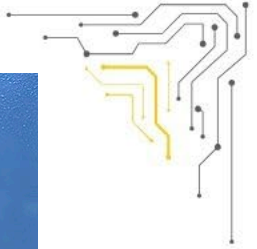
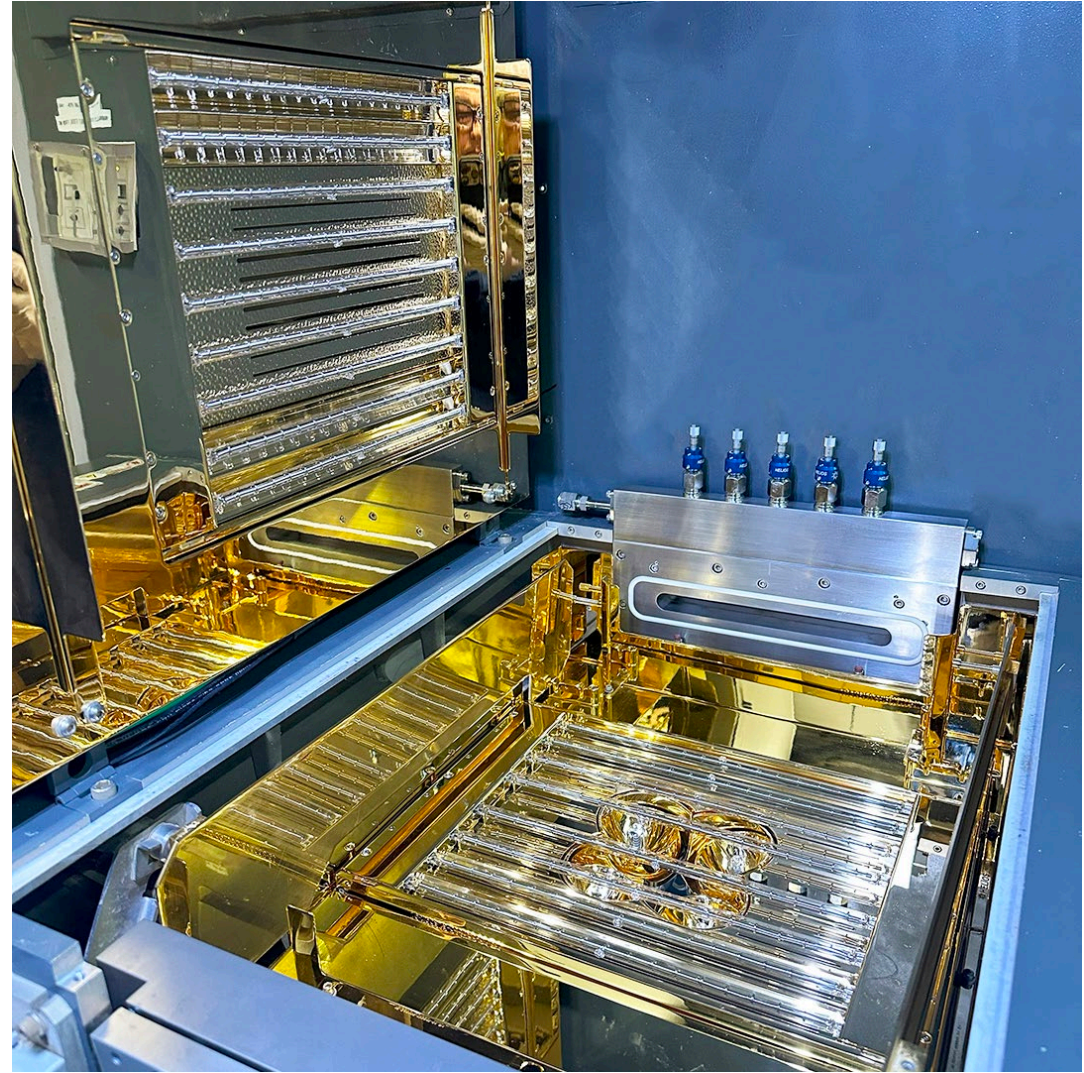




Helios – Reactor GOLD

The Solutions Company

Helios – Reactor GOLD





Helios Reactor Gold

The two central topics when discussing GOLD:

- 1. Reactor GOLD quality is critical to wafer performance, tunability, and manufacturing consistency**
- 2. GOLD configurations vary leading to inconsistencies in tool to tool performance, recipe optimization and film performance**





Helios Reactor Gold

Reactor GOLD quality is critical to wafer performance, tunability, and manufacturing consistency:

- **Gold is used in reactors for its emissivity properties, temperature tolerance and corrosion resistance**
 - **Degraded or low quality Gold can cause thermal anomalies**
- **Degraded or poor quality Gold leads to different tuning of each reactor for the same recipe**
 - **Many Fabs must continually augment recipes to compensate for temperature changes / degraded Gold**

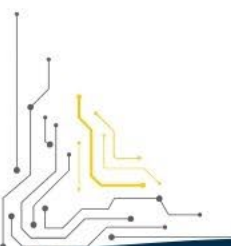




Helios Reactor Gold

GOLD configurations vary across tools, leading to inconsistencies in tool to tool performance, recipe optimization, manufacturing and film performance

- **There are many configurations of gold available**
 - **Number of parabolic, stippling**
- **Most fabs have multiple configurations – not consistent across the fleet**
 - **Leads to performance issues as well as spares challenges and availability**
- **Many customers have changed their product mix for more demanding Epi films**
 - **More demanding films require greater temperature control gained from some gold configurations**





Helios Reactor Gold

Is it time to upgrade your Gold?

Helios manufactures quality gold and in all configurations

- **Let Helios supply you with the best gold configuration for your Processes**
 - **Create a Gold configuration best suited for your needs**
- **With your optimized Helios Gold configuration, you can stock useful spares and upgrade your other reactors in a timely manner**
- **Replace your old, worn out, or damaged gold**
- **Consistency and availability in spare gold**





Helios Reactor Gold

All configurations (choices) for both Upper and Lower

NOTES:
 1. OPTIONAL CENTER REFLECTORS
 2. OPTIONAL SIDE REFLECTORS

OPTION 1 STIPPLED
STIPPLE CENTER REFLECTOR

OPTION 2 SHINNY
SHINNY CENTER REFLECTOR

OPTION 1A FLAT SHINNY
SHINNY SIDE REFLECTOR

OPTION 2A FLAT STIPPLED
STIPPLE SIDE REFLECTOR

OPTION 3A SHINNY / 1 PARA
SHINNY SIDE REFLECTOR 1 PARABOLIC

OPTION 4A STIPPLED / 1 PARA
STIPPLE SIDE REFLECTOR 1 PARABOLIC

OPTION 5A DOUBLE PARABOLIC
SIDE REFLECTOR 2 PARABOLIC

ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	16-231219-100340-01	LED-PCB
2	2	16-231219-172930-01	DAM-LIGHT-TOP
3	2	16-230919-046750-01	FRAME-LAMP-SIDE
4	2	16-230919-044330-01	FRAME-LAMP-END
5	2	02-231120-135040-01	ASSY-REFLECTOR-COVER-UPPER
6	1	16-240521-050940-01	REFL-ARRAY-A-CENTER-UPPER-STIP
7	1	16-240521-052850-01	REFL-ARRAY-S-CENTER-UPPER-STIP
8	1	16-240102-104550-01	REFL-ARRAY-A-CENTER-UPPER-SHINNY
9	1	16-240102-110550-01	REFL-ARRAY-S-CENTER-UPPER-SHINNY
10	2	16-231116-112850-01	REFL-ARRAY-SIDE-SHINNY
11	2	16-231122-170930-01	REFL-ARRAY-SIDE-STIPPLE
12	2	16-231121-172520-01	REFL-ARRAY-SIDE-1-PAR-SHINNY
13	2	16-231121-110530-01	REFL-ARRAY-SIDE-1-PAR-STIP
14	2	16-231122-185020-01	REFL-ARRAY-SIDE-2-PAR

