



## Design Review Report - Homologation

dated: 25/05/2021

**Report no.: 3467227**

### 1. Subject

Facility: **STROHBOLD – Eventzelt [event tent] 70**

Manufacturer and Design: STROHBOLD GmbH  
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Stress analysis: DI [grad eng.] Kurt Pock  
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Customer: STROHBOLD GmbH  
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Date: 25/05/2021

Our ref.:  
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The document consists of  
7 pages.  
Page 1 of 7

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The test results exclusively refer  
to the items tested.

**Period of validity until: 31/08/2024**

Until expiry of the period of validity, an initial execution approval may be granted on the basis of the homologated documents, i.e. the validity of the execution approval is independent of the expiry of this period of validity.  
Extensions of the execution approval may be issued also after the expiry of the period of validity.

Revision index:	Revision remark:	Revised on:	Revised by:
Rev.0	Initial version	-	-



## **2. Documents reviewed**

The following technical documents were available for testing:

- /1/ Static calculation DI [grad. eng.] Kurt Pock, engineering consultant for civil engineering.  
See Annex A.
- /2/ Set-up instructions Strohbold GmbH.  
See Annex A.
- /3/ Drawings Strohbold GmbH.  
See Annex A.
- /4/ Certificates and reports.  
See Annex A.

## **3. Design description**

The STROHBOLD Event tents 70 are built in wooden grate shell design as light plane load-bearing structures. The load-bearing structure of the STROHBOLD event tent 70 consists of a wooden slidable lattice grate in which, in an even grid of 1.25 m, wooden laths (73 x 33 mm) are connected in a rhomboid angle of 3-90° with single axially movable junction points by M12 threaded bolts. The cambered tapering edges of the construction are reinforced by edge girders connected on top at the tip with a metal hinge. The edge girders consist of an upper boom (43 x 90 mm) and a lower boom (43 x 90 mm) connected by aluminium sections. In order to achieve double curvature, the distance of the junction points must deviate from the grid in the 3<sup>rd</sup> direction. Non-sway stable triangles are achieved if this 3<sup>rd</sup> direction is stiffened with the ridge lath and the ground beams. In dismounted state, the slidable lattice grate is pushed together to a 13.5 m long package (minimum rhomboid angle 3°) and can be transported in one piece on a 12 m long passenger car trailer. The length of the construction which is pushed together corresponds approximately to the longest bar in the lattice grate. In set-up and unfolded state the maximum rhomboid angle is 90°.

Before set-up, the four ground beams are fastened in a fixed distance on the underground with tent pegs or, as an alternative, on the wooden floor. Subsequently the wooden slidable lattice grate is unfolded from the 12 m long trailer and placed in-centre on the set-up stand. The low ends on both sides are connected with a pulley block. When you draw together the pulley block with the load lever hoists, the lattice grate starts bending, unfolds when lifted and automatically obtains its geometry. The construction reaches its final position when the foot points of the grate shell are fastened on both sides to the ground beams by means of M12 threaded bolts and the pulley block is eliminated.

The camber of pre-bended bars is approx. 3.2 m, in this state the laths are without tension. This is guaranteed by treating the wood adequately with humidity prior to the first shape-forming. Once the grate is brought in desired position, there is a slight pre-tension in the grate bars.

In order to guarantee the stability of the STROHBROID event tent 70, the following possibilities are provided:

- heavy-load floor,
- chateau plank floor and anchorage with pegs,
- ballasting by means of concrete slabs,
- ballasting by means of heavy weights.

For further details see technical documents.

#### 4. Design load assumptions

The **snow loads** were taken into account according to EN 13782.

reduced snow loads *)	$q_k = 0.2 \text{ kN/m}^2$
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\*) Ensure that a snow height of 8 cm is not exceeded.

The **wind loads** were taken into account according to EN 13782.

$h < 5 \text{ m}$ (height of tent)	$q_p = 0.3 \text{ kN/m}^2$
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#### 5. Building materials

The following materials were mainly used:

Material	according to	components
Slab BauBuche S Slab BauBuche Q	EN 14374	Construction lattice grate, ground beams

For details regarding building materials see static calculation /1/, the drawings /3/ as well as the reports and certificates /4/.

#### 6. Soil

The entire facility is designed as temporary structure for repeated set-up and disassembling.

Provided that the underground is trafficable the following admissible soil pressures are applicable pursuant to DIN EN 13782 in accordance with the support width.

- $b = 20 \text{ cm} \Rightarrow \text{adm } \sigma = 100 \text{ kN/m}^2$
- $b = 30 \text{ cm} \Rightarrow \text{adm } \sigma = 150 \text{ kN/m}^2$
- $b = 40 \text{ cm} \Rightarrow \text{adm } \sigma = 200 \text{ kN/m}^2$

#### 7. Comments

The static calculation was established mainly according to EN 13782 and EN 1995-1-1.

The static calculations submitted were examined, as regards their results, by comparative calculation.

The admissible tensions are complied with in the static calculation submitted.

Assembly conditions were not tested in accordance with EN 13814.

Errors in calculation were marked only if they affect dimensioning.

## **8. Test result**

The static calculation and the corresponding design drawings are in accordance with EN 13782 and EN 1995-1-1 and are largely complete and correct.

There are no objections against granting an initial execution approval (**three**-year period of validity) within the period of validity of this test report if the following stipulations and conditions are complied with and implemented.

