



RenoNix PVD Magnet Profile

2020.09.03



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Company Compendium



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PVD Magnet OPM NEW & Overhaul



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RenoNix Major Customer

1-1. Company Profile

Established 04th November 2010

Business

Semiconductor tools marketing, Refurbishment, Installation, Relocation, Conversion & Modification, Parts outsourcing, Technical Service, On call service & Technical Development & manufacturing

Capital 330K USD

Employee 16 Persons

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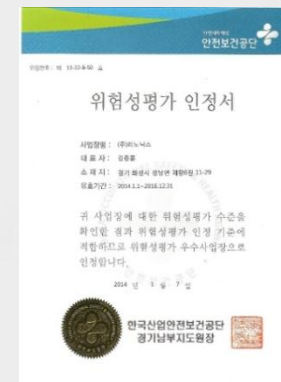
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QAIC/KR/4291-B



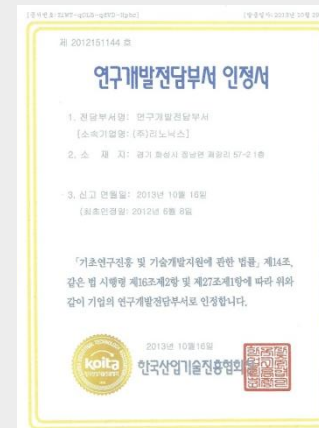
✓ISO14001
QAIC/KR/4292-B



✓Enterprise Risk Management
13-22-B-50



✓Research Institute
2012151144



✓Clean Industry
67,684



1-2. Project Record (The Most Recent 3 Years)

| Customer | Project Name | Brief Description | Q'TY | Year |
|-----------|---|------------------------|------|------|
| Korea | DxZ PE SiH4 System Controller | Relocation | 1 | 2019 |
| Korea | 4 CxZ Giga Fill Process Conversion From PSG to BPSG | Conversion | 1 | 2019 |
| Korea | Endura PCII Chamber Addition | Addition | 1 | 2019 |
| Korea | 4 WxZ Chamber Dual Divert | Conversion | 1 | 2019 |
| Korea | HDP SPEED USG 3 Chamber | Relocation | 1 | 2019 |
| Czech | Endura Back Metal 4 Chamber | Refurbish & Set-up | 1 | 2019 |
| Korea | CxZ Chamber From Bottom RPS to Top RPS | Conversion | 1 | 2019 |
| Singapore | Endura System From 6" to 8" | Conversion | 1 | 2019 |
| Korea | CxZ Chamber From Bottom RPS to Top RPS | Conversion | 1 | 2019 |
| Korea | Endura Chamber From HTHU Heater to STF 4F Heater | Conversion | 1 | 2018 |
| Korea | 4 DxZ PE TEOS Chamber | Refurbish & Set-up | 1 | 2018 |
| USA | 2 WxZ Chamber, 2 WxP Chamber | Refurbish & Set-up | 1 | 2018 |
| Korea | 4 WxZ Chamber Dual Divert | Conversion | 1 | 2018 |
| Korea | DLH PE SiH4 3 Chamber | Relocation | 1 | 2018 |
| Korea | AMAT Centura TPCC DPN | Refurbishment/Start up | 1 | 2017 |
| Singapore | AMAT Endura5500 Ai Cu | Refurbishment/Start up | 1 | 2017 |
| USA | AMAT Centura | Refurbishment | 1 | 2017 |
| Korea | AMAT Producer-S 200mm | Refurbishment | 1 | 2017 |
| Korea | AMAT Endura5500 MOCVD | Retrofit & Start up | 1 | 2017 |
| Korea | AMAT Centura WCVD | Refurbishment/Start up | 1 | 2017 |

1-3. Project Record (The Most Recent 9 Years)

Summary list for project

| Project Name | Endura | Centura | Producer | LAM / Novellus | TEL SCCM | DNS | Other | TOTAL |
|----------------------------|--------|---------|----------|----------------|------------|-----|-------|-------|
| Refurbishment/ Start up | 18 | 8 | 2 | 2 | 1 | 1 | 5 | 37 |
| Retrofit / Start up | 22 | 10 | - | - | - | - | 3 | 35 |
| Relocation/ Start up | 1 | 12 | - | 1 | - | - | 4 | 18 |
| Refurbishment | 6 | 2 | 2 | - | 1(Upgrade) | - | 3 | 14 |
| TOTAL (104) | 47 | 32 | 4 | 3 | 2 | 1 | 15 | 104 |

