



Industrie Service

TYPE APPROVAL CERTIFICATE

Issued by:

TÜV SÜD Industrie Service GmbH

Applying ISO Standard:

ISO 11439: 2013 (CNG-1)

Concerning:

High pressure cylinders for the on-board storage of natural gas as a fuel for automotive vehicles (CNG-1)

Approval No.:

225916 dated on 2015-10-20

Type of cylinder:

CNG1-406-100-20B(34CrMo4) in accordance with drawing No.: LD-QP1.TY-E-01 Rev.0 dated on 2015-05-28

Service pressure:

200 bar

Manufacturer:

**Anhui Clean Energy Co., Ltd.
No.17, Guanyin Road of Economic Development Zone of Taihu County, Anqing, Anhui Province,
P. R. China**

Reference to type approval test report no.: 225917 dated on 2015-10-20

We herewith certify that the type mentioned above meets the requirements of ISO 11439: 2013 (CNG-1).

Shanghai, October 20, 2015

(Place, date)



TÜV SÜD Industrie Service GmbH

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Testing Laboratory of TÜV SÜD Industrie Service GmbH

Report regarding the Final Assessment in accordance with ISO 11439:2013

Customer:	Anhui Clean Energy Co., Ltd.	Order No.:	7482049264
		Test / Inspection No.	225917
Equipment	CNG cylinder:	Place of	No.17, Guanyin Road of Economic
Type:	CNG1-406-100-20B(34CrMo4)	manufacturer.:	Development Zone of TaihuCounty, Anqing, Anhui Province,P. R. China

Test / Inspection Specification: ISO 11439:2013, Module / Type approval: CNG-1
Applied Technical Rule: --

Marking / Labeling of the pressure equipment:

Marking on: Gas cylinder

- Manufacturer's identification: **LD**
- Year of manufacture: 2015/10
- Type / Series / Batch number, Manufacturing / Serial number:
No.S015001~No.S015050

Intended Use: filling CNG cylinders used in automotive vehicles

Other identification information:

Chamber Designation:	CNG1-406-100-20B
Max. allowable pressure (bar/15°C):	200
Min./Max. allowable temperature (°C):	- 40~ + 65
Test pressure (bar)	300
Outside diameter (mm)	406

~~Design examination and certification / Type-examination / EC-Design-examination*)~~ on: 2015-07-01~2015-10-18 by: **TÜV SÜD Industrie Service GmbH**

Drawing No.: LD-QP1.TY-E-01 Rev.0 dated on 2015-05-28

The documents were presented and are valid.

Final Inspection / Examination of a Component / in accordance with ISO 11439:2013 on: 2015-07-01~2015-10-18 by the approved Testing Laboratory of TÜV SÜD Industrie Service GmbH

Inspections and examinations carried out, and results derived from it:

- Non-destructive Tests and Production Tests: Document No.: **see checklist**. The reports on the Production Tests and Non-destructive Tests were presented. The tests were carried out by: Anhui Clean Energy Co., Ltd. Test results comply with the requirements.
- The calibration certificates / labels showed that the inspection / measuring / test equipment used for the inspections was calibrated.
- The material certificates for the main pressure-bearing parts were presented and comply with the requirements.
- Evidence for the required qualifications of employed joining personnel and NDT-personnel was presented and is valid.
- ~~Evidence for the required qualification of joining procedures was presented and is valid.~~
- Visual inspection and dimensional checks were performed randomly without objections.
- Implemented procedures to ensure traceability were reviewed and are checked on an on-going basis in connection with inspections. There were no objections.

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Final Inspection in accordance with ISO 11439:2013 on : 2015-07-01~2015-10-18 (continued):

- Deviations, amendments or restrictions against the test / inspection specification: without
- Non-standardized test processes and procedures that were used: without
- Other documentation submitted by the manufacturer (Document No.): see the **attachment-checklist**

Proof (Pressure) Test in accordance with ISO 11439:2013 on 2015-08-05 performed by: Anhui Clean Energy Co., Ltd. and witnessed by TÜV inspector.

Chamber Designation:	CNG1-406-100-20B
Test Pressure (bar):	300
Pressure Test Medium:	Water

Conclusion: Final Inspection was performed in compliance with the requirements of ISO 11439:2013 and relevant drawings. The performance of the inspections / tests and their results showed no deviations.

Remarks:

- The test results cover only the tested equipment / component described here.
- A partial duplication of the test results without the written consent of the TÜV is not permitted.

Additional Notes:

- The pressure equipment was tested and inspected without constituent parts. Therefore, the testing and inspection of the constituent parts is still necessary.
- The pressure equipment is subject to inspections prior to putting into service, and to periodic in-service inspections in accordance with the applicable rules and regulations.

