Certificate no.:
TAS0000478

TYPE APPROVAL CERTIFICATE

This is to certify:

that the Gangway

with type designation(s)
W-Type V1

issued to
Ampelmann Operations B.V.
Delft, Zuid-Holland, **Netherlands**

is found to comply with
DNV standard DNV-ST-0358 – Offshore gangways
DNV standard DNV-ST-0378 – Offshore and platform lifting appliances

Application:

Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV.

Issued at **Høvik** on **2024-06-13**
This Certificate is valid until **2029-06-12**.
DNV local unit: **Netherlands CMC**

for **DNV**

Approval Engineer: **Florian Teica**

Product description

Product: 32.4m telescopic Offshore gangway with additional crane functionality
Designation: W-type V1

Application/Limitation

Categorization: TYPE 2 Offshore gangway with motion compensating system

Operational			
Configuration		supported at both ends (bumper/constant push mode, see #1)	
Live Load (LL)		200 kg (2 persons) or 750 kg cargo (including trolley* + 1 person)	
LL on transfer deck		3000 kg	
Maximum operational length**		31.2 m	
Minimum operational length**		22.7 m	
Bumper/push force setting @ tip		10 kN	
Main cylinder pretension (see #2):		between 245 and 283 bar	
Wind speed (at gangway location)		20 m/s	
Gangway Operating angle (from horizontal)***		+/-17°	
Vessel accelerations****	Vertical (in addition to gravity)	±1.5 m/s^2 *****	
	Longitudinal	1.5 m/s^2 *****	
	Transverse	1.5 m/s^2 *****	
Parked / Transit / Survival			
Configuration		Bridge supported by a support structure	Bridge in cantilever
Live Load (LL)		-	
Maximum Length		21.4 m	
Wind speed (at gangway location)		47.8 m/s	
Vessel accelerations****	Vertical (in addition to gravity)	±9.81 m/s^2	±1.5 m/s^2
	Longitudinal	8.83 m/s^2	1.5 m/s^2
	Transverse	4.91 m/s^2	1.5 m/s^2

*) manually controlled trolley, load including trolley self-weight and cargo. It is the end user's responsibility to assess and accept the trolley suitability for the intended application considering the operational safety aspects (e.g. ability of trolley operator to evacuate the gangway during an emergency case, hazards related to emergency procedures - e.g. emergency disconnection, etc.)
**) measured from the centre of the baseframe to outmost part of the gangway tip, excluding safety length = 1.2m.
***) excluding safety angle = +/-5 deg (from horizontal)
****) relative to the vessel axis
*****) see *Approval limitations #4*

Categorization: Offshore crane, motion compensated, not intended for personnel lifting.

Safe Working Load (SWL) is dependent on boom tip position and lifting modes as specified in PZEAF432EHE6-599815050-45013 Rev B.
Note: for Motion compensated lifts from floating-to-fixed or floating units, maximum residual (uncompensated) boom tip velocity (Vt):

- Vt = 0.22 m/s for all lifting cases

Vessel accelerations****	Vertical (in addition to gravity)	±1.0 m/s^2
	Longitudinal	1.0 m/s^2
	Transverse	1.0 m/s^2

Sidelead/Offlead angle (from vertical): 15/8 deg
See also *Approval limitation #3*

Winch and block self-weight: 466 kg

Design temperature: -20°C

Self-weight of components: see PZEAF432EHE6-599815050-3337 Rev J

Usage: ref PZEAF432EHE6-599815050-38895 Rev B

The operational limitations defined above have been provided by Ampelmann Operations B.V., data and procedures adopted for estimating which have not formed part of this review. It is the end user's responsibility to ensure that these are never exceeded during service.

It has been confirmed by the designer that the flow of people will be continuously monitored and regulated throughout the period in which the gangway is in operational / working condition, thus preventing the load on the gangway to exceed the above defined LL at any given time.

The control and monitoring system is covered by Type approval certificate TAS000047A.

The Type Approval is not covering any mechanical, electrical or hydraulic components. See *Certification* for more information.

