needs of your clients.

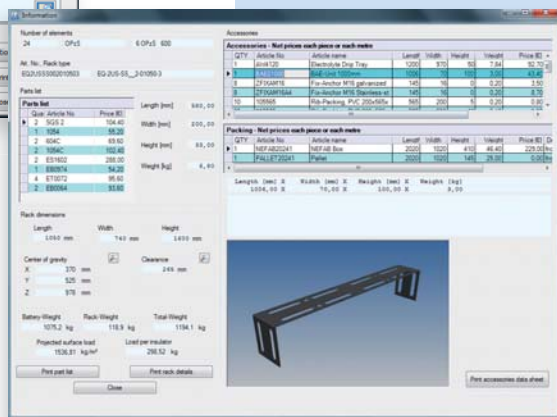
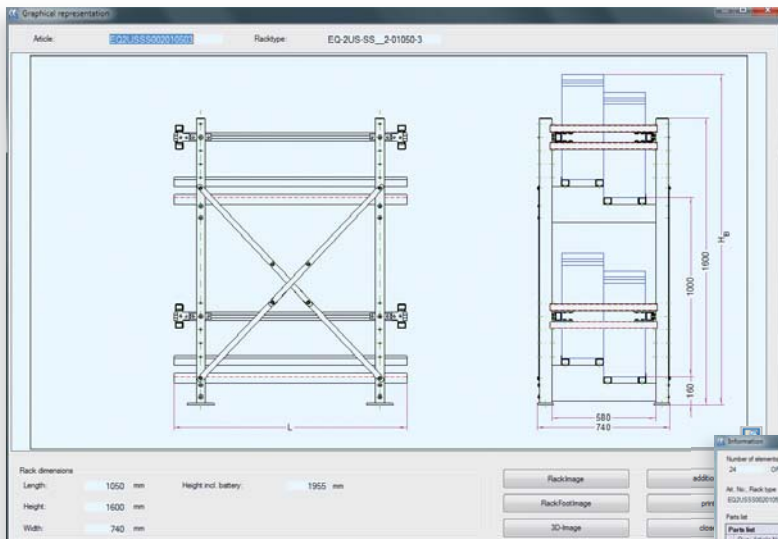
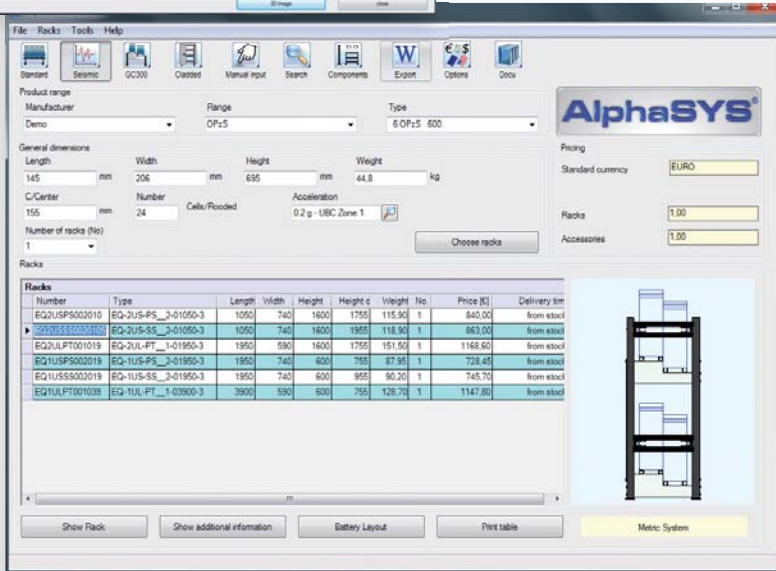
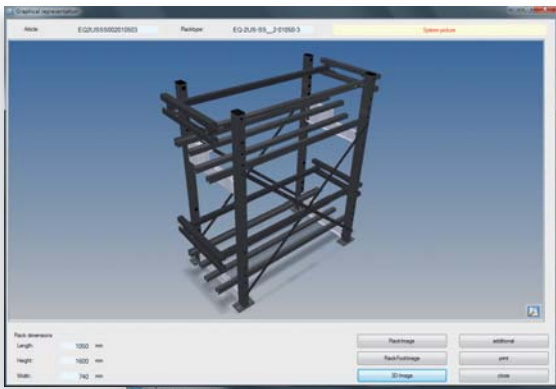
**AlphaSYS®** software is available, free of charge to our customers.

Available as PC, Web or Smartphone version.

Please visit our webpage for more information about the **AlphaSYS®** and how to get your own software.

[www.alpha-passoni.com](http://www.alpha-passoni.com)  
[www.passoni-alpha.com](http://www.passoni-alpha.com)

Use this QR-code with your Smartphone for a quick review.





## CUSTOMIZED RACKS

Beside the standard and seismic rack systems that are offered in series, we build a variety of special constructions for extreme cases, such as container, off-shore, power and nuclear power stations or military utilities.

These racks are designed, calculated and built, according to the specific customer requirement.

In quite special cases mechanical shock absorbing system are used.

alpha takes seismic and shock design criteria seriously.

For every construction a static calculation is carried out internally.

When required these racks are subject to a static calculation or computer simulation by an external, neutral expert authority, or being physically tested.

These racks are used worldwide.



