Part II. Certification

To establish to the withholding agent that you are a U.S. person, or resident alien, sign Form W-9. You may be requested to sign by the withholding agent even if items 1, 4, or 5 below indicate otherwise.

For a joint account, only the person whose TIN is shown in Part I should sign (when required). In the case of a disregarded entity, the person identified on line 1 must sign. Exempt payees, see *Exempt payee code* earlier.

Signature requirements. Complete the certification as indicated in items 1 through 5 below.

1. Interest, dividend, and barter exchange accounts opened before 1984 and broker accounts considered active during 1983. You must give your correct TIN, but you do not have to sign the certification.

2. Interest, dividend, broker, and barter exchange accounts opened after 1983 and broker accounts considered inactive during 1983. You must sign the certification or backup withholding will apply. If you are subject to backup withholding and you are merely providing your correct TIN to the requester, you must cross out item 2 in the certification before signing the form.

3. Real estate transactions. You must sign the certification. You may cross out item 2 of the certification.

4. Other payments. You must give your correct TIN, but you do not have to sign the certification unless you have been notified that you have previously given an incorrect TIN. "Other payments" include payments made in the course of the requester's trade or business for rents, royalties, goods (other than bills for merchandise), medical and health care services (including payments to corporations), payments to a nonemployee for services, payments made in settlement of payment card and third party network transactions, payments to certain fishing boat crew members and fishermen, and gross proceeds paid to attorneys (including payments to corporations).

5. Mortgage interest paid by you, acquisition or abandonment of secured property, cancellation of debt, qualified tuition program payments (under section 529), IRA, Coverdell ESA, Archer MSA or HSA contributions or distributions, and pension distributions. You must give your correct TIN, but you do not have to sign the certification.

What Name and Number To Give the Requester

For this type of account:	Give name and SSN of:
1. Individual	The individual
2. Two or more individuals (joint account)	The actual owner of the account or, if combined funds, the first individual on the account[1]
3. Custodian account of a minor (Uniform Gift to Minors Act)	The minor[2]
4. a. The usual revocable savings trust (grantor is also trustee)	The grantor-trustee[1]
b. So-called trust account that is not a legal or valid trust under state law	The actual owner[1]
5. Sole proprietorship or disregarded entity owned by an individual	The owner[3]
6. Grantor trust filing under Optional Form 1099 Filing Method 1 (see Regulations section 1.671-4(b)(2)(i)(A))	The grantor*
For this type of account:	**Give name and EIN of:**
7. Disregarded entity not owned by an individual	The owner
8. A valid trust, estate, or pension trust	Legal entity[4]
9. Corporation or LLC electing corporate status on Form 8832 or Form 2553	The corporation
10. Association, club, religious, charitable, educational, or other tax-exempt organization	The organization
11. Partnership or multi-member LLC	The partnership
12. A broker or registered nominee	The broker or nominee
13. Account with the Department of Agriculture in the name of a public entity (such as a state or local government, school district, or prison) that receives agricultural program payments	The public entity
14. Grantor trust filing under the Form 1041 Filing Method or the Optional Form 1099 Filing Method 2 (see Regulations section 1.671-4(b)(2)(i)(B))	The trust

[1] List first and circle the name of the person whose number you furnish. If only one person on a joint account has an SSN, that person's number must be furnished.

[2] Circle the minor's name and furnish the minor's SSN.

[3] You must show your individual name and you may also enter your business or DBA name on the "Business name/disregarded entity" name line. You may use either your SSN or EIN (if you have one), but the IRS encourages you to use your SSN.

[4] List first and circle the name of the trust, estate, or pension trust. (Do not furnish the TIN of the personal representative or trustee unless the legal entity itself is not designated in the account title.) Also see *Special rules for partnerships* on page 2.

*Note. Grantor also must provide a Form W-9 to trustee of trust.

Note. If no name is circled when more than one name is listed, the number will be considered to be that of the first name listed.

Secure Your Tax Records from Identity Theft

Identity theft occurs when someone uses your personal information such as your name, SSN, or other identifying information, without your permission, to commit fraud or other crimes. An identity thief may use your SSN to get a job or may file a tax return using your SSN to receive a refund.

To reduce your risk:

- Protect your SSN,
- Ensure your employer is protecting your SSN, and
- Be careful when choosing a tax preparer.

If your tax records are affected by identity theft and you receive a notice from the IRS, respond right away to the name and phone number printed on the IRS notice or letter.

If your tax records are not currently affected by identity theft but you think you are at risk due to a lost or stolen purse or wallet, questionable credit card activity or credit report, contact the IRS Identity Theft Hotline at 1-800-908-4490 or submit Form 14039.

For more information, see Publication 4535, Identity Theft Prevention and Victim Assistance.

Victims of identity theft who are experiencing economic harm or a system problem, or are seeking help in resolving tax problems that have not been resolved through normal channels, may be eligible for Taxpayer Advocate Service (TAS) assistance. You can reach TAS by calling the TAS toll-free case intake line at 1-877-777-4778 or TTY/TDD 1-800-829-4059.

Protect yourself from suspicious emails or phishing schemes. Phishing is the creation and use of email and websites designed to mimic legitimate business emails and websites. The most common act is sending an email to a user falsely claiming to be an established legitimate enterprise in an attempt to scam the user into surrendering private information that will be used for identity theft.

The IRS does not initiate contacts with taxpayers via emails. Also, the IRS does not request personal detailed information through email or ask taxpayers for the PIN numbers, passwords, or similar secret access information for their credit card, bank, or other financial accounts.

If you receive an unsolicited email claiming to be from the IRS, forward this message to *phishing@irs.gov*. You may also report misuse of the IRS name, logo, or other IRS property to the Treasury Inspector General for Tax Administration (TIGTA) at 1-800-366-4484. You can forward suspicious emails to the Federal Trade Commission at: *spam@uce.gov* or contact them at *www.ftc.gov/idtheft* or 1-877-IDTHEFT (1-877-438-4338).

Visit IRS.gov to learn more about identity theft and how to reduce your risk.

Privacy Act Notice

Section 6109 of the Internal Revenue Code requires you to provide your correct TIN to persons (including federal agencies) who are required to file information returns with the IRS to report interest, dividends, or certain other income paid to you; mortgage interest you paid; the acquisition or abandonment of secured property; the cancellation of debt; or contributions you made to an IRA, Archer MSA, or HSA. The person collecting this form uses the information on the form to file information returns with the IRS, reporting the above information. Routine uses of this information include giving it to the Department of Justice for civil and criminal litigation and to cities, states, the District of Columbia, and U.S. commonwealths and possessions for use in administering their laws. The information also may be disclosed to other countries under a treaty, to federal and state agencies to enforce civil and criminal laws, or to federal law enforcement and intelligence agencies to combat terrorism. You must provide your TIN whether or not you are required to file a tax return. Under section 3406, payers must generally withhold a percentage of taxable interest, dividend, and certain other payments to a payee who does not give a TIN to the payer. Certain penalties may also apply for providing false or fraudulent information.

Alabama A&M UNIVERSITY

Purchasing Department
P. O. Box 1627
Normal, Alabama 35762
(256) 372-5227 Office
(256) 372-5223 Fax

INSTRUCTIONS UNIQUE TO THIS INVITATION TO BID (ITB)

1. The sealed bid package submission deadline is December 12, 2017 at 2:00 P.M. Central Standard Time (CST). Bids not received by that time will be ineligible from further consideration. It shall not be sufficient to show that a bid was postmarked by or before the bid submission deadline.

2. Bidders must submit all provided documents with each bid response.

3. Where possible, please type Invitation to Bid responses directly into the PDF you have been provided. Handwritten responses are accepted but not preferred.

4. This bid is being advertised using Vendor Registry.

Technical Information

High Level Tool Specification

ALD deposition chamber

Manufacturer Picosun

Model Number R-200 Advanced with Picoplasma and load lock

Alabama A&M Tool Spec Details

Alabama A&M Tool Owner	Zhigang Xiao
Specification Number	
Version	4.0
Date	12-Dec-17
Project Name	(INTERNAL ONLY)
Factory Name	(INTERNAL ONLY)
Factory Location	(INTERNAL ONLY)
Process Step	High-k and 2D materials

HARDWARE REQUIREMENTS

HARDWARE CAPABILITY	DETAIL	SUPPLIER COMMENTS
Configuration		
ALD Reactor		
Additional options:	Single wafer load lock	Comply, manual or semi automatic from Hine, turbo pump kit
	Multi wafer cassette load lock	Comply, Brooks MX-400 module
	Glovebox interface	Comply, 2 or 4 glove box from Mbraun
	Load lock and glovebox interface	Comply, Brooks MX-400 module
	Multi wafer cassette load lock with glovebox interface	Comply, Glove boxes can be integrated on a Brooks MX-400
	Cluster system	Comply, Brooks MX-400 module has three sides in which it houses multiple reaction chambers.
Opertional Modes		
	Dynamic	Comply, normal operation with Ebara dry pump
	Variable Residence Time	Comply, PicoFlow is a diffusion mechanism to provide deposition on higher aspect ratio structures.
	Static	Comply, Yes we have an APC valve that can be accommodated to the system (option)
	Plasma Enhanced	Comply, Remote plasma source of 3kW with frequency between 1.7 to 3 MHz
Substrate Specifications		
	Substrate size up to 150mm	Comply, heating stage can accommodate up to 200mm wafers, pocket wafer will be included.
	Substrate heating stage for 150mm wafers	Comply,
	Temperature = 500 °C	Comply, heating stage can go up to 650°C
	Temperature uniformity on 150mm Si wafer to be <± 3%	Comply
Deposition Uniformity	1σ Uniformities, Thermal Al2O3 – 1.5%, Plasma Al2O3 – 1.5%	Comply