Approval limitations

1. The gangway structure has been evaluated for a static configuration (operational mode) where the gangway is in connected/push mode, as defined in the Calculations report, ref. doc no. 22025-20-RPT-01001-01 Rev 02, under the following limitations:
   - the gangway shall always be supported in axial (X-axis) direction (i.e. operate in bumper mode).
   - During personnel transfer operations. the gangway tip position relative to transverse (Y-axis) and vertical (Z-axis) directions will be ensured through an passive motion compensation system
   - During unrestricted transit/survival, while in parked position, the gangway will be supported by a Bridge support structure/cradle. The bridge support structure and its foundation (underdeck strength) are not part of the review. For more information related to gangway support conditions when not in personnel transfer mode, see PZEAF432EHE6-599815050-44069 Rev B.
2. The structural evaluation of the gangway is based on a static model assuming that the gangway main hinge and main cylinders will support 85% of the entire gangway mass (self-weight and reactions due to associated overturning moment) @ gangway maximum operational length and 0 deg luffing angle from horizontal, ref. 22025-20-RPT-01001-01 Rev 05 sec. 3.5.3.2 and table 5.
   It is the end user's responsibility to ensure that the preload pressure in the main cylinders is adequate and within the values stated in the above Operational Limitations, to implementing the assumption into reality.

3. For the crane mode, the type approval is not covering the derating.
   Lifting capacity when operating in motion compensating mode, ref drg no WRD-HC-TGW-V1-High Rev A and WRD-HC-TGW-V1-Low Rev A, is not associated with a specific significant wave height (Hs), but with a maximum residual boom tip velocity (Vt), i.e. the remaining boom tip velocity that is not compensated by the motion compensation system. Motion compensating system accuracy limiting curve shall be drawn for each mobilization/new onboard installation.
   See also *Certification.*
4. The actuator capacities have been sized for the vessel accelerations defined in *Application/Limitation*; the structure has been calculated for vessel accelerations equal to 2.94 m/s^2 (vertical, longitudinal and transverse). The limitations specified in *Application/Limitation* define the operational envelope for the offshore gangway assembly.
5. The structure has also been evaluated for the loads specified in PZEAF432EHE6-599815050-38895 Rev B sec 2.5.1. This Type Approval has not covered the derivation of said loads, nor the evaluation of the specified operating mode.

Type Approval documentation

Certification

This Type Approval covers design(s) only, i.e. the Type Approval is not valid for the final product, but may be used as basis for obtaining a product certificate.

If a DNV Product Certificate is required, the following shall apply:

- The manufacturing survey shall be followed-up by a DNV Surveyor
- Sub-components shall be provided with certificates as per DNV-ST-0358 tables 2-2 and sec 5.14, 5.15 and 5.17 and DNV-ST-0378 table 2-3.
- The gangway enhanced slip resistant features/treads suitability @ min/max gangway operating angles shall be assessed, tested and approved by the attending DNV surveyor.
- Motion compensating system performance:
  - Gangway mode – accuracy as per DNV-ST-0358 Sec 5.11.2
  - Crane mode:
    - no less than 95% accuracy i.e. 5% deviation from nominal position for both upper and lower limits of the operating Hs range;
    - The maximum continuous operating time for the MC system (i.e. maximum duration of 1 operation with MC active before loss of performance)
    - Any performance degradation in case of swinging load; it shall be proven that for the recommended range of rigging lengths the MC system will not cause swinging loads
- Each gangway shall be tested in accordance with DNV-ST-0358 Section 7, DNV-ST-0378 Section 14, TAS000047A and DNV approved test procedures in the presence of a DNV Surveyor.
  Control system testing shall be as per DNV-RU-SHIP Pt 4 Ch 9 Sec 1 §4 and followed-up by a DNV Surveyor.

  It is expected that the majority of the performance testing scope shall be performed in a simulated environment. Reference is made to the requirements in DNV-ST-0358 sec 7 and DNV-ST-0378 sec 14.6 for the test setup. A representative set of simulated test cases shall be selected to be repeated in a physical environment, thus validating the simulated test results.

Marking of product

Each gangway shall be marked in accordance with DNV-ST-0358 Section 7.4 and DNV-ST-0378 Section 14.

Periodical assessment

For retention of the Type Approval, a DNV Surveyor shall perform periodical assessment after two years (+/- 90 days) and after 3.5 years (+/- 90 days) to verify that the conditions for the approval are complied with. Reference is made to DNV-CP-0338.

This certificate is only valid if required periodical assessments are carried out with satisfactory results. To check the validity of this certificate, please look it up in https://approvalfinder.dnv.com.

End of certificate