Summary list for country

| Country | Q'TY | Rate |
|-----------|------|------|
| Korea | 54 | 52% |
| China | 18 | 17% |
| Singapore | 18 | 17% |
| Taiwan | 8 | 8% |
| Other | 6 | 6% |
| TOTAL | 104 | 100% |

1-4. Business Detail

Customer Satisfaction

Equipment Refurbish

- ✓ AMAT PVD / CVD / ETCH, LAM / Novellus ETCH / CVD, TEL ETCH / TRACK, DNS Scrubber, etc.
- System Refurbishment, Modification, Relocation, Upgrade & Conversion Start-up.

2nd / OPM NEW Overhaul Items

- ✓ ESC 2nd NEW (150mm / 200mm)
- ✓ Shower Head OPM NEW (200mm / 300mm)
- ✓ AMAT Ceramic Heater 2nd NEW
- ✓ Novellus Heater Block 2nd NEW (150mm / 200mm)
- ✓ WJ 999 / 1000 / 1500 EQUIP Parts 2nd NEW

Spare Parts

- ✓ OEM / OPM / 2nd New Parts
- ✓ OPM : LAM Electrode / Stud Socket / ESC / ALN Heater / Gasket etc.
- ✓ 2nd New : Ceramic Pin.
- ✓ Provide process kits for PVD, CVD, ETCH process chamber.
- ✓ AMAT / LAM / NOVELLUS DNS / TEL etc. system part.

2. AMAT Magnet OPM NEW & Overhaul

➤ Magnet OPM NEW & Overhaul Items.

PVD Process issue caused by Magnet problem.



- ◆ Unstable uniformity after sputtering on Endura PVD
- ◆ Sputtering rate low by Magnet force low
- ◆ Irregular sputtering by unstable Magnet force
- ◆ Unstable DC Power by corroded Magnet
- ◆ Micro Arcing by corroded Magnet

Magnet is very important on Endura PVD Process. So User must be managed the Magnet force

But it will not be easy.

Renonix can provide OPM New Magnet & Magnet refurbishment service that has been qualified by Foundries.

2. AMAT Magnet OPM NEW & Overhaul

➤ Magnet Overhaul Inspection Item & OPM NEW List.

Overhaul Check Item & Work Scope

| Inspection Item | Work scope |
|----------------------------------|----------------------|
| Magnet Chuck | Replacement or clean |
| Middle Guide | Replacement or clean |
| Magnet Parts | Replacement or clean |
| Sensor Magnet | Replacement or clean |
| Magnet Weight | Replacement or clean |
| Magnet Base | Replacement or clean |
| Magnet Clamp | Replacement or clean |
| Magnet Holder | Replacement or clean |
| Magnet Ass`y Corrosion Degree | Replacement or clean |

Magnet OPM New & Overhaul List (150/200mm List)

| P/N | Description |
|------------|--|
| 0010-21810 | MAGNET Ass`y, G12+, Encapsulated, Dura source |
| 0010-20328 | 8" AL MAGNET Ass`y Dura source |
| 0010-21844 | MAGNET Ass`y Dura source TTN Encapsulated G Type |
| 0010-20225 | MAGNET Ass`y 'A'13.0 AL Ass`y |
| 0010-20258 | Ti A-Type MAGNET |
| 0010-21616 | MAGNET ASSY P4 (R) |
| 0010-20221 | MAGNET,REM 11.03 TI ASY (R) |
| 0010-20224 | MAGNET -A- 11.3 AL Ass`y |
| 0010-21403 | Endura Source TTN Minus G Type |
| 0010-01198 | G-3 MAGNET Ass`y |
| 0010-12864 | MAGNET, SIP-Encore CU, LP-8.8, 8" |
| 0010-20819 | MAGNET Ass`y 13" |
| 0010-20818 | MAGNET Ass`y A-Type 13" |
| 0010-20389 | MAGNET Ass`y Dura source 11.3 |
| 0010-21465 | MAGNET Ass`y TI Dura Source 11.3 |
| 0010-20223 | MAGNET REM 11.3, TIN Ass`y |
| 0010-20222 | MAGNET, REM 11.3" TIW |
| 0010-04065 | MAGNET Ass`y, SIP-TTN, REV2, 8" |
| 0010-21206 | MAGNET Ass`y, Dura source 13" JMW1 |
| 0010-22043 | ASSY PVD MAGNET (R) |

2. AMAT Magnet OPM NEW & Overhaul

➤ Magnet OPM NEW List.

