



TEST REPORT

1. NO : CT22-077423E

2. Client

○ Name : New Energy Co., LTD

○ Address : 1436, Nakdong-daero, Sasang-gu, Busan, 46904, Rep. of KOREA

3. Date of Test : 2022.08.09 ~ 2022.09.01

4. Use of Report : Quality control

5. Test Sample : ION HEATING BOILER, Heat pump (Its products)

6. Test Method

(1) Client suggested method

7. Test Results

1) ION HEATING BOILER, Heat pump (Its products)

| Test Item(s) | Unit | Test Method | Test Results | Remark |
|--------------------|------|-------------|-------------------------------|--------|
| Energy consumption | | (1) | Please refer the next page(s) | - |

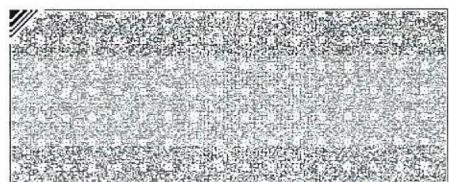
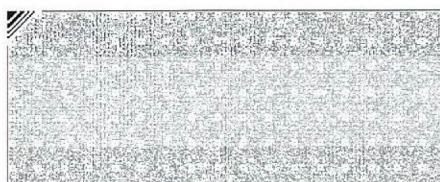
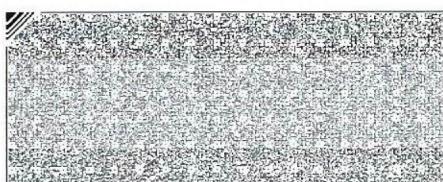
| | | | | |
|--|-----------------------------------|---------|--|----------------|
| Affirmation | Tested By Name : Son myeng hun | Son.m.h | Technical Manager Name : Kim Chang Hwan | Kim Chang Hwan |
| 1. Our report apply only to the standards or procedures identified and to the sample(s) tested unless otherwise specified. 2. The test results are not indicative of representative of the qualities of the lot from which the sample was taken or of apparently identical or similar products. 3. The results of using only a portion of this report cannot be guaranteed. 4. The authenticity of this test report can be checked on KCL website(www.kcl.re.kr) | | | | |

2022.09.01

Korea Conformity Laboratories

President Jo, Yung Tae

Result Inquiry : 595-10, Pyeongsin 1-ro, Daesan-eup, Seosan-si, Chungnam, 31900, Korea (82-43-753-3148)



