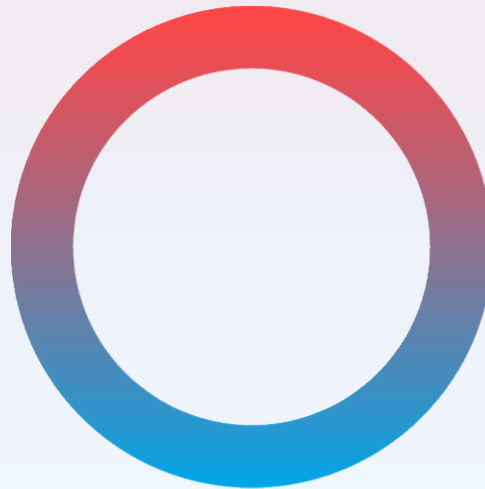


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# LAUDA-NOAH NEW PRODUCTS INTRODUCTION

02/03/2020

°FAHRENHEIT. °CELSIUS. °LAUDA.

# LAUDA-NOAH TE BASED SYSTEMS

## High Performance

- Rapid Temperature Response
- Repeatable and Accurate Performance

## Value Driven

- Low Total Cost of Ownership
- Minimal Fluid Use
- Low Power Consumption
- High Energy Efficiency, Especially In Above Ambient Applications
- Less consumption of Process Cooling Water (PCW)

## Flexible

- Compatible With Major Etch Tool Supplier Communication Interfaces and Protocols
- Minimum Facility Footprint With Sub-Floor Mounting
- Modular Design - Flexible Installation, Easy On-Site Maintenance
- Configurable For Process Match To Legacy Systems

## Reliable

- Solid State Thermoelectric Design - Virtually Maintenance Free

## Environmentally Sustainable

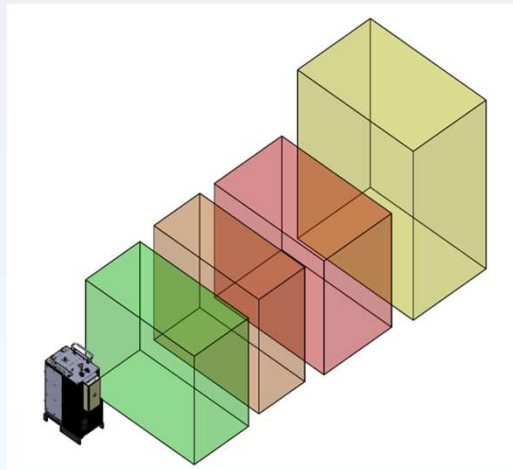
- No F-Gas, No Refrigerants



# SYSTEM SIZE COMPARISON

- **Small Footprint**

- Easy To Install At The Point Of Use
- Closer System Proximity For Faster System Response Time
- Saves Limited Space In The Clean Room
- Creates a Barrier To Entry For Future Competitors



## MEET THE NEW SEMISTAT MODELS



Semistat S 1200  
1200W @ 20C



Semistat S 2400  
2400W @ 20C



Semistat S 4400  
4400W @ 20C

# NEW LAUDA-NOAH SEMISTAT PRODUCT LINE

## Design Reimagined From The Ground Up

- New generation of TE devices for maximum performance per unit volume
- Designed with a focus on ease of use and reliability (MTBF expected to be > 8 years)
- Clear overflow tank with fill indicator eases identification of process fluid maintenance
- More complete overflow tank seal reduces process fluid evaporation

## Migration That Couldn't Be Simpler

- Drop in equivalent to legacy systems (with accompanying PSC)
- Smaller unit footprint increases installation flexibility over legacy POU systems

## Redefining Value

- Lower price points in existing customer performance space
- New Semistat S4400 performance level to broaden application coverage



# LAUDA-NOAH SEMISTAT S 1200

## The Performance You Need In The World's Smallest Package

- Virtually identical performance to POU 3300 (1200W Cooling Capacity @ +20 °C)
- 34% smaller than POU 3300, 37% smaller than thermoelectric based competitors models
- Drop in equivalent to legacy systems (with accompanying PSC 1200)
- 9% system price improvement compared POU 3300\*

\* May vary by specific system configuration



# LAUDA-NOAH SEMISTAT S 2400

## A New Mid-Range Size & Performance Benchmark

- 3500 performance in a much smaller package (2400W Cooling Capacity at +20 °C)
- Drop in equivalent to legacy systems (with accompanying PSC 2400)
- Physical installation equivalent to legacy POU 3300 and significantly smaller than performance equivalent POU 3500



# LAUDA-NOAH SEMISTAT S 4400

## A New Standard In Performance To Meet The Most Demanding Applications

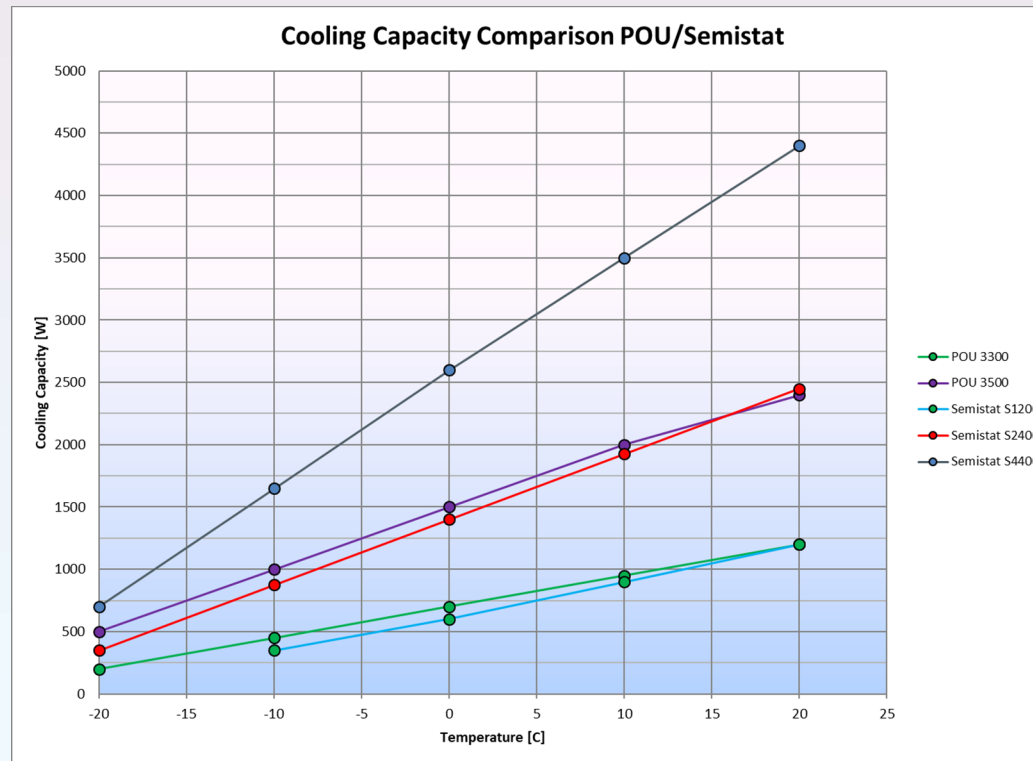
- Next level performance in a 3500 package (4400W Cooling Capacity at +20 °C)
- 83% performance increase with zero size or weight increase
- Dual PCW flow compatible\*
- Drop in equivalent to legacy systems (with accompanying PSC 4400)\*\*

\*Dual PCW loops or PCW manifold required to achieve maximum cooling capacity

\*\* 35A service required when paired with PSC 4400.