### **PROVISIONS**

- I. Homologation does not release the operator of the STROHBOLD event tent 70 from the obligation to procure an execution approval.
- II. The structural engineering documents indicated under '2. Documents reviewed' may be used only in the original version with a test report approved by the Prüfamt für Standsicherheit für die bautechnische Prüfung Fliegender Bauten [Test Authority for structural integrity of temporary structures] of TÜV SÜD Industrie Service GmbH, the test report as such only in a complete version.  
In cases of doubt the examined structural engineering documents available at the Test Authority shall prevail.
- III. The period of validity of this test report may be extended upon request by a maximum of 5 years, respectively. In reasonable cases, e.g. modification of technical construction provisions or requirements due to new technical knowledge, the test report may be modified or withdrawn completely. This is also applicable if it is detected that the examined documents may lead to erroneous usage.
- IV. The following documents are required for execution approval for every single facility built:
  - A) Test report homologation, sheet 1 to 7 dated 25/05/2021 of TÜV SÜD Industrie Service GmbH, Prüfamt für Standsicherheit für die bautechnische Prüfung Fliegender Bauten [Test Authority for structural integrity of temporary structures]
  - B) Test documents as indicated in the test report
  - C) Certificate according to EN 1090-1 of the manufacturing company for the production of welded components made of steel with load-bearing function
  - D) Certificate approving the behaviour in fire of the tarpaulins (building material class B1, flame-retardant up to a height of 2.3 m)

## **STIPULATIONS**

1. When the STROHBOLD event tent 70 is set up for the first time, an acceptance test must be carried out by an expert for temporary structures. The result is to be indicated in the inspection book.

### **Stipulations for operation:**

2. During set-up mind that all foot points are levelled on one level.
3. The event tent 70 was calculated with reduced snow loads. A maximum snow height of 8 cm must not be exceeded. If necessary, accumulating snow is to be eliminated immediately or the tent is to be heated so that the snow melts immediately.
4. The temporary structure may be set up only on sites with a basic value of basic wind speed of  $v_{b,0} \leq 28$  m/s. When installed in other areas, new calculations have to be submitted and checked.
5. Set-up and execution variants other than those indicated in the technical documents must be shown separately, proven and submitted for tests.
6. The STROHBOLD event tent 70 was proven as closed and frontally open structure. Additional openings must be closed with the onset of stronger winds.
7. The tarpaulin must be tensioned rigidly so that water pockets cannot develop.
8. All connections must be secured against unintentional loosening.
9. The wire rope connections in the area of the tip of variant „3 Connect“ must be made as becket with inserted thimble. At least three jaw clamps have to be arranged, with the jaws having to be arranged each at the rope part under tension. Adequate screw elements or screw gates must be used.
10. The relevant provisions of the guidelines for the construction and operation of temporary structures, as applicable, must be complied with as regards escapes and fire protection.

### **Construction stipulations:**

11. For the production of welded components made of steel with load-bearing functions, the enterprise must be certified according to EN 1090-1. Adequate proofs must be presented by the manufacturing enterprise.
12. All steel parts must be protected against corrosion prior to installation.
13. The tarpaulins up to a height of 2.3 m must be flame-retardant. This is to be proven by a certificate.

14. The tensile strength of the tarpaulin as well as the tear resistance of the seams and tarpaulin partitions must comply with the occurring loads.
15. All subordinate components and those components which are not proven separately in the static calculation must be dimensioned sufficiently with regard to construction.
16. If during assembly electrical equipment (lighting etc.) is installed, this has to undergo an inspection test prior to start-up by a specialized company which is indicated in the list of fitters of the respective electric utility company. Here the relevant VDE and UVV stipulations must be complied with.

TÜV SÜD Industrie Service GmbH  
Prüfamt für Standsicherheit für die  
bautechnische Prüfung Fliegender Bauten  
[Test Authority for structural integrity of temporary structures]

Chief engineer

Persons in charge

Ch. Falk

P. Hofer / M. Rasser

## **Annex A:**

### /1/ Static calculation of Dipl.-Ing. [grad eng.] Kurt Pock

<b>Title</b>	<b>Project no.</b>	<b>Rev.</b>	<b>Date</b>	<b>Pages</b>
Static calculation	18-025-4	--	28/01/2021	96

### /2/ Set-up instructions of STROHBOLD GmbH

<b>Title</b>	<b>Contents</b>	<b>Rev.</b>	<b>Date</b>	<b>Pages</b>
Set-up instructions	Set-up, disassembling, equipment	--	25.01.2021	37

### /3/ Drawings

<b>Content</b>	<b>Drawing no. / Date</b>	<b>Rev.</b>	<b>Author</b>
Strohbold Eventzelt 70 – Detailed view	25/01/2021	--	Strohbold GmbH
Welding drawing ZB hinge leaf large right	006-023-3-01, 12/01/2020	02	Metalltechnik Ing. Bernhard Maier
Welding drawing ZB hinge leaf left	006-023-3-02, 12/01/2020	02	Metalltechnik Ing. Bernhard Maier

### /4/ Reports and certificates

<b>Content</b>	<b>Number / Date</b>	<b>Rev.</b>	<b>Author</b>
General design approval – slab BauBuche S and BauBuche Q	Z-9.1-838, 19/09/2018	--	Deutsches Institut für Bautechnik
European technical evaluation – Baubuche GL75	ETA-14/0354, 11/07/2018	--	Österreichisches Institut für Bautechnik
Tests for the determination of the bending load-bearing capacity of wood-wood and/or wood-aluminium composite beams	PB20-515-1-02, 18/05/2020	--	Lignum Test Center TU Graz