Magnet OPM New & Overhaul List (150/200mm List)

| P/N | Description |
|------------|--------------------------------|
| 0010-26441 | MAGNET ASSY DURA SOURCE 13 AL |
| 0010-05940 | ASSY, RH-3 MAGNET RP (R) |
| 0010-21676 | RH-2 MAGNET Ass'y |
| 0010-20768 | G-12, 8" MAGNET Ass'y |
| 0010-21940 | MAGNET Ass'y, G-3 Encapsulated |

Magnet OPM New & Overhaul List (300mm List)

| P/N | Description |
|------------|--------------------------------|
| 0010-03487 | MAGNET, TIN/TTN ASSY 300mm PVD |
| 0010-23840 | 300mm Magnet Ass'y |
| 0010-03485 | 300mm PVD Source Magnet Ass'y |
| 0010-33888 | 300mm AMAT Magnet Assy |

2. AMAT Magnet OPM NEW & Overhaul

➤ Magnet Overhaul Report & OPM NEW

Confidential 2015년도

Magnet Assy Report

Incoming Report
 Full Overhaul Report
 Certificate of Compliance (OPM New)

The Part Number **0010-21810** (S/N : 007178)

입고 일자 2015년 03월 15일
 입사 리포트 발행 2015년 03월 16일


RENONIX

| 5. 입고 기본 검사 내용 | | 6. 내부 검토 용도 | |
|----------------|------------------|-------------|--|
| 제품 종류 | OEM Used 제품 | Overhaul ID | |
| Wafer Size | 200mm | 용이 여부 | |
| 마그넷 종류 | Neodymium | 당량 확인 | |
| 수리 가능성 | Full Overhaul 대상 | | |

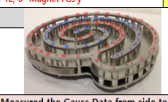
| 7. Check List | | | | |
|-----------------|----------------------------|----------------------------|-----------------|------------------------------|
| Inspect Process | Check Item | Judge | Working Scope | Remark |
| Magnet Chuck | P/N Etching | Pass | Magnet Chuck 교체 | Center 및 외부 부위 일련도 일치여 확인 |
| | 결함/Chipping 및 칩스 여부 | 안정/목인/Chipping 및 Scratches | | |
| 영구 Guide | 결함/칩스 여부 | Pass | | |
| Magnet Parts | Magnets Arrangement(일치 여부) | Pass | 마그넷 전할 교체 | |
| | Magnets 가측 검사 | 자력이 전방적으로 10% 정도 낮음 | | Center 부위는 자력이 현저하게 떨어짐(이동부) |
| Sensor Magnet | - | 부식 심하고 자력 떨어짐 | 센서 마그넷 교체 | 교체 필요 |
| Magnet Weight | - | Pass | 세정 | 중도 이상의 세정 작업 필요 |
| Magnet Base | - | Pass | 세정 | 부식 없음 |
| Magnet Clamp | - | Pass | 세정 | 환원 이상 교체용 제품 사용으로 필요 |
| Magnet holder | - | Pass | 세정 | 환원 이상 교체용 제품 사용으로 필요 |
| Magnet Assy 부식도 | - | 전방적으로 부식도 매우 심함 | - | 외부 부식이 Center 부위까지 확산 |

8. Extra Comments

1. NDT가이드 부식도록 부식이 상당함
 ** Magnet Assy 외곽과 중심 원소확인 자리로 부이 Center로 불려서 Magnet Chuck이 위로 올라 올림
 ** 불려 올린 Magnet Chuck이 자기 용출용 Target과 마그넷이 닿음 Magnet Chuck이 Scratches 발생됨
 ** Magnet Chuck과 Target의 마그넷을 일치시켜 Center 부이 고의 자력이 현저하게 떨어지는 현상이 됨
 2. 마그넷 위치가 정확하므로 10% 이상 낮아짐 (Center 부이 현저함)
 ** 전할 마그넷 교체 작업이 필요하며, 부식이 현저한 제품들은 Sensor Magnet 교체도 필요함
 3. 결함
 ** 전방적인 자력 교체 및 Magnet Chuck 교체 예정
 ** 부식된 부 제거용 환원도 이상의 세정 작업 예정
 ** 부식 혹은 부이 손 제거 용도 모두 교체 예정
 ** 본 제품은 Full Overhaul 대상 제품임