PARTS LIST

ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	16-231220-104840-01	PLATE-PCB-BOTTOM
2	1	16-240521-143430-01	DAM-LIGHT-REAR-NO-CUTOUT
3	1	16-240109-122810-01	DAM-LIGHT-REAR-WITH-CUTOUT
4	1	16-240109-105510-01	LIGHT-DAM-FRONT
5	1	16-231213-174620-01	DAM-LIGHT-CORNER-LH
6	1	16-231213-179610-01	DAM-LIGHT-CORNER-RH
7	2	16-231213-133010-01	DAM-LIGHT-SIDE
8	1	16-231219-161050-01	WGMT-REFLECT-SIDE-WTR-COOL-RL
9	1	16-231219-162720-01	WGMT-REFLECT-SIDE-WTR-COOL-LH
10	2	16-231220-174440-01	LOCATOR-SIDE-REFLECT-POSITION
11	2	16-230919-046750-01	FRAME-LAMP-SIDE
12	2	16-230919-044330-01	FRAME-LAMP-END
13	2	02-231120-132020-01	ASSY-REFLECTOR-S-COVER-LOWER
14	1	16-231116-112210-01	REFL-ARRAY-CENTER-LOWER-SHINNY
15	2	16-231116-112850-01	REFL-ARRAY-SIDE-SHINNY
16	2	16-231121-172520-01	REFL-ARRAY-SIDE-1-PAR-SHINNY
17	2	16-231121-165020-01	REFL-ARRAY-SIDE-2-PAR
18	1	16-231103-144810-01	WGMT-SPOTLAMP
19	4	16-231227-171710-01	REFLECTOR-SPOTLAMP
20	1	16-240528-121040-01	PLATE-PCB-BTM-WRP-RB-SENSOR
24	1	16-265410-131510-01	REFL-ARRAY-CENTER-LOWER-STIP
25	2	02-240716-171010-01	ASSY-SPOTLAMP-HOLDER-RH
26	2	02-240716-181520-01	ASSY-SPOTLAMP-HOLDER-LH

GOLD-CONF-UPPER
 DWG NO: 02-240521-145520-01
 SCALE: 1:1

NOTES:
 1. OPTIONAL SIDE REFLECTORS
 2. OPTIONAL REAR LIGHT DAMS
 3. OPTIONAL BOTTOM PLATES
 4. OPTIONAL CENTER REFLECTORS

OPTION 1 STIPPLED
STIPPLE CENTER REFLECTOR

OPTION 2 SHINNY
SHINNY CENTER REFLECTOR

OPTION 5 STIPPLED
SHINNY CENTER REFLECTOR

OPTION 4 SHINNY
SHINNY SIDE REFLECTOR

OPTION 1 FLAT SHINNY
SHINNY SIDE REFLECTOR

OPTION 2 FLAT SHINNY
SHINNY SIDE REFLECTOR 1 PARABOLIC

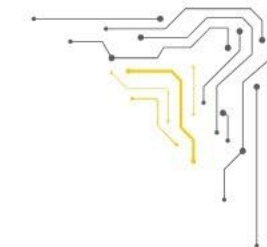
OPTION 3 DOUBLE PARABOLIC
SIDE REFLECTOR 2 PARABOLIC

ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	16-231219-100340-01	LED-PCB
2	2	16-231219-172930-01	DAM-LIGHT-TOP
3	2	16-230919-046750-01	FRAME-LAMP-SIDE
4	2	16-230919-044330-01	FRAME-LAMP-END
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8	1	16-240102-104550-01	REFL-ARRAY-A-CENTER-UPPER-SHINNY
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14	2	16-231122-185020-01	REFL-ARRAY-SIDE-2-PAR

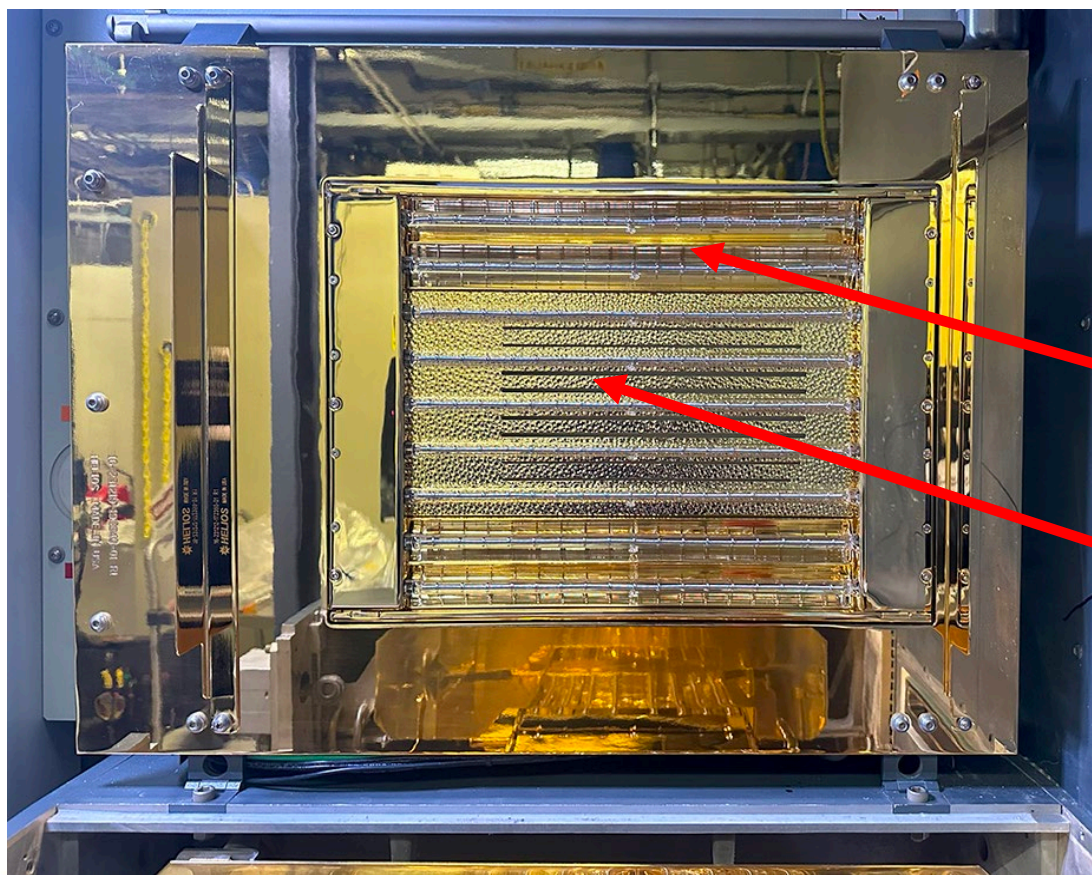
PARTS LIST

ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	16-231220-104840-01	PLATE-PCB-BOTTOM
2	1	16-240521-143430-01	DAM-LIGHT-REAR-NO-CUTOUT
3	1	16-240109-122810-01	DAM-LIGHT-REAR-WITH-CUTOUT
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26	2	02-240716-181520-01	ASSY-SPOTLAMP-HOLDER-LH

GOLD-CONF-LOWER
 DWG NO: 02-240521-145010-01
 SCALE: 1:1



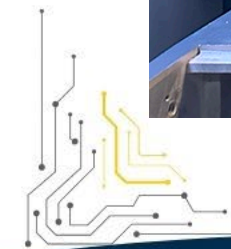
Helios Reactor Gold - example



Option for best performance and tunability

Dual Parabolic

Stippled, shinny



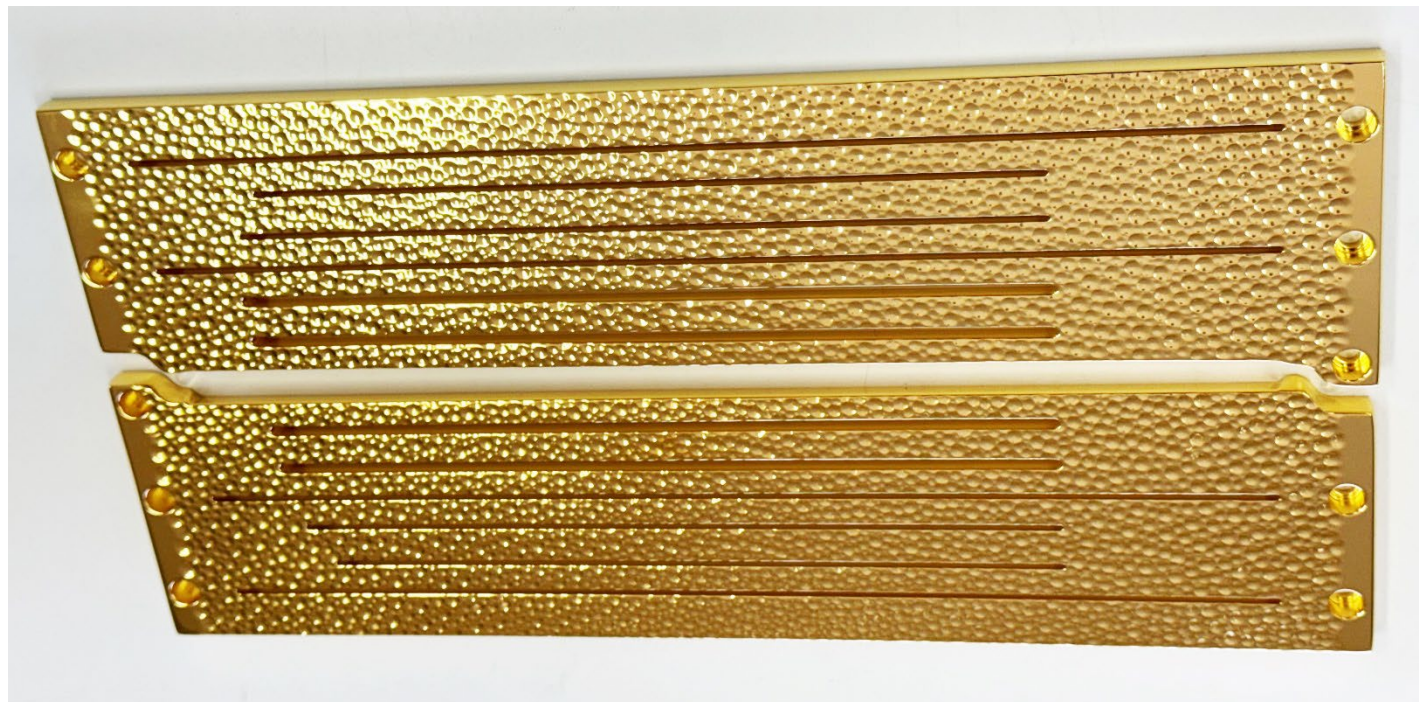


Helios Reactor Gold - example



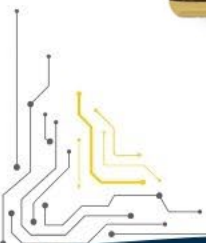
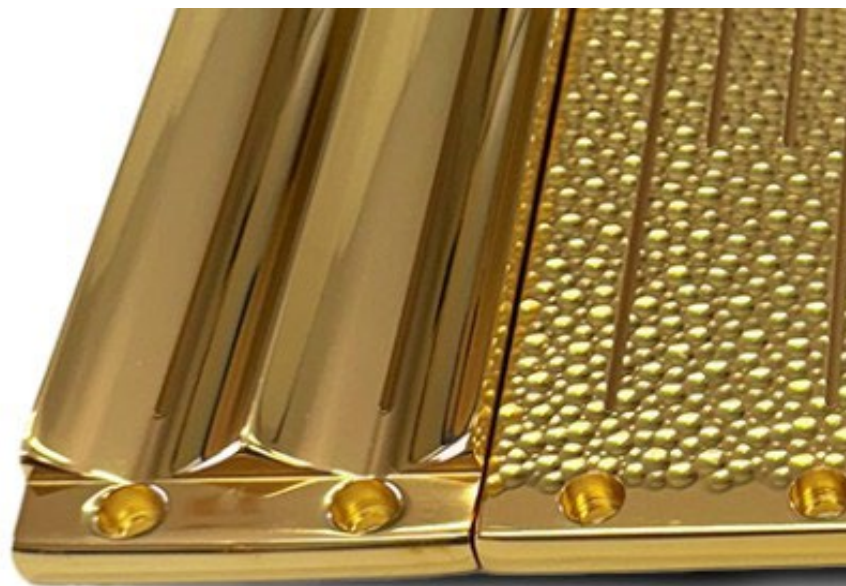
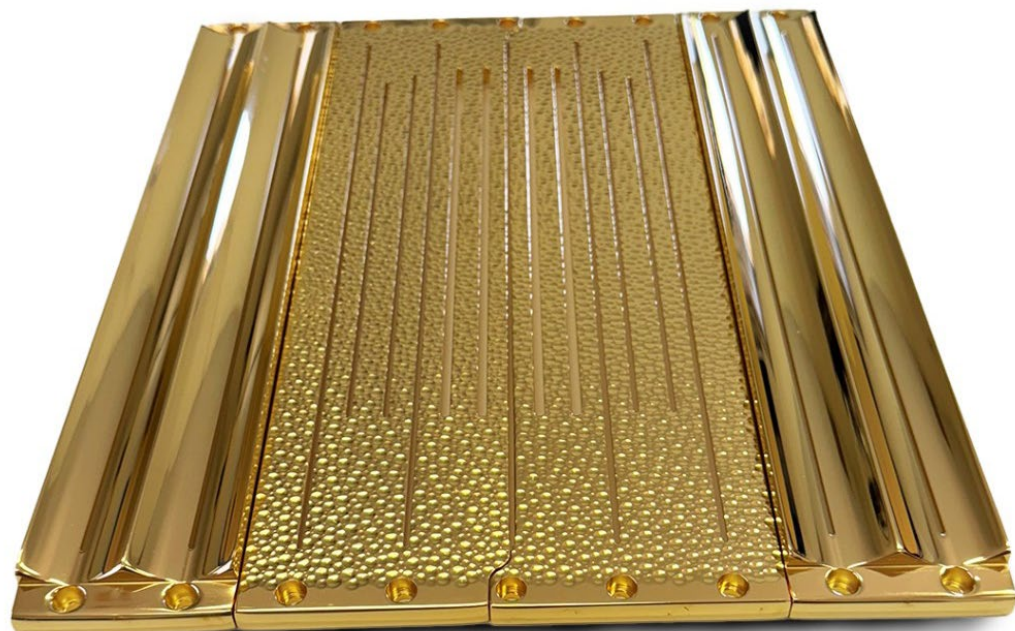


Helios Reactor Gold - example



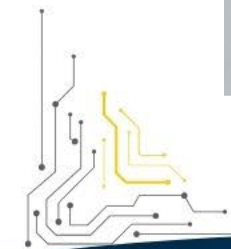
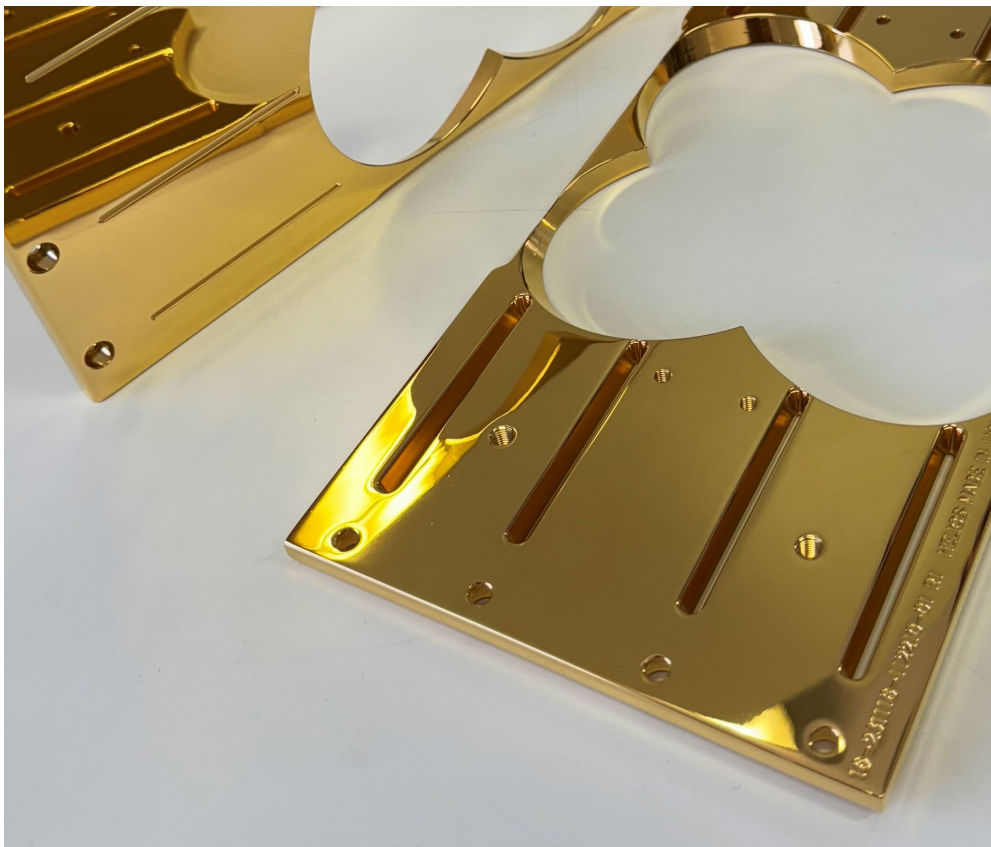