# POU & SEMISTAT COOLING CAPACITY



# LAUDA-NOAH PSCS

## Power Optimized To The Application

- Architecture Supporting Three New PSC Models – PSC 1200, PSC 2400, PSC 4400
- Power output matched to POU/Semistat models (see PSC-POU compatibility chart)
- Equivalent performance, energy consumption between PSC 2400 and legacy PSC2

## A Breakthrough In Reliability & Serviceability






- All design IP owned by LAUDA
- Modular design facilitates simpler, faster and more cost effective repairs
- Can be serviced and repaired completely by global service partners



# POU – PSC COMPATIBILITY

## PSC-Semistat Recommended Configurations



	Semistat S1200	POU 3300	Semistat S2400	POU 3500	Semistat S4400
PSC 1200					
PSC 2400					
PSC 4400					

## POU - PSC CONFIGURATION SUMMARY

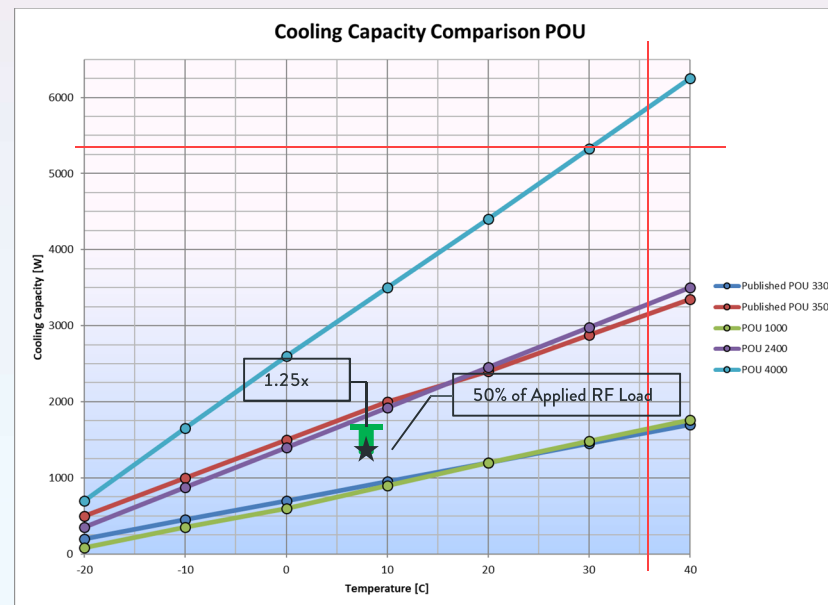
- **Legacy POU's (3300, 3500): Always pair with PSC 2400**
  - Legacy system customers: high value placed on system equivalence
- **New Semistat Devices (S 1200, S 2400, S 4400): Always pair with corresponding PSC model**
  - New system customers: Either new to the product line or high value placed on new features
  - S 1200 + PSC 1200
  - S 2400 + PSC 2400
  - S 4400 + PSC 4400



# SYSTEM CONFIGURATION – STEP 1

## Ask The Right Questions - Part 1

- What is the applied RF load in your application?
- What is the temperature set point in your application?



## SYSTEM CONFIGURATION – STEP 1

- **Consult the POU/Semistat datasheet**
  - Determine the Hx module which meets the application point
- **Consult the POU-PSC Compatibility Chart**
  - Select the appropriate PSC
- **Promote New Products Wherever Possible!**



+



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???

## SYSTEM CONFIGURATION – STEP 2

### Ask The Right Questions - Part 2

- What is the tool platform and chamber type?
- Determines RCM requirement
- If LAM – Analog or digital (LONWORKS) tool interface?
- Determines interface cables and chamber fittings