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For the Testing Laboratory:

place: **Shanghai**, date: **2015-10-20**

.....
(Name, Organisation unit)



Checklist – Final assessment

Manufacturer: Anhui Clean Energy Co., Ltd.

- Serial No. S015001~No.S015050, Ref.Test report No.: 225917

Tests and inspections and results derived thereof:

		Presented - Satisfac- tory	Not appli- cable	Document 1)	Remarks	Enclo- sure 1)
1	As built-drawing complies in its essentials with approved DWG	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Dwg.LD-QP1.TY-E-01 Rev.0 dated on 2015-05-28		<input checked="" type="checkbox"/>
2	Material certificates	<input checked="" type="checkbox"/>	<input type="checkbox"/>	List of material used Doc-Nr.:		<input checked="" type="checkbox"/>
3	Prototype/production test	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Doc-Nr.:See additional Notes. 3		<input checked="" type="checkbox"/>
4	Subcontracted parts, (incl. certificates)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Doc-Nr.: (PRD) Doc-Nr.		<input checked="" type="checkbox"/>
5	NDT-Reports: On: RT: On: cylinder shell UT: On: PT / MT: On: (Others):	<input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/>	List of report (s) Doc.-Nr.: Doc.-Nr.: LD-BD-JP-22 Doc.-Nr.: -- Doc.-Nr.:		<input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
6	Heat treatment (after forming/PWHT):	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Protocol Doc.-Nr.: --		<input checked="" type="checkbox"/>
7	Documents on repair and similar/related action:	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Protocol No:		<input type="checkbox"/>
8	Dimensions examination	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Main Dimensions Doc.-Nr.: LD-BD-JP-23		<input checked="" type="checkbox"/>
9	Calibration pressure gauge Calibration Instrument 2) Calibration Instrument 2)	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Calibration certificate available on the factory		<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
10	Nameplate/Stamp marking	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Dwg.LD-QP1.TY-E-01 Rev.0 dated on 2015-05-28		<input checked="" type="checkbox"/>
11	Function/Safety of quick closing doors	<input type="checkbox"/>	<input checked="" type="checkbox"/>			<input type="checkbox"/>

*) delete if not appropriate 1) as far as required; 2) Define Type/nature of instrument



Checklist – Final assessment

Manufacturer: Anhui Clean Energy Co., Ltd.

- Serial No. S015001~No.S015050, Ref.Test report No.: 225917

		Satisfactory	N.A.	Document	Remarks	3)	
						With Manufacturer	Enclosure
12	Approval of personnel for permanent joining	<input type="checkbox"/>	<input checked="" type="checkbox"/>	List of persons, Doc.-No.		<input type="checkbox"/>	<input type="checkbox"/>
13	Approval of joining procedures	<input type="checkbox"/>	<input checked="" type="checkbox"/>	List of WPAR Doc.-Nr.		<input type="checkbox"/>	<input type="checkbox"/>
14	Traceability of materials	<input checked="" type="checkbox"/>	<input type="checkbox"/>	ISO-System	See process card	<input checked="" type="checkbox"/>	<input type="checkbox"/>
15	Approval of NDT-personnel	<input checked="" type="checkbox"/>	<input type="checkbox"/>	List of personnel Doc.-Nr.		<input type="checkbox"/>	<input checked="" type="checkbox"/>
16	Instructions for use	<input type="checkbox"/>	<input checked="" type="checkbox"/>		Sample	<input type="checkbox"/>	<input type="checkbox"/>
17	Declaration of conformity	<input type="checkbox"/>	<input checked="" type="checkbox"/>		Sample	<input type="checkbox"/>	<input type="checkbox"/>

3) Mark where appropriate

Additional Notes:

The test results cover only the tested equipment described here including CSPEI. A partial duplication of the test results without the written consent of the Testing Laboratory is not permitted.

- Those documents marked „Enclosure“ will be retained together with the test report.
- Those documents marked „With manufacturer“ will be filed separately by the manufacturer.
- Prototype/production test document: Cylinder Mechanical test report No.LD-BD-JP-24; Hardness test report no. LD-BD-JP-19; Hydraulic test report No. LD-BD-JP-25; Burst test report No.LD-BD-JP-26/27/28; cycling test report no.20150819.
- This type variant is based from approved prototype: CNG1-356-80-20B(34CrMo4)

Based on the above performed tests and inspections documents and after approval of the Certification Body, there are no objections to issue the type approval certificate.

TÜV SÜD Industrie Service GmbH

Testing Laboratory:

Location, Datum: Shanghai, 2015-10-20

Signature: Zhujun Xu

Name, Organisation: