



Prime Water Electrodes

DURABILITY

PRIME WATER ELECTRODES Internal Durability Test Conducted

According to the analysis of the test results:

The tests were performed according to standard test methodology.

After each test was taken according to the different flow rates and comparing the analysis to a range of standards, even when not using the standard amounts, water cell life was ten years

- TEST conditions: H₂SO₄ 0.5mol / l on the electrolyte solution 40 °C, 2A / d m² is current, 240hr electrolysis
- TEST Quantity: 3 varieties [Heat 1, Heat 2 times, Brazing products]
- TEST Date: 1/10 08:00
- TEST End Date: 20.01 08:00
- TEST progress results: 240hr after all

n=	1 Pt 1 =	0.22
n=	2 Pt 1 =	0.18
n=	3 Pt 1 =	0.20
n=	4 Pt 1 =	0.19
n=	5 Pt 1 =	0.14
n=	6 Pt 1 =	0.18
n=	7 Pt 1 =	0.21
n=	8 Pt 1 =	0.20
n=	9 Pt 1 =	0.21



Mean	0.190
Standard deviation	0.024
C.O.V. (%)	12.85
Range	0.08
Number of readings	9.0
Min. reading	0.14
Max. reading	0.14
Measuring time	0.22
Operator:	20

Prime Water Electrodes Durability and Performance testing

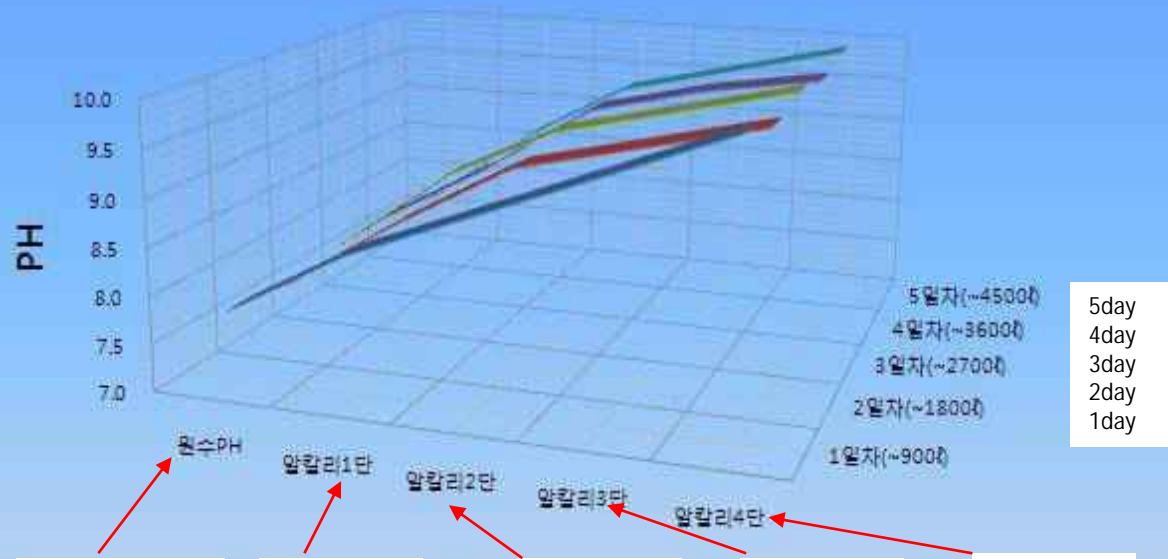
NO	Data	Descriptions	Comments
1	Product	Electrolytic Alkaline Water Generator (Prime 1301 – 13Plates)	
2	Test Period	40 days	Daily Journal kept
3	Total Discharge	36,000 liters (Four people using 10 L per day on average: about 10 years worth)	Standard - 365 day year
4	Basis of usage life	At least 10 years over	
5	Water pressure	2.5 Kg/cm ²	Water pressure from unit
6	Water flow rate	2.5 l/min	Alkaline water:1.5l/min Acidic water:1.0l/min
7	This method	Every day five samples were taken to test pH and the average was taken down.	
8	This started cleaning method	The machine was used for 30 min. to produce alkaline water after which the machine went into cleaning cycle then tested.	
9	Testing machine	pH-meter Model:HM-20P Jejo Co.: TOA(Japan)	

According to the analysis of the test results:

The tests were performed according to standard test methodology. After each test was taken according to the different flow rates and comparing the analysis to a range of standards, even when not using the standard amounts, water cell life was at least ten years over

Prime Water Electrodes Durability and Performance testing

1~5 days test (0~4,500L)

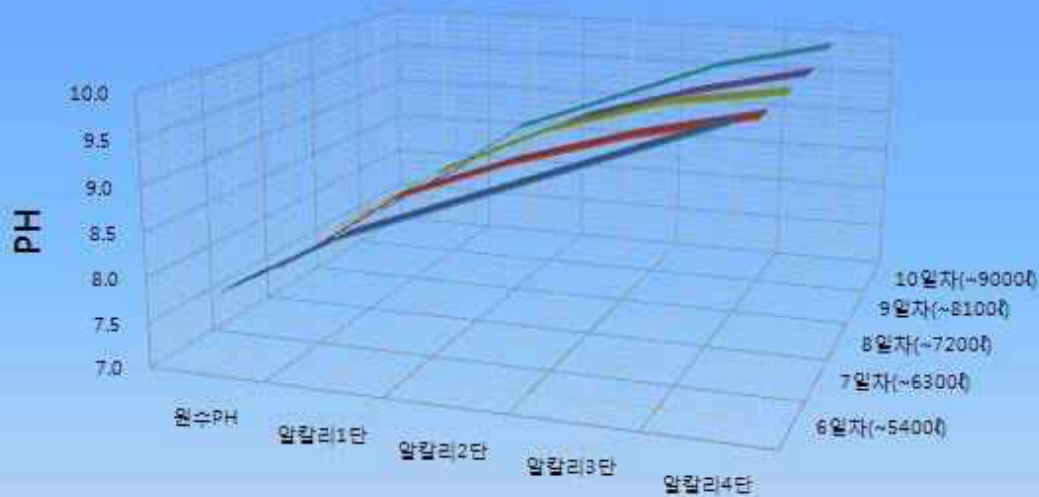


	Tap Water pH	Alkaline-1	Alkaline-2	Alkaline-3	Alkaline-4
1day	7.8	8.5	9.0	9.5	10.0
2day	7.7	8.5	9.2	9.5	9.8
3day	7.8	8.7	9.3	9.6	9.9
4day	7.8	8.5	9.3	9.6	9.8
5day	7.7	8.6	9.3	9.6	9.9

- pH측정값은 5회씩 기록하여 나온 평균값으로 기재함.

Prime Water Electrodes Durability and Performance testing

6~10 days test (4,500~9,000L)

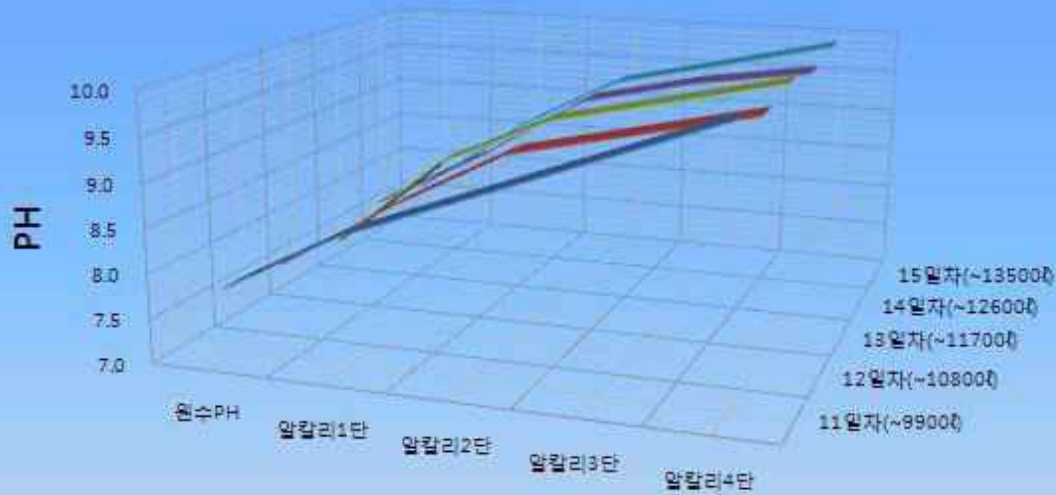


	Tap Water pH	Alkaline-1	Alkaline-2	Alkaline-3	Alkaline-4
6일자(~5400L)	7.8	8.5	9.0	9.5	10.0
7일자(~6300L)	7.7	8.6	9.1	9.5	9.8
8일자(~7200L)	7.8	8.6	9.2	9.6	9.8
9일자(~8100L)	7.7	8.5	9.1	9.5	9.8
10일자(~9000L)	7.7	8.6	9.1	9.6	9.9

- pH측정값은 5회를 실험정하여 나온 평균값으로 기재함.

Prime Water Electrodes Durability and Performance testing

11~15 days test (9,000~13,500L)

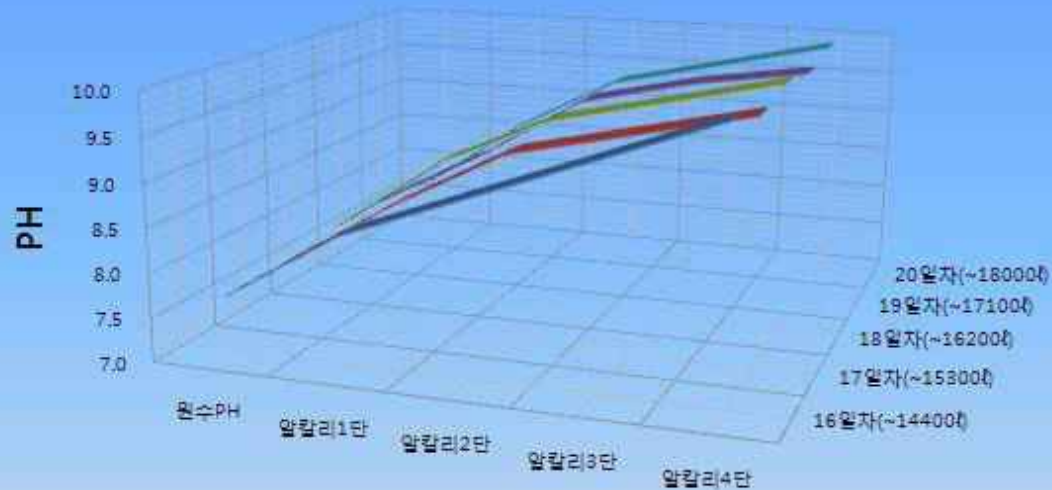


	Tap Water pH	Alkaline-1	Alkaline-2	Alkaline-3	Alkaline-4
11일자(~9900L)	7.8	8.5	9.0	9.5	10.0
12일자(~10800L)	7.7	8.5	9.2	9.5	9.8
13일자(~11700L)	7.6	8.7	9.3	9.6	9.9
14일자(~12600L)	7.8	8.5	9.3	9.6	9.8
15일자(~13500L)	7.7	8.6	9.3	9.6	9.9

- pH측정값은 5회를 측정하여 나온 평균값으로 기재함.

Prime Water Electrodes Durability and Performance testing

16~20 days test (13,500~18,000L)