Plasma Specifications		
	Remote plasma source with 1kW RF power supply	Comply, system uses an Advanced Energy 3kW, 1.7-3 MHz
	6 plasma gas lines	Comply, system will be set up with 6 plasma gases
	Dedicated MFC for each plasma gas line	Comply
	Reactant bypass network	Comply, by-pass valves are integrated to remove any residual gases during idle or maintenance cycles
	User Gas Compatibility PLC to prevent unwanted/unsafe mixing of gases in reactor	Comply, system will use integrated software to allow
	High vacuum pump/purge each reactant line through load lock	Comply, gases will be purged through the reaction chamber in order to prevent any contamintion from entering load lock
	All manual isolation valves are LOTO compatible	Comply,
Precursor Specification		
	5 independent vapor delivery ports to a top plate reactor	Comply, system will come with 6 independent gas lines
	Precursor delivery to reactor is through a dispersion plate	Comply, system can be set up in either thermal or plasma mode
	10 precursor lines standard; optional of 15 total precursor lines	Not Comply, the system already uses two lines for heated sources, four other lines can be adjusted in order to maximize source usage
	1 flow through source as part of standard	Comply, Picohot 300 is a through flow source that has an IN and OUT lines
	Individual precursor zone heating to 200°C	Comply, one heated source can go up to 200C and the other to 300C. The system can be upgraded to fit additional precursors at the customer discretion
	Ability to control hazardous gas phase precursors between 5-100 Torr	Comply, pressures range from mTorr to high Torr range. High speed,
Precursor Delivery		
	Use Focusing technology for focusing of precursor gas/vapor onto a substrate surface for process performance	Not Comply, system utilizes gas dispersion to uniformly deposit films
	Each independent delivery line to port has its own heater control	Comply,
	Heater zones <± 5% uniformity up to 200°C	Comply,
ALD Valve Speed/Control		
	Industry standard high speed ALD valve, 10ms minimum pulse time	Comply, Picosun uses Swagelok ALD valves
	Valve dose/pulse resolution of 0.5ms	Not Comply, pulsing speed is on the order of 100ms
	True precision timing from independent hardware timing module	Comply,
Controls		
	Standalong Real Time Controller (RTC) executes equipment automation	Comply,
	RTC provides uninterrupted operation, independent of the Windows Computer and User Interface State	Comply,
	PC provides supervisory interface to RTC, facilties monitoring and manual actuation of vacuum, transfer, maintenance, and deposition process components	Comply, system automation takes into account all components
	Four standard user security levels with user access assignable to controls via user security	Comply, system has three operator levels OPERATOR, ENGINEER, SUPERVISOR
Single wafer load lock		

	Ultra High Purity transfer under laminar conditions approximately 1 Torr	Comply,
	Base Pressure of 5x10-7 Torr (clean and dry)	Comply, load lock can achieve low base pressures using turbo molecular pump
	Fully automated transfer from load lock to ALD reactor	Comply with exception, system comes with manual lock load as standard, can be upgrade into an automated load lock
Compatibility		
Clean Room	Class 10 or 1000 compatible	Comply,
Additional items:		
Spectroscopic Ellipsometer Ports	Standard	Comply,
Vacuum Pump	>40CFM wet pump part of base system	Comply, processing chamber uses 420 m3/hr dry pump
	Foreline Purge/Vent	Comply,
Dimensions (mm)	2528 x 920 x 2024	Comply,
System Options:		
	Optical Emission Spectrometer	Not Comply, product is not available
	Ozone Generator	Comply,
	Ability to integrate with cluster system for multi-deposition technique capability	Comply, see above
	RGA Port	Comply, System has been quoted with RGA system and ports
	Quartz Crystal Microbalance	Comply, system can be set up to have QCM if required

Alabama A&M TOOL OWNER SIGNATURE

Date: 12/12/2017

SUPPLIER SIGNATURE

BID: 2K18-05B

Quotation for a PICOSUN™ R-200 Advanced Plasma ALD System

picosun

Table of Contents

picosun

12/12/2017

Recipient:

Dr. Zhigang Xiao
Alabama A&M University
Phone: 256 468 4770
Email: zhigang.xiao@aamu.edu

Quotation reference: Quotation_Picosun_Alabama A&M_R200Adv_12122017A

Bid Number: 2K18-05B

Dear Dr. Zhigang Xiao,

Thank you for allowing Picosun with the opportunity to provide a quote for our **R-200 Advanced Plasma ALD System**. The system includes two Picosolution™ cooled liquid sources, one Picohot™ 200 and one Picohot™ 300 heated source for depositing metal oxide coatings.

Picosun ALD-tools are designed with six fully separated source lines, top-flow geometry and a dual vacuum chamber wall. This ensures no chemical reactions between precursors before the reaction chamber and no condensation of precursors which helps prevent formation of particles or additional side-reactions. This is a unique feature offered only by Picosun which provides many advantages. The top-flow geometry results in the best possible uniformity. In addition, the tool is equipped with PicoPlasma™, a 3000W plasma generator which enables the use of low reactive precursors and low temperature processes. The reactor is modular and it can be easily modified or upgraded to fulfil your requirements now and in the future. The system can process pieces up to a 200mm wafers. The ALD system has very small footprint and it is easy to operate and maintain in the cleanroom.

Some key highlights of the Picosun R-200 Advanced Plasma ALD System include:

- Six-fully separated gas source lines with top-flow geometry
- Dual vacuum wall chamber construction
- Hot-wall reaction chamber prevents particle formation
- Modular design to provide easy maintenance
- Stainless steel materials to provide durability and longevity
- High quality, industry standard ALD pulsing valves
- Interlock and cover system to ensure user safety while handling toxic gases such as H2S
- 3kW remote plasma source for low temperature processing
- Heated sample stage with capability of up to 650°C
- Diffusion enhancement system for high aspect ratio coatings
- Two heated source systems with capability of up to 200C and 300C (bottles included)
- High vacuum load lock with turbo pump achieving 5E-7 Torr
- Fast cycle times capability via high speed pumping system
- Low maintenance, chemical resistance dry pump for high performance in harsh processes
- Analytical *in-situ* analysis via spectroscopic ellipsometry and mass spectrometry
- High aspect ratio coatings achieved via diffusion enhancer
- Integrated software to allow single and multi-layer coatings

Please feel free to contact me in case of any questions regarding this quotation. We look forward to partnering with Alabama A&M University on this new R-200 Advanced System.

Sincerely,

Wilfredo Cabrera, Ph.D.
General Manager
Picosun USA, LLC

picosun

12/12/2017

Quotation for a PICOSUN™ R-200 Advanced ALD system

Picosun USA, LLC, Richardson, TX, USA (hereinafter called "the Seller") is pleased to give a quotation for **PICOSUN™ R-200 Advanced PLASMA ALD reactor** (hereinafter called "ALD Product") to Dr. Zhigang Xiao, Alabama A&M University., USA (hereinafter called "the Buyer").

1. DELIVERY PRICES AND TIMES

1.1. Price and delivery time of the ALD Product

Table 1. Items included in the price of a PICOSUN™ R-200 Advanced Plasma ALD reactor.

ITEM	QTY	DESCRIPTION
Reactor	1	PICOSUN™ R-200 ALD Advanced Plasma reactor with six separate precursor inlets and four plasma gases, each with own MFC, pulsing valve and PT. Maximum deposition temperature of the ALD reactor with heated sample stage is 650 °C. The Product includes: - *Stainless steel vacuum chamber (AISI304) with KF connection flanges* - *Reaction chamber (AISI316L) RC-200 (6 inlets)* - *Chamber and lid with top flow configuration* - *Access ports for spectroscopic ellipsometer (not included)* - *Substrate holder for 8" including 8" Si pocket wafer for 6" wafers and smaller samples* - *Advanced source control and electronics system* - *Safety covers for toxic gases such as H2S*
Substrate Heating	1	Stainless steel heated sample stage (AISI 316) for up to 200mm - *Maximum substrate temperature up to 650°C*
Load lock	1	Picoloader™ Automated loadlock with turbo molecular kit for low base pressure loading (Turbo model: Edwards nEXT 300D), capability of 5E-07 Torr
RGA	1	MKS Vision 2000C residual gas analysis capability to sampling directly processes using quadrupole mass spectrometer with the range of 1-300amu.

Ellipsometry	**1**	FS-1 Multi-wavelength Ellipsometer system which includes a 4 wavelength LED light source unit (mounts are included)
Precursor-sources	**11**	2 Picosolution™ for liquid sources for high pressure liquid sources. 1 Picohot™ 200 heated source systems (bottle is included) *Heated vapor-draw source system (up to 200 °C)* 1 Picohot™ 300 heated source systems (bottle is included) *Heated bubbler source system (up to 300 °C)* 1 Picogas™ source line for gaseous precursors such as O2, H2, H2S, etc. (to be discussed with customer) 1 Picoplasma™ 3000W ICP Remote plasma generator with 6 gas inlets, 1 additional MFM line is provided with system (Argon line). (gases to TBD), by-pass is included for each line for safety
Dry Mechanical Pump	**1**	420 m3/hr (245 CFM) dry mechanical pump with pump line and exhaust trap
Diffusion Enhancer	**1**	PF-200 Picoflow Diffusion Enhancer for High Aspect Ratio Structures
Software	**1**	12-pack Software with a touch panel PC *Touch panel PC and electronics cabinet used for operating the ALD reactor with ALD-software and electronics.*
Power supply	**1**	200-240V, 50Hz-60Hz; 3-phase 6 kW
Warranty	**1**	24 Months warranty (included)
Shipping	**1**	Shipping (excludes taxes and duties) DAP to Normal, AL
Commissioning, Installation & Training	**1**	Commissioning (installation, including acceptance tests) Training for use of the equipment during installation, for any number of people is also included in the price.
PicoSupport	**1**	Agreement: Standard *Standard service and support package (see Table 3. Service and Support Agreements in 1.2 Optional Items section)*

12/12/2017

PM Training	**1**	One-day PM training workshop (PicoSupport Standard): - Short instructional course on performing PM (trap spare included) - Hands-on course (Picosun to perform PM) *Note: To be scheduled during the 1st year warranty period with customer*

Quote:

For the Buyer the total price of the CE marked ALD Product according to **General Terms and Conditions of Sale** (Section 7) (Annex) set hence forth:

Price: Seven hundred sixteen thousand three hundred thirty-four US dollars
(**716,334 USD**, VAT 0 %, Incoterms 2010, FCA, Masala, Finland).

Discounted Price to Alabama A&M University (with 40% discount) with DAP shipping:
Four hundred twenty-nine thousand eight hundred one US dollars
(**429,801 USD**, VAT 0 %, Incoterms 2010, FCA, Masala, Finland).
- Note: Exchange rate (euro to USD) = 1.18, was used for the calculation

Warranty: Twenty-four (24) months after completion of installation

Terms of Payment (see also Article 7.8):
- 30% upon PO placement with bank guarantee from Picosun , NET 30
- 60% upon shipment, NET 30
- 10% upon acceptance of tool, NET 30

Delivery Time: 18-22 weeks from the first payment of the ALD system.

1.2. Optional items

To extend this system, we would recommend you to consider the following options, which you might order either together with the basic system or at any later time separately (some of the options cannot be retrofitted). Additional fees due to installation apply for items marked with (*) if purchased after initial order. Items below will have additional 36% if purchased at time initial system order.

ITEM	QTY	DESCRIPTION	PRICE ($)
POCA 200*	1	Particle insert for RC-200 Chamber	$3,100
Picovibe*	1	Picovibe with ultrasonic vibration system	$30,156
Picoplasma Gas line	**1**	Picoplasma gas line for remote ICP (up to four in total) Two included in base system	$6,492
Ozone Generator	**1**	Picozone™ PZ-100 (InUsa AC2025) used for production of 10% concentration ozone.	$31,680
Quartz Crystal Microbalance	**1**	Port access for Quartz Crystal monitoring system	$12,000
Vacuum load lock pump	**1**	Load lock dry pump (Edwards nXDS10i)	$6,968
Single wafer load lock	**1**	Picosun Handyman™ Manual load lock	$53,424
Glove box	**1**	Glovebox 1800/1200 8xgl (MBraun200MOD) LL (Vacom)	$121,286
Glove box	**1**	Glovebox 1200/780 2xgl (MbraunLabstar) LL (Vacom)	$68,715
Glove box integration	**1**	Access ports to integrating glove box to ALD system	$8,000
Multi-wafer cassette load lock/Cluster module	**1**	Picoplatform™ (Brooks MX400 1x VCE) module used for multi-wafer and multi-tool capability	$469,080
Picoflow	**1**	PF-200 Picoflow Diffusion Enhancer for High Aspect Ratio Structures	$4,806
Picohot 200 assembly	**1**	Picohot™ 200 heated source systems with source bottle	$13,380
Picohot 300 assembly	**1**	Picohot™ 300 heated source systems with source bottle	$22,920
Picosolution 100 assembly	**1**	Picosolution™ 100 source systems with source bottle	$7,710

Spare Chamber	**1**	Reaction chamber (AISI316L) RC-200	$13,380
Spare Trap	**1**	Spare particle trap for exhaust	$3,680
Picosolution 100 bottle	**1**	Spare container for Picosolution 100	$2,361
Picohot 200 bottle	**1**	Spare container for Picohot 200	$2,732
Picohot 300 bottle	**1**	Spare container for Picohot 300	$4,933

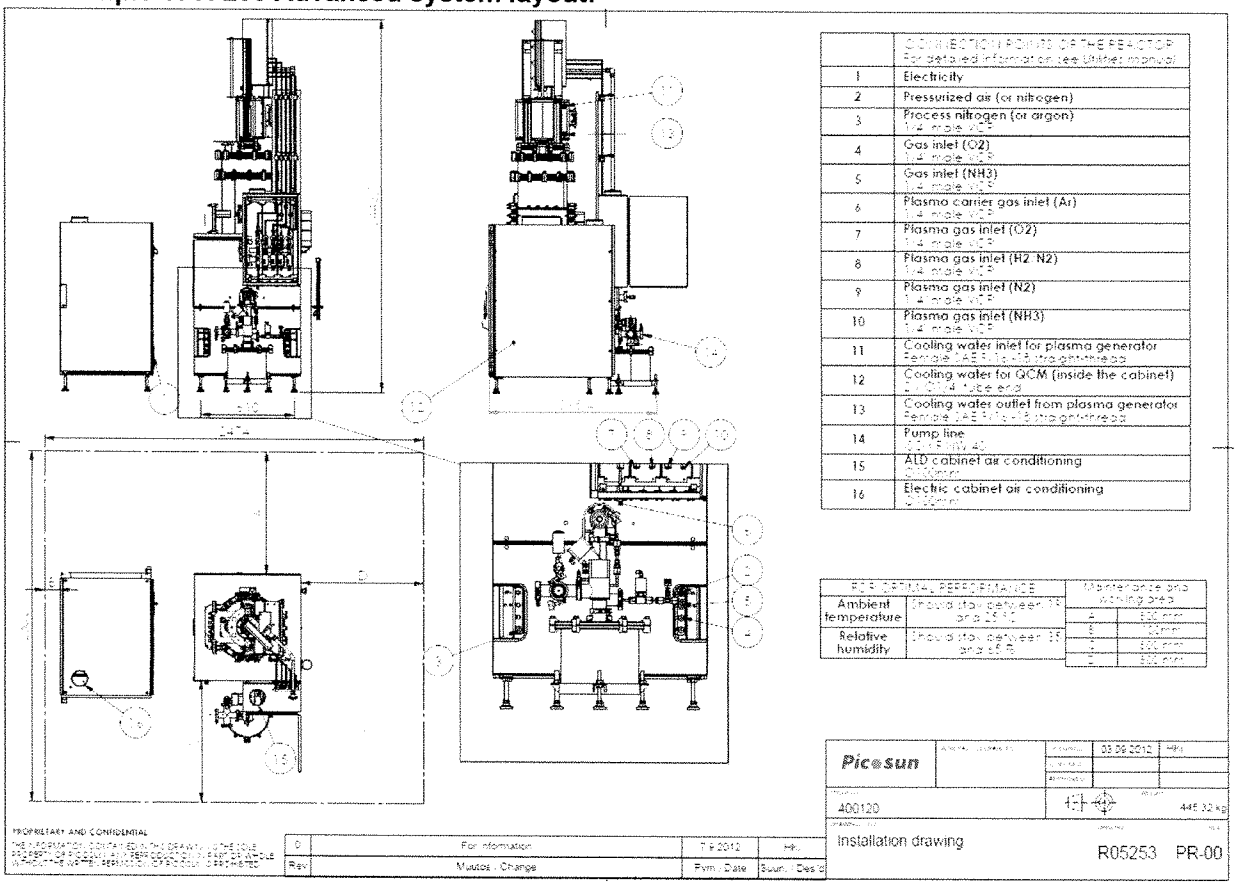
Table 3. Service and Support Agreements

Picosupport™ Agreements – Description and Conditions				
Services included and priorities	**Non-contract**	**Standard level**	**Silver Level**	**Gold Level**
On-site support priority	lowest priority	Standard	High	Highest
- tool in non-operational condition	typ. < 8 wks	typ. < 4 wks	typ. < 2 wks	typ. few days
- tool in operational condition	typ. <12 wks	typ. < 4 wks	typ. < 4 wks	negotiable
Discounts for spare parts				
- PM-1 and PM-2 parts	not included	not included	5% Discount	10% discount
- Wear-based maintenance parts	not included	not included	5 % Discount	10% discount
- Critical spare parts	not included	not included	not included	5% discount
Service visit special pricing	not included	not included	1 visit included per year (max. 2 days)	2 visits included per year (max. 3 days per visit)
Storage for faster lead times:				
- PM-1 and PM-2 spare parts	not included	not included	Included	Included
- Wear-based maintenance parts	not included	not included	Optional	Included
- Critical spare parts	not included	not included	not included	Optional
***PicoAccount for faster procurement of Parts & Services**	Not available	Not available	Available	Included
2017 Prices				
Yearly cost for listed Services	$0	$0	$7 000	$23 000
Fixed daily rate for a Certified Picosun Field Service Engineer	$2200 USD/day + travel & accommodation (based on local rates)	1500 USD/day + travel & accommodation	1430 USD/day + travel & accommodation (based on local	1200 USD/day + travel & accommodation (based on local