| | | | | |
|----------------|----------------|------------------------|------------------------|------------|
| RENONIX | Renonix | Incoming Report | 검사일 2015년 03월 15일 | Authorized |
| Description | | G-12, 8" Magnet Assy | 담당엔지니어 Kevin Lee | 승인서 서명 |
| | | | 고객사 풀루미티크 | |
| | | | 판정 기준 Full Overhaul 대상 | |

| | |
|---------------------------|---|
| 1. General Information | 2. Photos |
| P/N # 0010-21810 |  |
| S/N # 007178 | |
| 마그넷 종류 Neodymium | |
| Judge Full Overhaul 가능 대상 | |

| 3. Gauss Data(Original Data) (Magnet North & South Pole) Measured the Gauss Data from side to side with a hole as the center | | | | | | | | | | | | | | | | | | | | | | | |
|--|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|-----|-----|--|
| N | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | |
| | 693 | 721 | 857 | 929 | 876 | 870 | 870 | 877 | 883 | 925 | 851 | 856 | 832 | 912 | 822 | 771 | 775 | 773 | 762 | 765 | 777 | 834 | |
| | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | 41 | 42 | 43 | 44 | |
| | 820 | 811 | 790 | 763 | 767 | 742 | 745 | 711 | 688 | 776 | 1170 | 968 | 968 | 968 | 1054 | 1074 | 1074 | 1074 | 1000 | 1080 | 990 | 922 | |
| | 45 | 46 | 47 | 48 | 49 | 50 | | | | | | | | | | | | | | | | | |
| | 1077 | 1022 | 1055 | 900 | 1444 | 1401 | | | | | | | | | | | | | | | | | |
| S | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | |
| | 1544 | 1127 | 1079 | 1089 | 1099 | 1119 | 1120 | 1186 | 1168 | 1122 | 1122 | 1185 | 1165 | 1143 | 1149 | 1159 | 1185 | 1153 | 1190 | 1002 | 981 | 859 | |
| | 23 | 24 | 25 | 26 | 27 | 28 | 29 | | | | | | | | | | | | | | | | |
| | 825 | 821 | 798 | 699 | 698 | 688 | 7694 | 1645 | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | |

| 4. Gauss Data(Incoming Data) Each Gauss Data should be within range of Max. Min. ±50 (Tolerance Total : Max. Min. ±100) | | | | | | | | | | | | | | | | | | | | | | | |
|---|------|------|------|------|------|------|------|------|------|------|------|------|------|------|-----|-----|------|-----|------|-----|-----|-----|--|
| N | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | |
| | 893 | 674 | 848 | 766 | 735 | 744 | 745 | 747 | 738 | 759 | 710 | 707 | 704 | 743 | 663 | 639 | 635 | 639 | 631 | 634 | 635 | 701 | |
| | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | 41 | 42 | 43 | 44 | |
| | 727 | 688 | 660 | 655 | 642 | 640 | 637 | 624 | 571 | 716 | 932 | 874 | 900 | 894 | 900 | 906 | 907 | 921 | 924 | 962 | 901 | 921 | |
| | 45 | 46 | 47 | 48 | 49 | 50 | | | | | | | | | | | | | | | | | |
| | 921 | 892 | 899 | 680 | 920 | 987 | | | | | | | | | | | | | | | | | |
| S | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | |
| | 1452 | 1070 | 1060 | 1045 | 1036 | 1034 | 1027 | 1036 | 1034 | 1028 | 1055 | 1096 | 1011 | 1087 | 994 | 976 | 1021 | 992 | 1056 | 891 | 830 | 803 | |
| | 23 | 24 | 25 | 26 | 27 | 28 | 29 | | | | | | | | | | | | | | | | |
| | 735 | 704 | 677 | 693 | 580 | 1266 | 1399 | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | |



RenoNix Major Customer

ON Semiconductor®



Dongbu HiTek
Agricultural Business

SILTERRA

UMC-SG

SSMC



em microelectronic

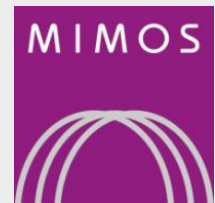


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 **长电科技**
JCET CHANGJIANG ELEC. TECH.

HEJIAN



Contact Point

**We're Capable of Most of service for PVD,CVD, ETCH areas.
If you have any inquiry or interest , please feel free to contact us.**



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