**LAM (Analog):**  
RCM-PM2  
RCM2\*

**TEL:**  
RCMT

**LAM (Digital):**  
RCMe

**AMAT / PlasmaTherm**  
No RCM required!

\* - RCM2 not pictured

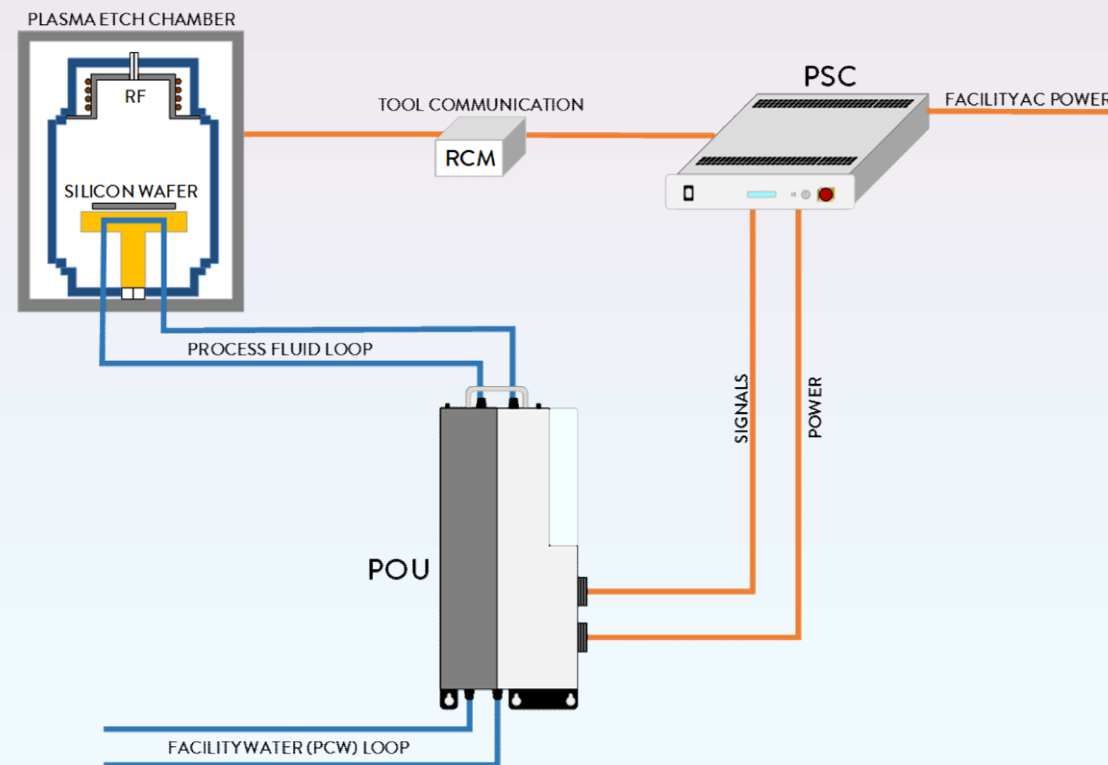
## SYSTEM CONFIGURATION – STEP 2

### Ask The Right Questions - Part 2

- **Gather other installation details**

- How long do the process and PCW fluid hoses need to be?
- How long does the POU – PSC electrical cabling need to be?
- How many systems will be installed?
- Channel sharing possible for RCMs
- Daisy Chaining PSC comms affects comm cable configuration

# SYSTEM CONFIGURATION OVERVIEW



# THE FINE PRINT

- **S 1200 and S 2400 EQUIVALENCY WITH LEGACY POU<sub>s</sub>**
  - Different TE's are used in the new products, which have a unique efficiency curve.
  - The position of the application point may result in power efficiency differences between the new models and their legacy equivalents.
- **S 2400**
  - Single Pump means somewhat lower flow rate than POU 3500
  - May not be suitable for LAM 2400, where 3500 is already near min acceptable flow rate
- **S 4400**
  - Configured with two PCW connections – 4 GPM each for a total of 8 GPM
  - Customer either needs two loops, or can purchase optional pipe manifold accessory
  - Requires higher PCW flow rate to achieve max performance (8GPM)
  - Required PCW flow rate is in line with competitive products of similar performance
  - Requires PSC 4400 and 35A service for max performance, legacy products only required 30A service. This is an additional facility requirement.
- **PSC<sub>s</sub>**
  - PSC 4400 requires 35A service
- **SEMISTAT PRODUCT COMPATIBILITY WITH LEGACY PSC2**
  - Not compatible – No pump tach output from Semistat models will cause PSC2 alarm.
  - Semistat models must be paired with new PSC models – they are a system, not individual components.