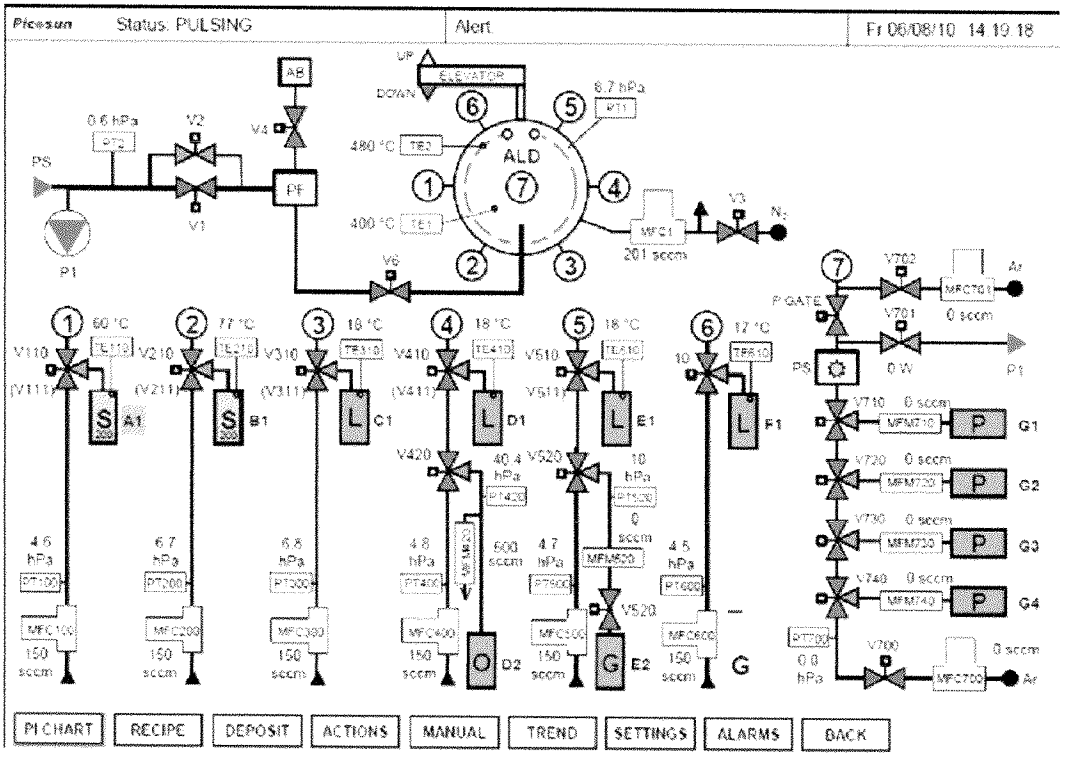
12/12/2017

		(based on local rates)	rates)	rates)
***Picoaccount:** pre-payment account to expedite procurement of parts and services	Not available .	Not available	credit *bonus* of $500 when you open an account with minimum $1000 credit	credit *bonus* of $1000 when you open an account with minimum $1000 credit
E-mail / phone support	Free / not included	Free / not included	Free / not included	Free / Free
Storage in Dallas, TX for faster lead times:				
- PM-1 and PM-2 parts	Not included		5 % of worth / year	Free
- Wear-based maintenance parts	Not included	Not included	5 % of worth / year	Free
- Critical spare parts	Not included	Not included Not included	Not included	7% of worth / year

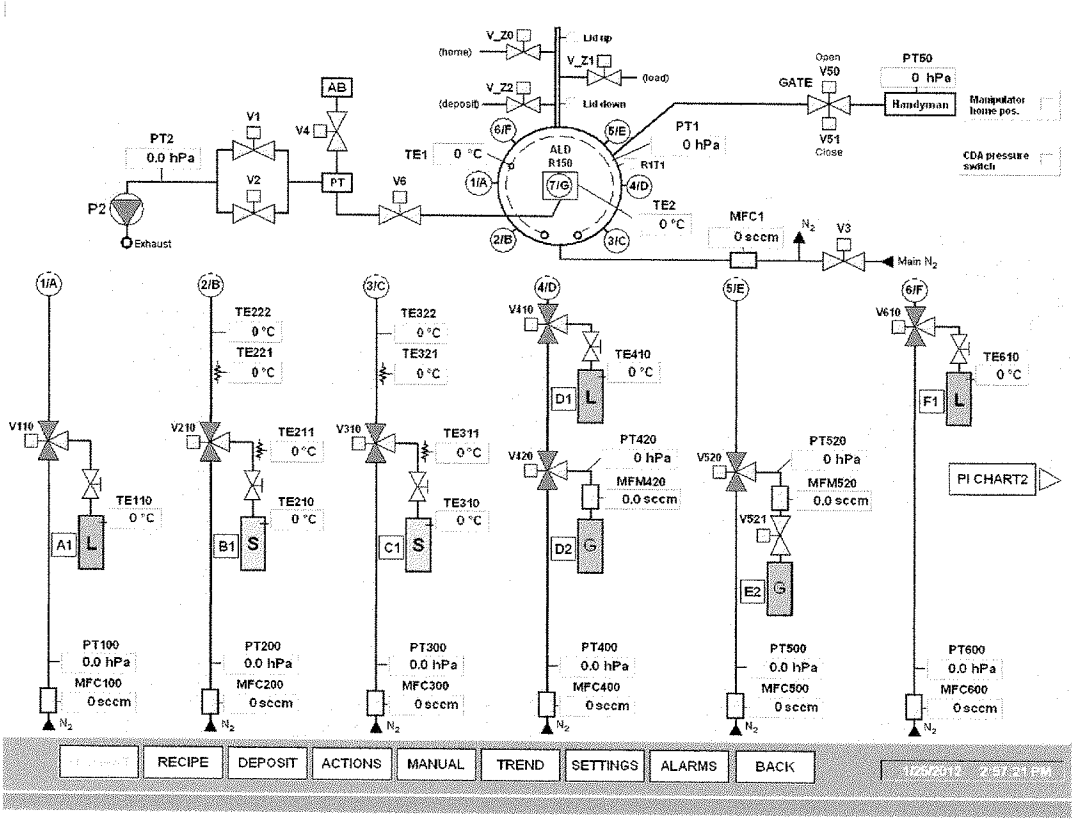
An example of R-200 Advanced system layout:



An example of source configuration for R-200 Advanced source layouts:



An example of source configuration for P-300F:



2. SPECIFICATION OF THE ALD PRODUCT AND CONTENTS OF DELIVERY

2.1. Vacuum chambers

- AISI 304 stainless steel vessel with connection flanges and metal seals for metal oxide and metal nitride processes
- Flange for electrical connections to reaction chamber
- Air cooled cold wall vacuum chamber

2.2. Reaction chamber RC-200 with heating stage

- Hot wall reaction chamber (within the cold wall vacuum chamber) for metal oxide or metal nitride processes
- Six inlets pre-installed for precursor source conduits
- Vertical flow of precursors perpendicular to the substrate
- Optimized sample holder and reaction chamber geometry to optimize the gas flows for best uniformity when depositing on 6" wafers
- Computer controlled standard deposition temperature range up to 650 °C
- The reaction chamber is made from AISI 316 stainless steel

2.3. Substrate holder P-200S

- Sample holder for single 6" wafers
- The substrate holder is made from AISI 316 stainless steel

2.4. Automated flow control

- Exhaust line is equipped with a computer-controlled pneumatic valve, and the reaction chamber is evacuated and vented by the computer
- Flow of nitrogen gas to the intermediate space is adjusted with a computer-controlled mass flow controller (MFC)

2.5. Source lines

- Six individual source lines are included in both ALD reactors
- Separate mass flow controllers for carrier/purge nitrogen gas and separate ALD three-way pulsing valves for controlling precursor vapour near room temperature
- Each source line is connected to carrier/purge nitrogen line, the minimum recommended purity of the nitrogen gas being 99.999%.
- The source lines have metal sealed VCR fittings to ensure leak-free seals.