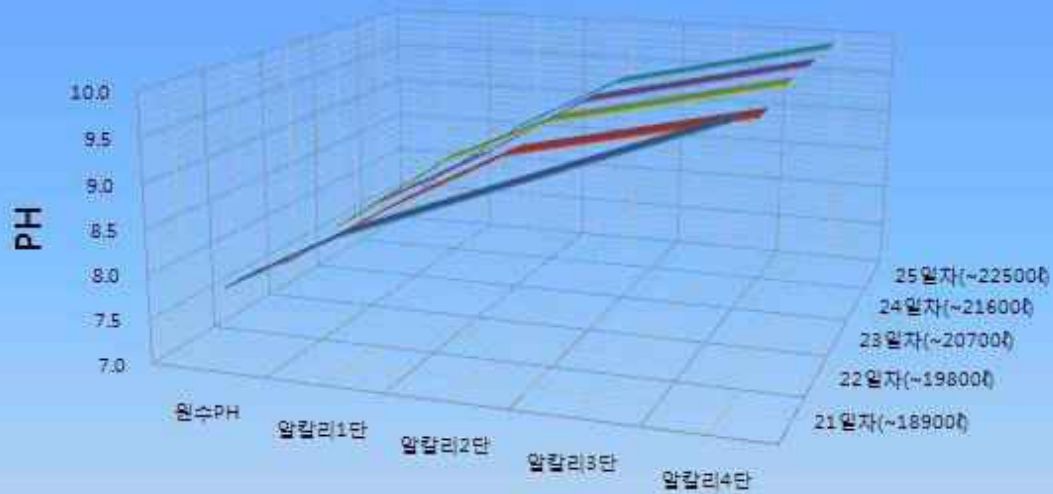


	Tap Water pH	Alkaline-1	Alkaline-2	Alkaline-3	Alkaline-4
16일자(~14400L)	7.7	8.5	9.0	9.5	10.0
17일자(~15300L)	7.7	8.5	9.2	9.5	9.8
18일자(~16200L)	7.8	8.7	9.3	9.6	9.9
19일자(~17100L)	7.8	8.5	9.3	9.6	9.8
20일자(~18000L)	7.7	8.6	9.3	9.6	9.9

- pH측정값은 5회를 실험정하여 나온 평균값으로 기재함.

Prime Water Electrodes Durability and Performance testing

21~25 days test (18,000~22,500L)

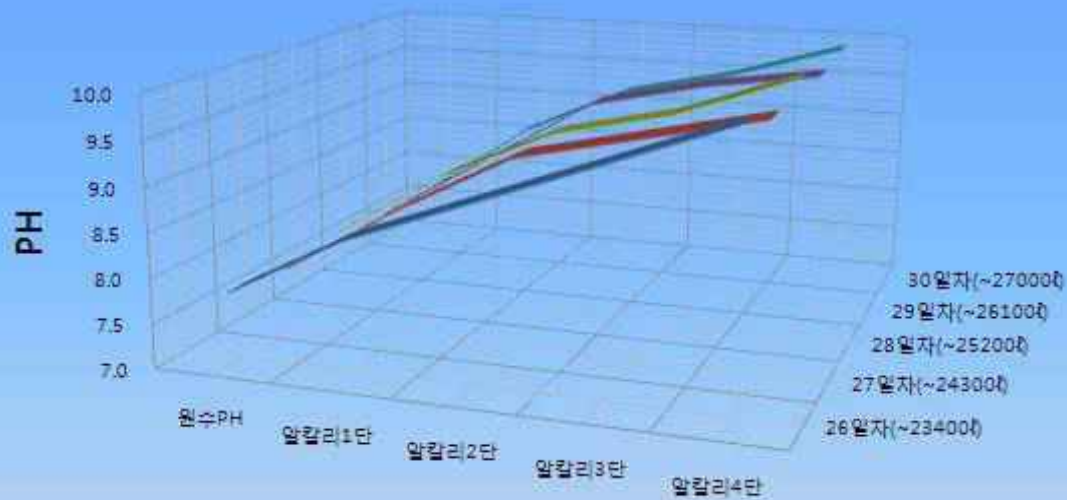


	Tap Water pH	Alkaline-1	Alkaline-2	Alkaline-3	Alkaline-4
21일자(~18900ℓ)	7.8	8.5	9.0	9.5	10.0
22일자(~19800ℓ)	7.7	8.5	9.2	9.5	9.8
23일자(~20700ℓ)	7.8	8.7	9.3	9.6	9.9
24일자(~21600ℓ)	7.8	8.5	9.3	9.6	9.9
25일자(~22500ℓ)	7.7	8.6	9.3	9.6	9.9

- pH측정값은 5회를 연속정화의 나온 평균값으로 기재함.

Prime Water Electrodes Durability and Performance testing

26~30 days test (22,500~27,000L)

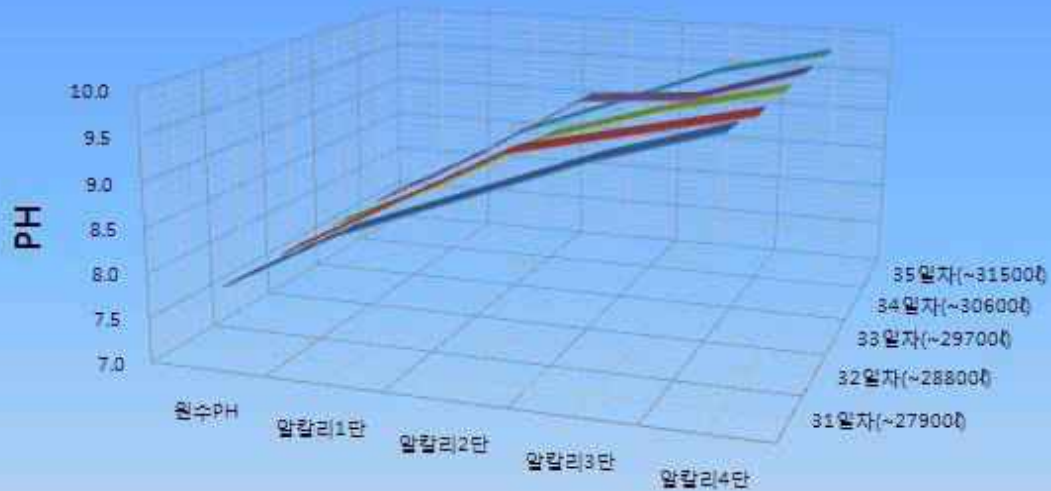


	Tap Water pH	Alkaline-1	Alkaline-2	Alkaline-3	Alkaline-4
26일자(~23400ℓ)	7.8	8.5	9.0	9.5	10.0
27일자(~24300ℓ)	7.7	8.5	9.2	9.5	9.8
28일자(~25200ℓ)	7.8	8.6	9.2	9.5	9.98
29일자(~26100ℓ)	7.7	8.5	9.3	9.6	9.8
30일자(~27000ℓ)	7.7	8.6	9.2	9.5	9.9

- pH측정값은 5회를 실측정하여 나온 평균값으로 기재함.

Prime Water Electrodes Durability and Performance testing

31~35 days test (27,900~31,500L)

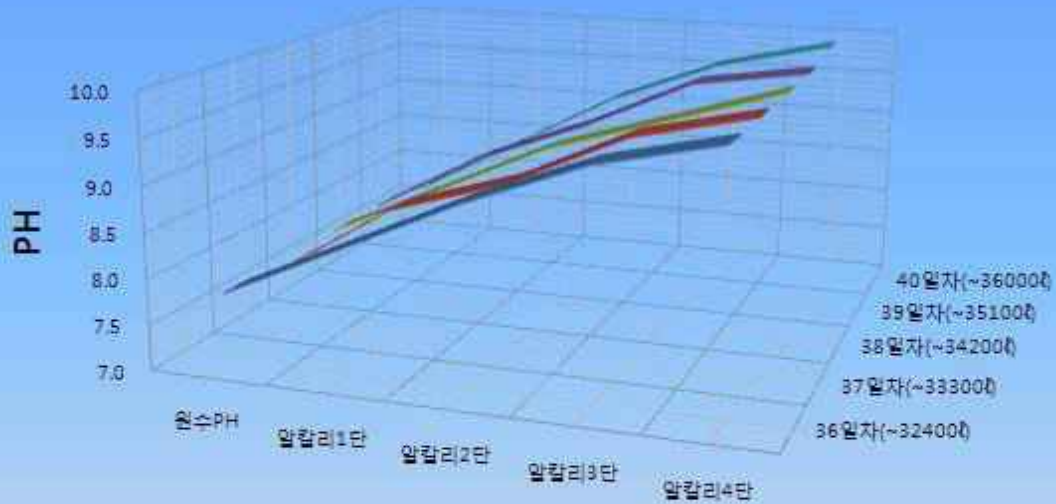


	Tap Water pH	Alkaline-1	Alkaline-2	Alkaline-3	Alkaline-4
31일자(~27900L)	7.8	8.5	9.0	9.5	9.9
32일자(~28800L)	7.8	8.5	9.2	9.5	9.8
33일자(~29700L)	7.8	8.4	9.1	9.5	9.8
34일자(~30600L)	7.8	8.5	9.3	9.4	9.8
35일자(~31500L)	7.7	8.5	9.0	9.5	9.8

- pH측정값은 5회를 실측정하여 나온 평균값으로 기재함.

Prime Water Electrodes Durability and Performance testing

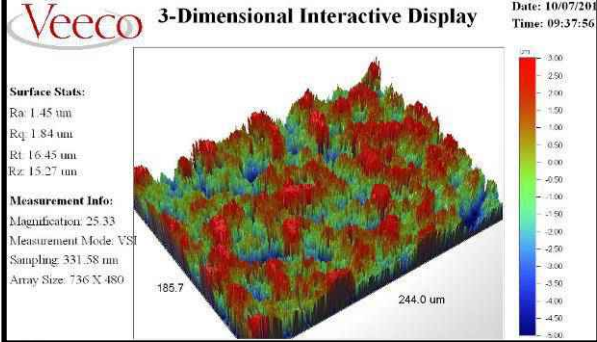
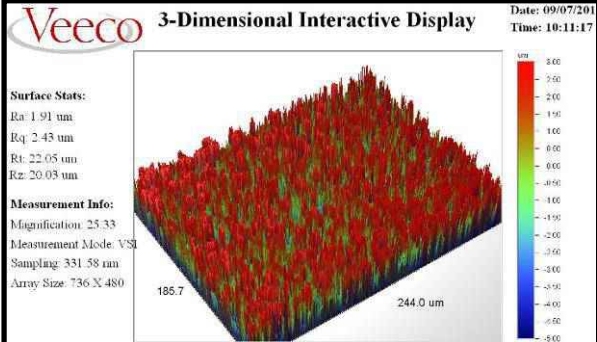
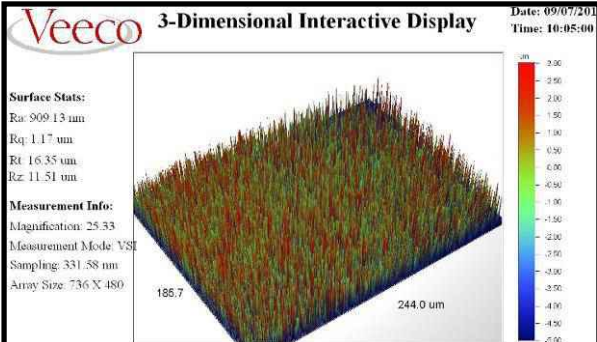
36~40 days test (31,500~36,000L)



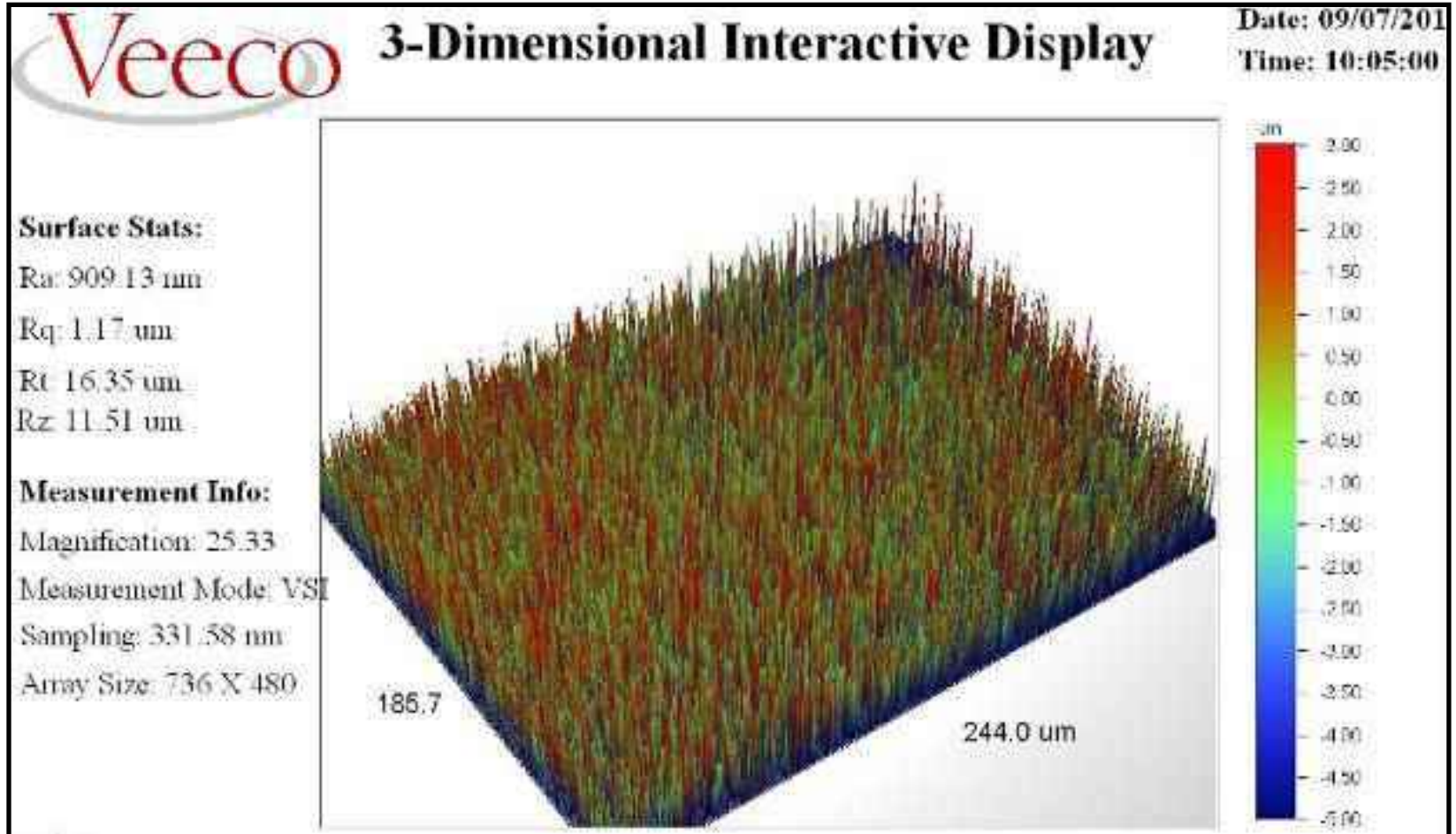
	Tap Water pH	Alkaline-1	Alkaline-2	Alkaline-3	Alkaline-4
36일자(~32400)	7.8	8.4	9.0	9.5	9.8
37일자(~33300)	7.7	8.5	8.9	9.5	9.8
38일자(~34200)	7.8	8.4	9.0	9.4	9.8
39일자(~35100)	7.8	8.5	9.0	9.6	9.8
40일자(~36000)	7.7	8.4	9.1	9.6	9.9