TEST REPORT

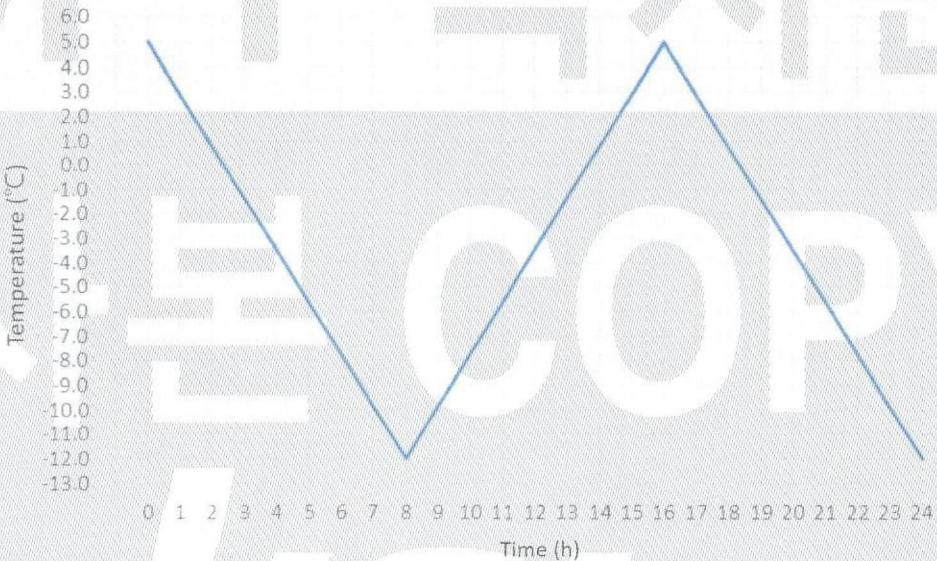
No : CT22-077423E

Annex 1. Test method

| Contests | |
|---|---|
| | <p>1. ION HEATING BOILER (Its products)</p> <p>1.1 Preparation</p> <p>1.1.1 Mock-up chamber placement</p> <p>Place the Mock-up chamber inside the medium-size climate environment chamber</p> <p>1.1.2 Indoor unit installation</p> <p>Install the indoor unit(combined use of air conditioning and heating, 4 Way) inside the Mock-up chamber</p> <p>1.1.3 Sample installation</p> <p>Install the Ion Heating Boiler inside the Mock-up Chamber and connect it to the indoor unit piping</p> <p>1.1.4 Sensor installation</p> <p>1.1.4.1 Install a thermocouple for measuring Mock-up chamber indoor temperature</p> <p>1.1.4.2 Install a wattmeter at the power supply electrical equipment of the sample for measuring electrical energy</p> <p>1.2 Start the test</p> <p>1.2.1 Set the temperature of the medium-size climate environment chamber to 5 °C, and set the indoor temperature of the Mock-up chamber to 25 °C by operating the ION HEATING BOILER</p> <p>1.2.2 When the temperature conditions specified in '1.2.1' have been established, start to control the temperature of the medium-size climate environment chamber according to the environmental condition profile and measure the Mock-up chamber indoor temperature, medium-size climate environment chamber temperature, and sample electrical energy</p> |
| Test procedure (presented by client) | <p>2. Heat pump (Its products)</p> <p>2.1 Preparation</p> <p>2.1.1 Mock-up chamber placement</p> <p>Place the Mock-up chamber inside the medium-size climate environment chamber</p> <p>2.1.2 Indoor unit installation</p> <p>Install the indoor unit(combined use of air conditioning and heating, 4 Way) inside the Mock-up chamber</p> <p>2.1.3 Sample installation</p> <p>Install it outside the Mock-up chamber. The heat storage hot water tank(60 ℥) is installed inside the Mock-up chamber and connect it to the indoor unit piping</p> <p>2.1.4 Sensor installation</p> <p>2.1.4.1 Install a thermocouple for measuring Mock-up chamber indoor temperature</p> <p>2.1.4.2 Install a wattmeter at the power supply electrical equipment of the sample for measuring electrical energy</p> <p>2.2 Start the test</p> <p>2.2.1 Set the temperature of the medium-size climate environment chamber to 5 °C, and set the indoor temperature of the Mock-up chamber to 25 °C by operating the Heat pump</p> <p>2.2.2 When the temperature conditions specified in '2.2.1' have been established, start to control the temperature of the medium-size climate environment chamber according to the environmental condition profile and measure the Mock-up chamber indoor temperature, medium-size climate environment chamber temperature, and sample electrical energy</p> |

TEST REPORT

No : CT22-077423E

| | | | | | | | | | | | |
|---------------------------------|--|------|--------------------------------|------|--|--------|--|------|---------------------|----------|------------------|
| Environmental condition profile |  | | | | | | | | | | |
| Sample | <ol style="list-style-type: none">1. ION HEATING BOILER (Its products)<ol style="list-style-type: none">a. Power consumption: (0.1 ~ 12.0) kWb. Heating ability: (4.0 ~ 12.0) kW2. Heat pump (Its products)<ol style="list-style-type: none">a. Power consumption: 4.0 kWb. Heating ability: 8.0 kW | | | | | | | | | | |
| Mock-up chamber information | <table><tr><td>Size</td><td>6.0 m(L) × 3.6 m(W) × 2.5 m(H)</td></tr><tr><td>Wall</td><td>Sandwich panel with EPS-insulated 100 mm</td></tr><tr><td>Window</td><td>Double pane glass with Low-e coating, sliding window with PVC frame</td></tr><tr><td>Door</td><td>Insulated fire door</td></tr><tr><td>Lighting</td><td>Two LED lighting</td></tr></table> | Size | 6.0 m(L) × 3.6 m(W) × 2.5 m(H) | Wall | Sandwich panel with EPS-insulated 100 mm | Window | Double pane glass with Low-e coating, sliding window with PVC frame | Door | Insulated fire door | Lighting | Two LED lighting |
| Size | 6.0 m(L) × 3.6 m(W) × 2.5 m(H) | | | | | | | | | | |
| Wall | Sandwich panel with EPS-insulated 100 mm | | | | | | | | | | |
| Window | Double pane glass with Low-e coating, sliding window with PVC frame | | | | | | | | | | |
| Door | Insulated fire door | | | | | | | | | | |
| Lighting | Two LED lighting | | | | | | | | | | |



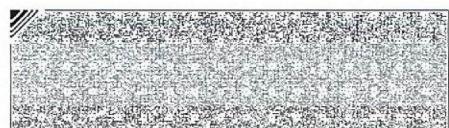
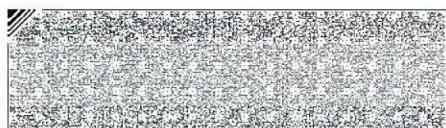
TEST REPORT

No : CT22-077423E

Annex 2. Test results

(Its products)

| | | ION HEATING BOILER | Heat pump |
|--|---------|---|---|
| Test date | | 2022. 08. 16. 16:36~ 2022. 08. 17. 16:36 | 2022. 08. 17. 20:33~ 2022. 08. 18. 20:33 |
| Climate environment Chamber Temperature (°C) | Average | -3.3 | -3.4 |
| | Maximum | 5.2 | 6.4 |
| | Minimum | -12.6 | -12.6 |
| Mock-up chamber indoor temperature (°C) | Average | 27.4 | 28.0 |
| | Maximum | 35.3 | 38.6 |
| | Minimum | 21.9 | 20.6 |
| Electrical energy (Wh) | Average | 0.336 | 0.431 |
| | Maximum | 2.279 | 0.793 |
| | Minimum | 0.001 | 0.011 |
| Energy consumption (kWh/day) | | 29.054 | 37.225 |
| ION HEATING BOILER energy consumption reduction rate (based on the Heat pump) | | 28.1 % | |



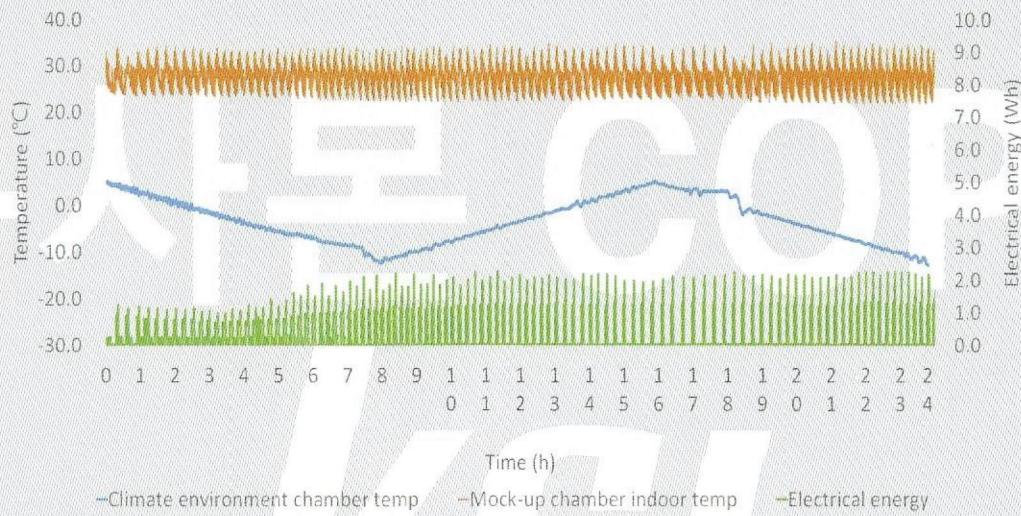
TEST REPORT

No : CT22-077423E

Annex 3. Test data graph

1. ION HEATING BOILER (Its products)

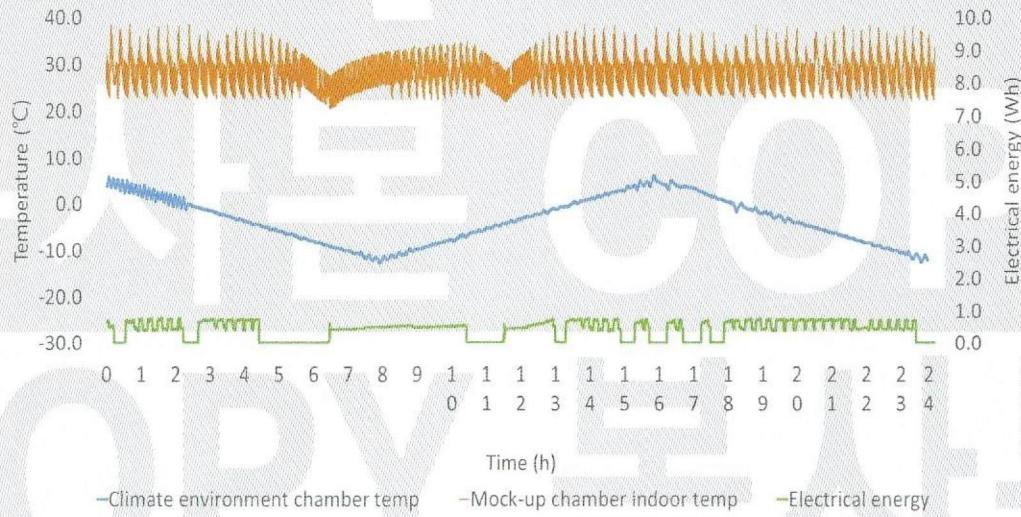
- Energy consumption: 29.1 kWh/day (Reduction rate compared with Heat pump -28.1 %)
- Graph



<Figure 1> ION HEATING BOILER test data graph

2. Heat pump (Its products)

- Energy consumption: 37.2 kWh/day (Rate of increase compared with ION HEATING BOILER +28.1 %)
- Graph



<Figure 2> Heat pump test data graph

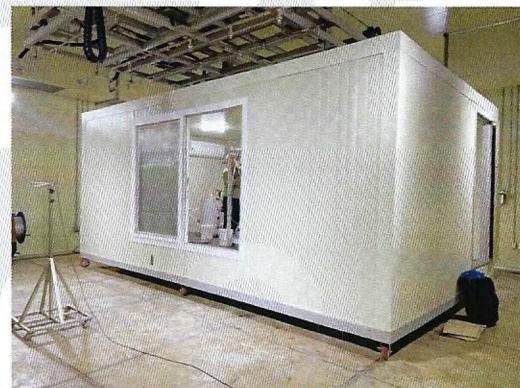
TEST REPORT

No : CT22-077423E

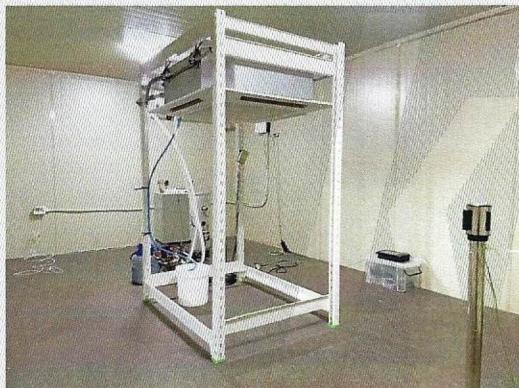
Annex 4. Picture



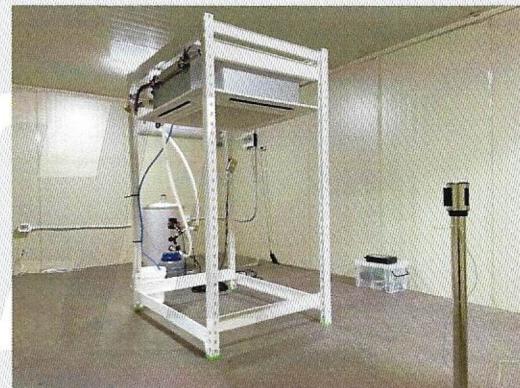
<Picture 1> Mock-up chamber - 1



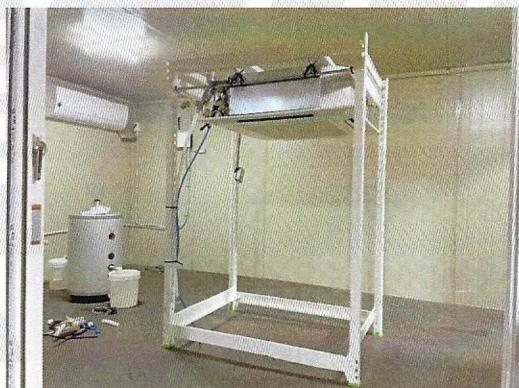
<Picture 2> Mock-up chamber - 2



<Picture 3> ION HEATING BOILER installation



<Picture 4> Heat pump installation



<Picture 5> Indoor unit - 1



<picture 6> Indoor unit -2

-----End of report-----

Page 6 of 6

양식TQP-12-01-04(1)