2.6. Software and electronics

- Pro package control program and control electronics upgrade suitable for the deposition of e.g. nanolaminates, doped thin films and ternary thin films
- Human Machine Interface (HMI) PLC system with a touch screen panel
- PC data logging. Possibility to save log files on an USB stick or a flash card memory.
- Individually programmable purge gas flow rate for both independent source lines
- Fully programmable pulsing sequences for ternary compounds and nanolaminates
- Electronics package for handling the electrical power feeds and input/output signals related to the instrumentation of the precursor sources
- SECS/GEM control software of the ALD system integrated to the touch panel PC is available. User interface created with SCADA software system.

2.7. Precursor sources

Notice: Both metallic precursor sources and non-metallic reactant sources are counted together as precursor sources.

Notice: Precursor sources described in this purchase offer are compatible only with the Seller's ALD Product.

2.7.1. PICOSOLUTION™ 100 SOURCE SYSTEM FOR HIGH VAPOUR PRESSURE LIQUID PRECURSORS

Notice: Source chemicals are not included.

- Suitable for source chemicals having a vapour pressure of at least 10 mbar at source temperature
- One (1) complete container assembly with conduits and a pulsing valve
- Compatible with high vapour pressure (>10 mbar) liquid chemicals, such as water
- AISI 316 stainless steel container for up to 100 cm^3 of liquid precursor
- Precursor container certified for transport
- Integrated manual isolation valve
- Computer-controlled three-way pneumatic valve for pulsing
- VCR all metal sealed gas flow system
- Temperature stabilized ~3-5 °C below ambient temperature.

2.7.2. PICOGASES™ CONNECTION FOR GASEOUS PRECURSORS

Notice: Source chemicals are not included.

- Connection point for an external gas cylinder
- Equipped with a mass-flow meter, a manual isolation valve, and tubing
- Gas flow can be monitored from the screen of the HMI
- Essentially VCR metal sealed gas flow system
- Gas leak sensor and gaseous precursors are not included

2.7.3. PICOHOT™ 200 HEATED SOURCE SYSTEM

Notice: Source chemicals are not included.
Modules can accommodate maximum of three Picohot™ 200 Heated source systems

- Single, computer-controlled pneumatic valve for vapour draw pulsing
- Suitable with source chemicals having a vapor pressure of at least 2 mbar at source temperature
- Source heating temperature up to 200 °C
- Compatible with thermally stable metal chemicals including metal halides, metal-organic compounds and organometallic chemicals
- One complete source assembly with temperature controlled conduits, a pulsing valve and heat insulators
- 50 ml precursor container certified for transport (SAFC)
- VCR metal sealed gas flow system
- Source chemicals shall be bought separately

2.7.4. PICOHOT™ 300 HEATED SOURCE SYSTEM

Notice: Source chemicals are not included.
Modules can accommodate maximum of two Picohot™ 300 Heated source systems

- Suitable with source chemicals having a vapor pressure of at least 1 mbar at source temperature
- Source heating temperature up to 300 °C
- Compatible with thermally stable metal chemicals including metal halides, metal-organic compounds and organometallic chemicals
- One complete container assembly with temperature controlled conduits, a pulsing valve and heat insulators
- 300 ml precursor container certified for transport
- Two computer-controlled three-way pneumatic valves for pulsing
- VCR metal sealed gas flow system
- Safety pipe with a burst disk (10 bar) for heating of chemicals that have a risk to generate overpressure

2.8. Picoplasma™ plasma source

- Commercial Matching Network, plasma generator and power supply integrated in one compact system, weight 22.2 kg
- Mounted on the loading chamber with connection to reaction chamber
- Up to 4 different gases
- Commercial RF plasma generator with adjustable 100 – 3000 W power, 1.7 – 3 MHz RF frequency
- AC Power 208 VAC (optional 400 VAC and transformer), 35 A, 3 phases, AC input current 16 A max
- Cooling water flow 5.71 lpm, T < 35 °C
- Analog (25 pin) and RS-232 (AE Bus) interfaces
- Chemraz® O-ring sealing
- Generator MTBF > 100 000 h without chemicals

- Generator compliant with the following certifications: CE 73/23/EEC & 89/336/EEC, IEC/EN 61010-1, CSA C22.2 No. 1010.1, ANSI/ISA-82.02.01, NRTL/C, SEMI S2-0302, SEMI F47, EN 55011, EN61326 and 47 CFR

2.9. Dry vacuum pump (>400 m^3/h) with foreline particle trap

- Ebara ESA 70W-D oil-free dry vacuum pump
- Mechanical foreline particle trap and afterburner are included
- Backflow valve, MCM MicroTIM and Pump Display Terminal are included
- Abatement system not included
- Power: 3 phase 208-220V
- Inlet flange size: DN 50 KF
- Outlet flange size: DN 40 KF
- Ultimate vacuum (typical): 3 x 10-3, 1.3 x 10-3mbar
- Peak speed: 420 m^3/h
- Typical water flow: 3.5 l/m
- Purge flow range: 14-16 slm
- Weight: 380 kg
- System Power at ultimate: 2.2 - 3.7 kW
- Dimensions: (LxWxH) 784x390x780 mm

2.10. Picoflow™ Diffusion enhancer

- Extra stop-valve and tubing in the pump line for restricting the gas flows
- Possibility for increased precursor diffusion and reaction times without a risk of back-diffusion of the precursor chemicals into inlet lines of the reaction chamber
- Software sequence for additional process control
- Optimal for coating porous substrates with extremely high aspect ratios

2.11. Automated Load-Lock with turbo pump

- Directly connected to ALD chamber via gate valve capable of achieving base pressure of 5E-07 Torr
- Edwards nEXT 300D turbo molecular pump is used for creating high vacuum
- Automated substrate handler for a single substrate with a loader chamber and a gate valve
- Handler composed of AISI 316 stainless steel
- Reaction chamber is isolated from room atmosphere during the loading and unloading of the substrate
- Suitable for R-200 reactors; to be configured at purchase according wafer size

2.12. Clean room compatibility

- System is clean room compatible (class 10)

2.13. Facility Requirements

- Electricity for the ALD unit and the pump

- Pump line + exhaust line
- Nitrogen line with min. 2 slm flow, 99.999 % min. purity, 1-2 barg pressure for the ALD unit
- Air conditioning (suggested ambient temperature 19-25°C and relative humidity 35-65 %)
- Compressed dry air at 4-5.5 barg pressure for ALD unit
- Cooling water and nitrogen for the dry-pump.
- **A facility sheet will be provided after design review.**

3. TESTING AND APPROVAL OF THE ALD PRODUCT

The ALD Product shall be tested with the first and the second acceptance runs in accordance with the test procedures to be specified between the Seller and the Buyer.

The first acceptance runs shall be performed at the Seller's site prior to delivery to judge the proper performance of the ALD Product.

The second acceptance runs shall be performed at the Buyer's site after the installation of the ALD Product to reconfirm the proper performance of the ALD Product.

The ALD Product is tested and approved with

Thermal ALD Al2O3:

- The deposition temperature is 300 °C
- Liquid trimethyl aluminium TMA is used as the metallic precursor
- Liquid water H_2O is used as the non-metallic precursor
- Depositions are made with 150 cycles
- Criterion for the acceptance of the ALD Product:

Thickness uniformity of the Al_2O_3 thin film on 6-inch silicon wafer measured with ellipsometer shall be ≦ 1% 1 sigma (with 49 points and 5 mm edge exclusion):

4. SUPPORT, MAINTENANCE PERIODS AND SPARE PARTS

4.1. After sales support

Field Service Support from Picosun headquarters is running 5 days per week, 8 am to 8 pm.
Back-up support is available globally. In Belgium the local support can be done by Microtest.
24/7 maintenance contracts are available on request.
Picoline™ online service and support tool is available on request.

Applications laboratory in Finland is available for process trouble shooting.

Continuous Improvement program is applied with frequent technical bulletins and customer newsletters.

After the warranty period of twelve (12) months, starting after the acceptance of the ALD Product, all travelling and labour costs are charged excluding visits defined in article 12.

The Seller has arranged reaction chamber refurbishment service subject to a fee. The reaction chamber and the reaction chamber lid are cleaned with bead blasting and passivated with a thin film coating. Software includes an automatic alarm and warning system for upcoming maintenance.

After the warranty separate service agreement can be arranged with the local representative of the Seller. Price for the agreement has to be separately negotiated.

4.2. Maintenance periods

Notice: warranty does not include normal maintenance that comprises cleaning of parts, passivation of parts or oil change.

Most common maintenance periods for the ALD Product are as follows.

- The pumping valve of the exhaust line is removed and cleaned with ordinary cleaning solutions every 6-12 months. Counter for cycles of the pulsing valve is included in the system software for scheduled maintenance purposes.
- The reaction chamber and the reaction chamber lid are removed, cleaned by bead blasting and passivated depending on the use (deposition of around 8 micrometer thick film), and preferably when changing the thin film material to a new one. Alarm limits can be set in the software for scheduled maintenance.
- The particle trap cleaned by every 6-12 months depending on the use; metal meshes could be changed and body of the trap can be bead blasted.