- pH측정값은 5회를 측정하여, 나온 평균값으로 기재함.

Prime Water Electrodes Durability and Performance testing

Company	3D Surface roughness measure	Result
<p style="text-align: center;">CHINA PLATES</p>	 <p>Veeco 3-Dimensional Interactive Display Date: 10/07/201 Time: 09:37:56</p> <p>Surface Stats: Ra: 1.45 μm Rq: 1.84 μm Rt: 16.45 μm Rz: 15.27 μm</p> <p>Measurement Info: Magnification: 25.33 Measurement Mode: VSI Sampling: 331.58 μm Array Size: 736 X 480</p>	<p style="text-align: center;">Surface roughness : rough</p>
<p style="text-align: center;">KOREA "A" COMPANY PLATES</p>	 <p>Veeco 3-Dimensional Interactive Display Date: 09/07/201 Time: 10:11:17</p> <p>Surface Stats: Ra: 1.91 μm Rq: 2.43 μm Rt: 22.05 μm Rz: 20.03 μm</p> <p>Measurement Info: Magnification: 25.33 Measurement Mode: VSI Sampling: 331.58 μm Array Size: 736 X 480</p>	<p style="text-align: center;">Surface roughness : rough</p>
<p style="text-align: center;">PRIME WATER PLATES</p>	 <p>Veeco 3-Dimensional Interactive Display Date: 09/07/201 Time: 10:05:00</p> <p>Surface Stats: Ra: 0.0913 μm Rq: 1.17 μm Rt: 16.35 μm Rz: 11.51 μm</p> <p>Measurement Info: Magnification: 25.33 Measurement Mode: VSI Sampling: 331.58 μm Array Size: 736 X 480</p>	<p style="text-align: center;">Surface roughness :Good surface</p>

Prime Water Electrodes Surface



Platinum Plating Process



Press

Titanium shape processing in the press

Electrode machining

Electrode cutting and rolling process

Washing

Removal of oil and grease from media and cut pieces

Spot Weding

Welding of the metal terminal to the electrode.

Sanding

Sand blasting process to improve plating adhesion

Racking

Titanium electrodes loaded onto plating jig



Skimmer

Removal of any surface grease or oil



Etching

Removal of oxidation from titanium surface



Activator

Surface of titanium activated to improve plating adhesion



Platinum Plating

Titanium plated with platinum



Drying

Water is removed from the surface of the platinum



Heat Treatment

Heat treated in furnace to strengthen adhesion of platinum
To titanium.



Shipping Inspection

Reliability and appearance inspection /
Certificate of Inspection issued



Packing/Shipping