POWER PLANT RACKS  
SHAKING TEST



RACKS FOR MARINE VESSELS



# SPECIAL RACKS

RACKS FOR MILITARY UTILITIES



RACKS FOR OFF-SHORE INSTALLATIONS







## DNV BUSINESS ASSURANCE MANAGEMENT SYSTEM CERTIFICATE

Certificato No. / Certificate No. **CERT-00231-94-1Q-MIL-SINCERT**

Si attesta che / This is to certify that

**PASSONI PAOLO E FIGLI S.r.l.**

Via Aristotele, 23 - 20861 Brugherio (MB) - Italy

è conforme ai requisiti della norma per i sistemi di gestione:  
has been found to conform to the management system standard:

**UNI EN ISO 9001:2008 (ISO 9001:2008)**

Questa Certificazione è valida per il seguente campo applicativo:  
This Certificate is valid for the following product or service ranges:

**Progettazione, costruzione e vendita di scaffalature metalliche per batterie stazionarie**  
(Settore EA : 17)

Design, manufacture and sale of steel racks for stationary batteries  
(Sector EA : 17)

Data Prima Emisioni/Initial Certification Date:

1994-05-13

Il Certificato è valido fino al:  
This Certificate is valid until:

2018-05-05

L'audit è stato eseguito sotto la supervisione di:  
The audit has been performed under the supervision of:

**Rodolfo Giannini**  
Lead Auditor



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Via Salaria, 1000  
00198 Roma, Italia  
Tel. +39 06 52001  
Fax +39 06 52002  
www.accredia.it

Lunga e Data/Place and Date:

Vimerca (MB), 2015-04-04

Per l'Organismo di Certificazione:  
For the Certification Body:

**Vittorio Marangon**  
Management Representative

La validità del presente Certificato è subordinata al rispetto delle condizioni contenute nel Contratto di Certificazione.  
Lack of fullness of conditions as set out in the Certification Agreement may render this Certificate invalid.  
www.dnv.com/certificates, www.dnv.com/certificates, www.dnv.com/certificates, www.dnv.com/certificates



## CERTIFICATE

No. 0 9397 02

on the approval of a static calculation

The static calculation:

provided by:

for:

manufactured by:

racks for earthquake proof battery installations  
(Gestelle für erdbebensicheren Batterieeinbau)  
Date 07.10.03, 26 pages + 5 annexes  
Kühne BSB GmbH  
Hirschbachstr. 70  
D-64354 Reinheim, Deutschland

earthquake proof battery racks

Passoni Paolo e figli S.r.l.  
Via Aristotele, 23  
I 20047 Brugherio (MI)-Italia

alpha industrie-bedarfs gmbh  
Hüttenstraße 25  
D 67550 Worms, Deutschland

was approved with respect to static design. The racks are appropriate for use as earthquake proof battery racks in USA, earthquake zone 4. The approval was done basing on DIN 18800, DIN 4149, the Uniform Building Code ed.1997 and the International Building Code ed.2000 and 2003. This certificate holds in connection with the RWTÜV-report of approval no. 0 9397 02, doc.no.: 4 2-397/00 mey, dated Feb. 5<sup>th</sup>, 2004

Essen, 2010-06-10

TÜV NORD SysTec GmbH & Co. KG

The Independent Experts

Dipl.-Ing. Petruschke



Dipl.-Ing. Meyer

003377-09 Cert-01.de



## CERTIFICATE OF APPROVAL

**EARTHQUAKE PROOF RACKS FOR STATIC BATTERIES  
MANUFACTURED BY**

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

alpha industrie-bedarfs gmbh  
Hüttenstraße, 5  
67550 Worms - Germany

The earthquake proof racks for static battery installation produced by Passoni alpha are hereby approved for use in California, in earthquake zone 4 as defined by the UBC 1997 and IBC 2003. This approval is based on a thorough review of the report entitled "static calculation-racks for earthquake proof battery installation" produced by:

Kühne BSB GmbH  
Hirschbachstr. 70  
D-64354 Reinheim, Deutschland

and collateral linear static stress and critical buckling load analysis performed by our engineers.



21 March, 2005  
No. 2005-32



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20047 Brugherio (MI) - Italy

alpha industrie-bedarfs gmbh  
Hüttenstraße, 5  
67550 Worms - Germany

The earthquake proof battery racks produced by Passoni alpha are hereby approved for compliance with the following Building Codes:

2007 California Building Code - CBC,  
2006 International Building Code - IBC,  
2005 IEEE Std 693 - Annex J

IEEE Recommended Practice for Seismic Design of station batteries and battery racks

These battery racks are hereby approved for structural adequacy in earthquake zone 4 as defined by the above codes. This approval is based on a thorough review of the report entitled "static calculation-racks for earthquake proof battery installation" produced by:

Kühne BSB GmbH  
Hirschbachstr. 70  
D-64354 Reinheim - Deutschland  
and collateral linear static stress and critical buckling load analysis performed by our engineers. The 2 tier battery racks have been analyzed for dynamic loads according to the methods defined in the IEEE Std 693, Annex J



Kent Bingham  
18 May, 2008  
No. 2008-09







- Canada 2,283,873
- USA 6257427B1
- Europe 0976167
- Czech Rep. 296298
- Poland 190256
- Hungary 222608
- Ukraine 58541
- Russia 2195748
- China ZL 99800017.5

发明专利证书

专利号: ZL 99 8 00017.5 国际专利主分类号: H01M 2/10

The company reserves the right to change the specifications of these products without prior notice.  
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