4.3. Spare parts

Spare parts for the ALD Product are available from the Seller for at least five years after the installation of the ALD Product at Buyer's site.

5. ADDITIONAL INFORMATION

For additional information you could also contact:

Managing Director Juhana Kostamo
Mobile: +358 (0)50 3699565
E-mail: juhana.kostamo@picosun.com

6. VALIDITY

Please note that any the terms of this quotation shall be applicable to any subsequent agreement or contract between the parties regarding the subject matters. Words written in capital letters have a specific meaning if separately defined herein; otherwise capital letters are used for convenience only.

picosun

12/12/2017

This quotation is valid until the December 31, 2017

Richardson, Texas, USA

The 12th December, 2017

Picosun USA, LLC

Wilfredo Cabrera
General Manager

7. General Terms and Conditions of Sale

7.1. GENERAL

These terms and conditions of Sale ("General Conditions") shall apply to the manufacture, assembly and supply of any new ALD products ("ALD Product" or "Equipment") and to any installation services and training related thereto ("Services") provided by Picosun or its affiliates ("Seller") to a customer ("Buyer") (i) as set forth in a separate Seller's written quotation accepted by way of Buyer's order followed by Seller's order confirmation, if any or (ii) alternatively in a separate signed agreement ((i) and (ii) hereinafter "Transaction Document(s)"). These General Conditions form an integral part of any Transaction Document(s) and unless otherwise provided in the Transaction Document(s) or agreed to in writing by Seller, all orders are accepted by Seller subject to these General Conditions only. In case of a conflict, inconsistency or addition not expressly accepted in writing by Seller, General Conditions provided herein shall supersede the conflicting, inconsistent or additional terms stated in Buyer's purchase order, order form or otherwise. The Transaction Document(s) and these General Conditions will supersede all prior communications and constitute a complete and binding contract between Buyer and Seller, which contract cannot be modified or canceled without the written agreement of both parties. Hereinafter the Seller and Buyer may also be referred to, each as a "Party" and together as the "Parties").

7.2. SHIPMENT AND DELIVERY

Seller shall aim to honor, but will not guarantee, shipping date(s) and loading and routing instructions. Unless otherwise specifically set forth in the Transaction Document(s) or otherwise agreed in writing between the Parties, in no event shall the seller be liable for any penalties, liquidated damages, discounts, price reductions, reimbursements, indemnities or damages as a result of delays. In the event of a default or delayed payment (related to previous deliveries) by Buyer, Seller may decline to make further shipments without waiving any of its rights.

Sales are made EXW Masala, Finland, Incoterms 2010 and Buyer shall pay all freight, duties and handling. Risk of loss or damage shall pass from Seller to Buyer upon the placement of the Equipment and other material purchased hereunder in good condition into the possession of a common carrier, such carrier acting as Buyer's agent. During all phases of shipment to the Buyer site and regardless of the shipping terms selected by Seller and Buyer, insurance shall be arranged by Seller. Claims for damages during transportation must be filed with the carrier upon the receipt of the Equipment.

All Equipment shall be packed for shipment and storage in accordance with Seller's standard commercial practices. All costs associated with any special packaging and/or shipping requested by Buyer shall be borne by Buyer.

7.3. INSTALLATION

If pursuant to the Transaction Document(s) the installation shall be carried out by Seller, Buyer is liable for the installation site being ready and in compliance with the dimensions, installation requirements, functional characteristics and environmental and electrical requirements of the Equipment as well as with other instructions and requirements supplied by Seller. Buyer declares that it is aware of the type of Equipment, capacity, weight, power, other utilities and safety protection requirements. Buyer further declares that it has examined the installation requirements and instructions provided to it by Seller and that it has necessary capacity and adequately-trained personnel to properly carry out or assist with the installation at the installation site. Any installation services agreed between the Parties shall not relieve Buyer from its obligation to prepare the installation site so that it complies with the characteristics of the Equipment, Seller's requirements and instructions and with applicable accident prevention laws.

7.4. ACCEPTANCE

If Seller's quotation references Acceptance provisions, then Buyer agrees to accept the purchased Equipment in accordance with such provisions. The parties agree to give priority to achieving Acceptance and Buyer agrees that the purchased Equipment shall not be used for material production, for development of new processes or for any purposes other than achieving Acceptance, prior to successful completion or waiver of the Acceptance provisions. Any such use of the Equipment prior to completion of the Acceptance provisions shall be deemed to constitute the achievement of Acceptance. The parties agree that, if Acceptance procedures have not been commenced within 30 days after delivery, or if Acceptance has not been completed within 60 days after delivery (through no fault of Seller), then the Equipment shall be deemed finally accepted and to have achieved Acceptance. In the

event of any such deemed acceptance, Buyer agrees to sign and return to Seller, promptly upon presentation by Seller, an acceptance certificate in a form to be determined by Seller.

Except where the Acceptance provisions are specified in the Transaction Document(s), the Equipment shall be considered finally accepted 30 days following (a) installation, if Seller performs installation, or (b) shipment, unless written notice of rejection is provided to Seller within such 30 day period.

7.5. TITLE

Title to the Equipment shall remain with Seller until such time that the payment of the Equipment has been received in full by Seller together with any interest payable hereunder.

7.6. SUPPORT AND MAINTENANCE

Other than the Services agreed herein or in the Transaction Document(s), Seller provides support and maintenance services only under a separate Support and Maintenance agreement for so long as these services are generally available.

7.6.1. GENERAL

ALD Product and PhD level process support is offered directly from our distribution partners at Picosun Asia, our distribution partners or the Picosun main headquarters and factory in Finland.

The said support is available after the Buyer has accepted our service pricing determined in the valid PicoSupport™ service price list by signing PicoSupport™ Agreement offered by the Seller.

Signing of the PicoSupport™ Agreement does not bind the Buyer to use or purchasing of services. It is however highly recommended to perform scheduled maintenance through Picosun or by the Buyer since it is necessary to keep the ALD Product in full operation condition and this said maintenance is a pre-requisite for validity of the warranty.

Field Service Support in Finland is running 5 days per week, 8 am to 8 pm.
Picoline™ online service and support tool connecting your ALD Product to Picosun software troubleshooting center is available on request. Back-up support is available globally.

In your geographical area we have one person properly trained and accepted by Picosun for R-200 ALD reactor support in addition to Picosun Field Service in Finland.

Through PicoSupport™ agreement additional paid services are made available.
Cost is €20.000,00 for 100 hours of scheduled or unscheduled maintenance or training work after the warranty, added with travel costs + 15% plus parts. Prices are valid for two years. Minimum 8 hours ordered at a time

Training
We can provide Protraining services with scope customized for your specific needs and focus areas. Our trainers are the best experts for tool maintenance, -operating or processes. This is a good way extend your knowledge and capabilities or ramp-up competencies with your new personnel.

Application consultancy / ramp-up
We can provide project based application consultancy or ramp-up for your targeted processes with most experiences ALD chemistry and process experts.

Major modifications
We can provide upgrades and modifications for your tool configuration from our wide selection of optional features, additional or modified source configurations depending on your needs. Re-locating services with dismantling, re-assembly and functional testing is also available.

Spare Parts
All parts and components for your tool are available as qualified and tested spare parts with specific lead times and competitive price.
As additional service option we can provide Critical Spares Management service where operations critical spare parts components will stocked at Picosun and available with very short delivery time when needed. Detailed covered parts for you will be specified based on your tool configuration, components risk assessment and availability.

Periodical Maintenance
Periodical Maintenance is required to ensure smooth and faultless operation and as warranty pre-condition. We can provide required periodical maintenance and inspections services with highest quality and cost effectively. Service includes inspections,

cleaning of specific parts and replace specific critical parts within recommended intervals. Detailed scope will be defined based on your tool configuration and estimated usage (adjustable). Please see tool O&M Manual Chapter 5 for details about PM requirements. The Seller has arranged refurbishment service in Finland subject to a fee. The reaction chamber and the reaction chamber lid are cleaned with bead blasting and passivated with a thin film coating.

HelpDesk

In case you need support with tool usage or you are facing a problem where you cannot find a resolution, we have our HelpDesk service available to assist you. As a standard service level (included in warranty) you can describe your problem and ask support via e-mail: support@picosun.com. Request handling language is English (or Finnish) and requests are handled based on available capacity of experts. To accelerate resolutions, please always include:

- details of tool (serial number or Picosun project number)
- details of problem with conditions and circumstances problem appears
- include photos when relevant (specially from affected HMI screens in case of SW related issue)
- your full contact details

Additional service options we can provide HelpDesk 8/5 priority support. It includes SLA (defined target response and recovery times), telephone support, remote access (to allow Picosun experts to login your tool for faster resolutions), local business hours coverage (by Picosun or via regional Picosun service partners).

In case this is not enough for your critical tool usage, we also have available 24/7/365 Emergency service & fastest possible on-site escalations alternative for fastest possible recovery around the clock. Pre-requisite for this option is to have also Critical Spares Management service.

7.6.2. PICOSUN SUPPORT CONTACT INFO

For additional information and details please don't hesitate to contact us.

Additional information about services, upgrades and spare parts: support@picosun.com
or sales@picosun.com

Key persons at our Customer and Field Support team:
http://www.picosun.com/en/about+us/customer+and+field+service+team/

7.6.3. MAINTENANCE PERIODS

Notice: warranty does not include normal maintenance that comprises cleaning of parts, passivation of parts or oil change.

Most common maintenance periods for the ALD Product are as follows.

- The pumping valve of the exhaust line is removed and cleaned with ordinary cleaning solutions every 6-12 months. Counter for cycles of the pulsing valve is included in the system software for scheduled maintenance purposes.
- The reaction chamber and the reaction chamber lid are removed, cleaned by bead blasting and passivated every 2 – 6 months depending on the use (deposition of around 6 um thick film), and preferably when changing the thin film material to a new one. Alarm limits can be set in the software for scheduled maintenance.
- The particle trap cleaned by every 6-12 months depending on the use; metal meshes could be changed and body of the trap can be bead blasted.

7.6.4. SPARE PARTS

Spare parts for the ALD Product are available from the Seller for at least five years after the installation of the ALD Product at Buyer's site.

7.7. PRICES

Irrespective of any prices listed on Buyer's order, an order is accepted only at the prices shown on the Transaction Document(s) accepted by Seller. Installation of utilities required for Equipment is not included in the specified price.

7.8. PAYMENT TERMS

Invoices are payable as bank transfers to the account set forth on the invoice within forty-five (45) days from the date of the invoice. Checks are not accepted. Any exchange or bank charges will paid by Buyer. Any amounts not paid when due will bear interest at a rate of 12% per annum or, if lower, the maximum rate permissible by mandatory governing law. All payments shall be made by Buyer without set-off or other deduction.

Payments

The Seller shall invoice 60 % of the total price at the fixed date of order confirmation.

The Seller shall invoice 30 % of the total price against shipping documents.

The Seller shall invoice 10 % of the total price after acceptance runs at the Buyer's site against the acceptance document signed by the Buyer. If the acceptance runs are delayed by Buyer for any cause more than 30 days, the Seller shall invoice the total price prior to the acceptance runs.

Usage of the ALD product before the acceptance documents have been signed is strictly limited to actions aimed at reaching the acceptance. Any other usage will render the warranty of the ALD product void.

All invoices are sent electronically in PDF format and paper invoices only on separate request.

All orders made pursuant to the Transaction Document(s) are subject to credit approval by Seller. The amount of any credit extended by Seller to Buyer may be changed, and such credit may be withdrawn by Seller. With respect to an order on which credit is not extended by Seller or, if extended, is subsequently withdrawn, shipment or delivery shall be made through Letter of Credit, with all costs arising for the account of Buyer. If, at Seller's sole discretion, the financial condition of Buyer does not justify continuation of production or shipment on the terms of payment originally specified, Seller is entitled to require full or partial payment in advance.

Each shipment shall be considered a separate independent transaction, and payment therefore shall be made accordingly. If for any reason Buyer is not prepared to accept delivery of Equipment in accordance with agreed timing, Seller may store the Equipment at Buyer's expense and risk in the name of Buyer, and such storage shall constitute shipment and delivery to Buyer.

7.9. TAXES AND DUTIES

Unless otherwise agreed in the Transaction Document(s), quoted prices are net prices and they do not include excise, sales, use or similar taxes or duties. Accordingly, in addition to the prices specified on the written quotation, Buyer shall be responsible for and shall pay the amount of any applicable excise, sales, use and/or similar taxes and duties , however designated, applied on the sale, transportation, import, export, or use related to any Equipment or Services.

7.10. RESCHEDULING

If one shipping date rescheduling is requested by the Buyer, the charges shall be determined as follows and shall be due and payable within ten (10) days of the rescheduling.

Number of Weeks of Rescheduling Requested	Rescheduling Charge
Up to 4 Weeks	No Charge
5 to 8 Weeks	1% of Purchase Price/week
9 to 12 Weeks	2% of Purchase Price/week
13+ Weeks	3% of Purchase Price/week or order considered canceled

Subsequent shipping date rescheduling will be considered a cancellation of the transaction. On any shipping date that is rescheduled and subsequently canceled, cancellation charges will be based upon the time between the originally scheduled delivery date and the date of notice of cancellation.

7.11. CANCELLATION

In the event of cancellation by Buyer of any order, Buyer shall pay Seller a cancellation charge based upon the timing of the cancellation notice as follows:

Cancellation Notice Given X Days Before Confirmed Shipment Date of Order	Cancellation Fee Equals the Following Percentage of Purchase Price
More than 90 days	35%
61 – 90 days	50%
31 – 60 days	75%
0 – 30 days	100%

(or at any time after the original Confirmed Shipment Date, if rescheduled)

At Seller's discretion, Seller may accept the return of parts, provided that (i) Buyer first receives Seller's written authorization to return the parts and thereafter follows Seller's shipping instructions and (ii) returns are to be in the original packaging and in the original condition when delivered to Buyer.

7.12. INTELLECTUAL PROPERTY RIGHTS AND CONFIDENTIALITY

The Seller retains any and all intellectual property rights, including but not limited to copyright, design rights, patents, trademarks and logos in the ALD Products and Services. Any and all new intellectual property rights relating to any ALD Product and/or Service, including but not limited to all modifications, corrections and technical feedback developed jointly by the Parties or developed or suggested by either Party shall be vested in Seller. To Sellers knowledge and belief, the ALD Products and/or Services do not infringe any patents or third party rights when used for its original purpose. Buyer shall not make any changes to any parts of the Equipment under patents or other intellectual property rights without Sellers written permission. The Seller does not license or sell to Buyer any intellectual property rights of utilizing any chemicals in the film deposition or depositing any materials or depositing any materials for any technical applications in the ALD Product under any Transaction Document(s). Buyer is expected to ensure that the deposition process planned to use is not infringing any intellectual property rights of a third party. However, if Buyer is subjected to any allegation of infringement of any intellectual property rights of utilizing any chemicals or depositing any material or depositing any materials to any technical applications in the ALD Product, the Buyer is fully responsible of all actions, claims, demands, proceedings, damages, costs, charges and expenses caused by infringement or alleged infringements of third party's intellectual property rights.

Buyer hereby undertakes not to manufacture a copy or a modification of or in any other way to exploit directly or indirectly the ALD Product or any part of it. All know-how, samples, models, designs and drawings relating to the ALD Product or its development are strictly confidential and shall remain the sole property of Seller and Buyer shall not copy, use or disclose the same or any part thereof without the prior written consent of Seller. Buyer shall take all reasonable steps to ensure that its employees and agents keep such information secret and refrain from using such information except as authorised herein. Buyer hereby undertakes not to demonstrate the ALD Product or any part of it by any means including but not limited to by photographing, video filming, copying or by other comparable means to any third party, such as a competitor of Seller or its agent or to allow the competitor to inspect it without a prior written consent by Seller.

Buyer shall keep secret and shall not divulge to any third party, except sub-contractors accepting a like obligation of secrecy and then only to the extent necessary for the performance of any sub-contract, all confidential information given in writing or which becomes known to Buyer through his use of the ALD Product. Buyer shall take all reasonable steps to ensure that its employees and agents keep such information secret and refrain from using such information except as authorised herein. Seller has the right to claim and receive from Buyer compensation for the damage caused to the Seller's business by any violation of this section.

7.13. WARRANTY

Seller warrants to the original Buyer that new Equipment will be free of material defects in material and workmanship for a period of eighteen months commencing on the earlier of (a) final acceptance, (b) taking of the Equipment into material production (c) Equipment demonstration sign-off, if applicable or (d) 90 days from shipping. This warranty covers the cost of parts and labor (including, where applicable, field service labor and travel required to restore the Equipment to normal operation), and includes parts provided after initial shipment, if any, that may be required in order to achieve the proper functioning of the Equipment according to its technical specifications.

Seller warrants to the original Buyer that replacement or repaired parts provided under the original warranty will be new or of equal functional quality and warranted for the remaining warranty period of the original warranty or 90 days from shipping, whichever is longer.

Seller warrants to the original Buyer that software will perform in substantial compliance with the written materials accompanying the software. Seller does not warrant uninterrupted or error-free operation of the software. Title to the software provided with the Equipment remains with the Seller or Seller's licensors, as the case may be. Unless otherwise provided in the Transaction Document(s) or pursuant to a separate written agreement between Buyer and Seller, Seller grants Buyer a non-exclusive, non-transferable right to use such software internally only in machine readable form and solely as part of the Equipment into which the software is embedded. Software shall not be copied in whole or in part by Buyer, and Buyer agrees not to provide, disclose or otherwise transfer any such software, or any portion of such software, to any third party on standalone basis. Any attempt to transfer software without Seller's prior written approval shall automatically terminate Buyer's license to use the software, and any use of such software by Buyer's intended transferee shall be without Seller's authorization. This license shall terminate when Buyer discontinues use of the software or Equipment with which such software is provided.

Seller's sole obligation and Buyer's sole and exclusive remedy under this warranty is limited to repairing or replacing, at Seller's option, defective parts or software. These services will be performed, at Seller's option, at either Seller's facility or Buyer's business location. For repairs performed at Seller's facility, Buyer must contact Seller in advance for authorization to return Equipment and must follow Seller's shipping instructions. Freight charges and shipments to Seller are Buyer's responsibility. Seller will return the Equipment to Buyer at Seller's expense.

The warranty obligation of Seller shall not extend to defects that do not impair service or to provide warranty service beyond normal business hours, Monday through Friday (excluding Seller holidays). No claim will be allowed for any defect unless Seller shall have received notice of the defect within thirty days following its discovery by Buyer. Also, no claim will be allowed for Equipment damaged in shipment sold under standard terms of EXW Masala, Incoterms 2013. Within thirty days of Buyer's receipt of Equipment, Seller must receive notice of any defect which Buyer could have discovered by prompt inspection.

Expendable items, including, but not limited to, filters, valves, lamps, wafer carriers, lights, filaments, fuses, mechanical pump belts, V-belts, wafer transport belts, pump fluids, O-rings and seals ARE SPECIFICALLY EXCLUDED FROM THE FOREGOING WARRANTY. Seller's sole warranty with respect to expendable items is that at the time of delivery, the form, fit and function of the expendable item shall be suitable for use with Seller's Equipment. Replacement and repaired parts provided by Seller which are not covered by the original equipment warranty shall be free of defects in materials and workmanship for a period of ninety (90) days from shipping. All stand-alone computer and data storage equipment not manufactured by Seller (such as computers, monitors, printers and printer buffers) is excluded from this warranty. Such equipment will carry only the original manufacturer's warranty.

Notwithstanding the aforesaid in this section, the warranty does not cover Equipment or system failures resulting from (1) normal wear and tear (2) abuse, misuse, modification or mishandling; (3) damage due to forces external to the machine including, but not limited to, flooding, fire, explosion, earthquakes, typhoons, volcanic activity, power surges, power failures, defective electrical work, transportation, foreign equipment/attachments, or utilities or services such as gas; (4) the use of parts, expendable items, or labor not provided by Seller or authorized for use by Seller; (5) improper operation or maintenance; (6) failure to perform preventive maintenance in accordance with Seller's recommendations (including keeping an accurate log of preventive maintenance) or (7) if Buyer performs the installation of the Equipment and it is not performed in accordance with Seller's instructions. In addition, this warranty does not apply if any Equipment or part has been modified without the written permission of Seller or if any Seller serial number has been removed or defaced.

Seller reserves the right to make technical modifications to its Equipment and individual parts thereof and vary the specifications of its Equipment without assuming any obligation to make said modifications and variations to Equipment which have previously been sold and/or delivered to its customers.

This warranty is for the benefit of the original Buyer only and is not transferable. No one is authorized to extend or alter this warranty on Seller's behalf without the written authorization of Seller.

THE FOREGOING WARRANTY SETS FORTH THE ENTIRE LIABILITY OF SELLER AND THE ABOVE WARRANTY IS EXPRESSLY IN LIEU OF ANY OTHER EXPRESS OR IMPLIED WARRANTIES (INCLUDING THE WARRANTY OF MERCHANTABILITY), AND OF ANY OTHER OBLIGATION ON THE PART OF SELLER. SELLER DOES NOT WARRANT THAT ANY EQUIPMENT OR SYSTEM CAN BE USED FOR ANY PARTICULAR PURPOSE OR WITH ANY PARTICULAR PROCESS OTHER THAN THAT COVERED BY THE APPLICABLE PUBLISHED SPECIFICATIONS.

7.14. DECLARATION OF CONFORMANCE AND SAFETY

The ALD Product is CE-marked, it will be provided with a declaration of conformance. The ALD Product will confirm to laws and regulations of the country of manufacture. The Buyer shall be responsible for the conformity of the Equipment with any specific national laws in Buyer's country.

Buyer shall take all such steps as required by applicable directives, laws and regulations and all other steps which are mandatory, practical or usual to eliminate or reduce any risk to health and/or safety to which use or storage of the Equipment may give rise, and shall indemnify and hold harmless Seller for any claims arising as a result of breach of this section by Buyer. In case the Equipment is used contrary to the instructions and manuals given by Seller from time to time or for purposes other than originally designed for or has been modified, relocated or altered without the written consent of Seller or is not serviced properly (e.g. use of non-original spare parts) according to the maintenance manuals by authorized service personnel, Seller shall not be liable for any damage to property or death or injury. Seller shall in order to maintain or improve the safety of the Equipment be entitled to give instructions and orders in respect of the use of the Equipment and to repair defects and shortcomings in relation to the safety of the Equipment. Each Party shall ensure that its personnel and the personnel of its subcontractors observe all applicable health and safety regulations, without limitation, especially during the installation, training and start-up proceedings.

7.15. NO CONSEQUENTIAL DAMAGES. LIMITATION OF LIABILITY

NOTWITHSTANDING ANY PROVISION CONTAINED IN THESE GENERAL CONDITIIONS OR IN OTHER TRANSACTION DOCUMENT(S) SELLER SHALL NOT BE LIABLE IN CONTRACT, TORT OR OTHERWISE FOR CONSEQUENTIAL DAMAGES, FOR ANTICIPATED OR LOST PROFITS, INCIDENTAL, INDIRECT, SPECIAL OR PUNITIVE DAMAGES, LOSS OF TIME, LOSS OF USE, BUSINESS OR PRODUCTION INTERRUPTION OR OTHER LOSSES, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGES, INCURRED BY BUYER OR ANY THIRD PARTY IN CONNECTION WITH THE EQUIPMENT OR SERVICES OR THE INSTALLATION, SITE PREPARATION ACTIVITIES AND DELIVERY OF THE SAME. IN NO EVENT WILL SELLER'S AGGREGATE LIABILITY IN CONNECTION WITH AN ITEM OF EQUIPMENT OR A PARTICULAR SERVICE PROVIDED BY SELLER EXCEED THE AMOUNTS PAID TO SELLER BY BUYER FOR SUCH ITEM OF EQUIPMENT OR PARTICULAR SERVICE.

7.16. FORCE MAJEURE

The seller shall not be liable for failure to perform occasioned by strikes, lockouts, labor difficulties, riots, inability or difficulty in obtaining or procuring supplies, labor or transportation, fires, storms, floods, earthquakes, explosions, accidents, interference by civil or military authorities, whether legal or de facto, war, rebellion, insurrection, sabotage, embargoes, orders given priority by any public authority or any other cause beyond the reasonable control of Seller (such occurrences collectively called "force majeure events"). Seller shall promptly notify the other party in writing of any force majeure event and shall undertake appropriate remedial measures to mitigate its impact.

7.17. ASSIGNMENT

Neither party shall assign this agreement or any portion thereof without the prior written consent of the other party. Notwithstanding the foregoing the Seller shall be entitled to assign its rights and obligations arising out of the Transaction Document(s) to any of its affiliates or to a successor organization by merger or acquisition, without the consent of the other party. In addition Seller may appoint subcontractors for any services provided under the Transaction Document(s) without the prior written consent of Buyer.

7.18. COMPLIANCE WITH LAWS

All quotations by Seller and all purchase orders are subject to compliance with governing laws and regulations. Buyer acknowledges that Seller's products and related technical information may be subject to export control regulations of Finland and the EU ("Export Control Laws"). Buyer agrees to take all steps necessary to comply with applicable Export Control Laws and related policies and procedures of Seller as in effect from time to time. Buyer also agrees to assist Seller in obtaining export, import and other regulatory approvals that may be necessary or appropriate in connection with the performance of the transactions hereunder.

7.19. APPLICABLE LAW AND DISPUTE RESOLUTION

All disputes arising in connection with the Transaction Document(s), these General Conditions or delivery and use of the Equipment and Services shall be finally and exclusively settled through arbitration conducted under the Rules of Arbitration of the Central Chamber of Commerce, Finland by one arbitrator appointed in accordance with the said Rules. The arbitration shall be held in Helsinki, Finland in the English language.

The contract between the Parties shall be constructed in accordance with and governed in all respects by the Finnish law, excluding its choice of law provisions.

Main HQ

Picosun Oy
Masalantie 365
FI-02430 Masala, Finland
Tel. +358 50 321 1955
Fax +358 9 297 6116
info@picosun.com

Picosun Oy
Tietotie 3
FI-02150 Espoo, Finland
Tel. +358 50 321 1955
info@picosun.com

European HQ

Picosun Europe GmbH
Tel. +49 1522 449 49 11
sales@picosun.com

North American HQ

Picosun USA, LLC
Tel. +1 214 790 0844
Mobile +1 214 490 3951
sales@picosun.com

Asian HQ

Picosun Asia Pte. Ltd., Singapore
Tel. +65 9756 3265
sales@picosun.com

Picosun Taiwan Co. Ltd.
Tel. +886 90 515 2985
sales@picosun.com

Picosun China Co. Ltd.
Tel. +358 40 480 3449
sales@picosun.com

Picosun Japan Co. Ltd.
Tel. +81 3 6431 9500
Mobile +81 90 5198 8131
sales@picosun.com