Helios Reactor Gold - example



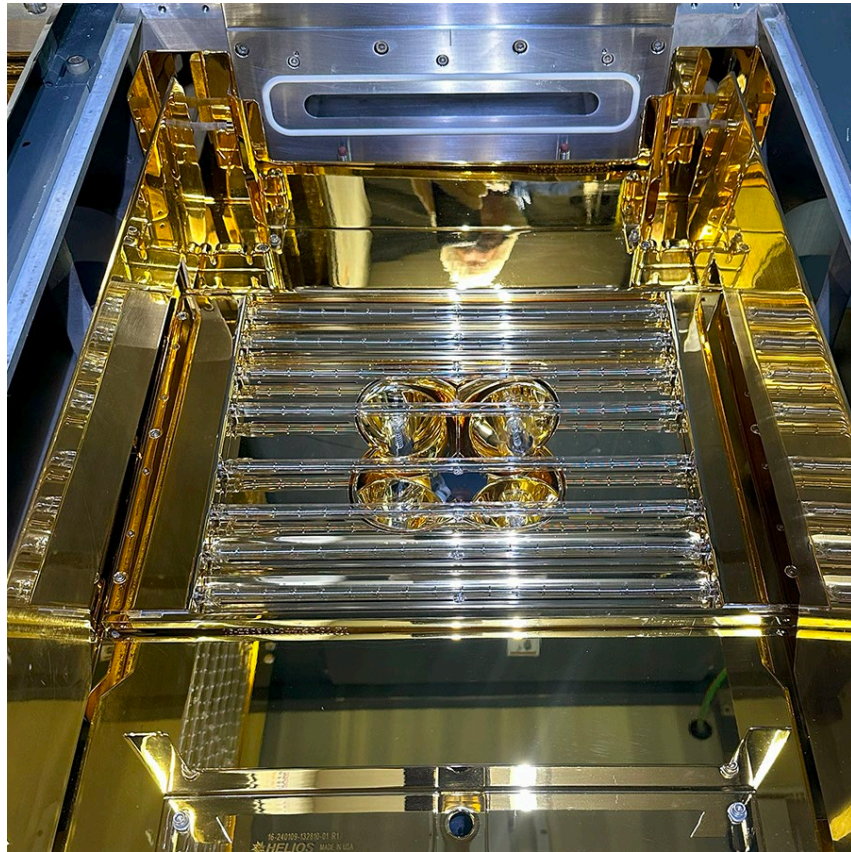


Helios Reactor Gold - example



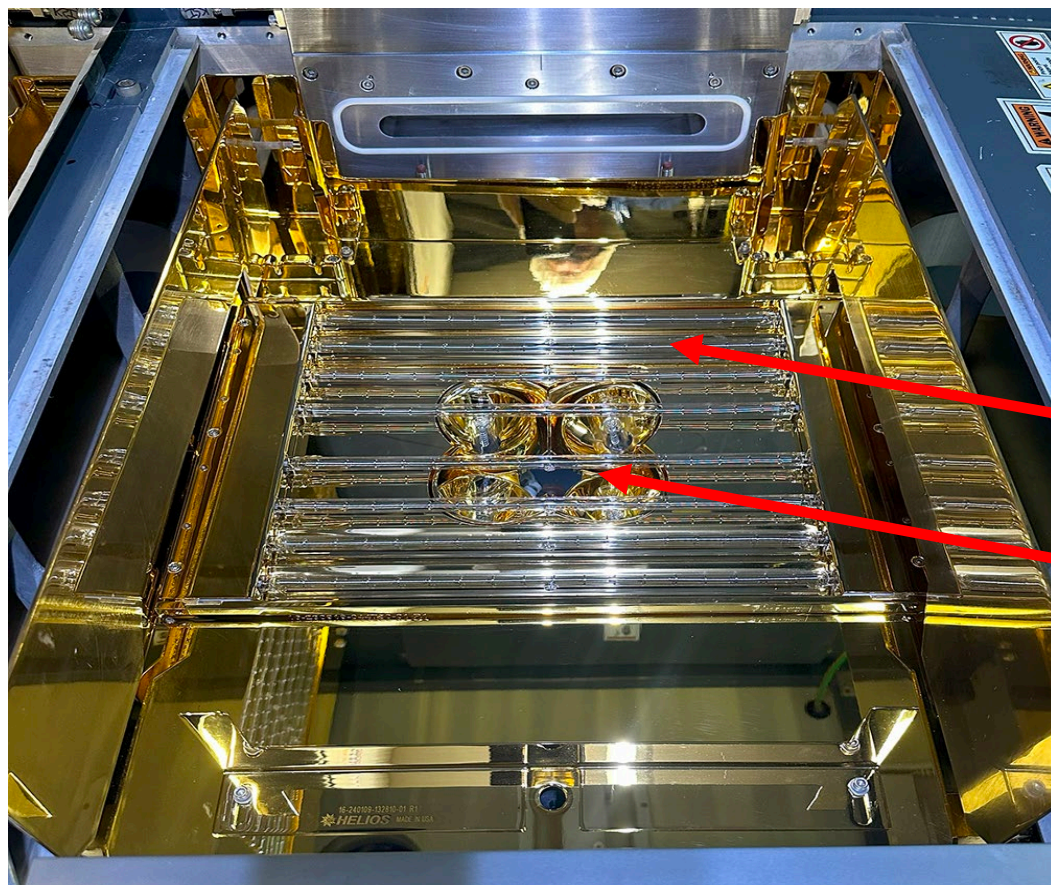


Helios Reactor Gold - example





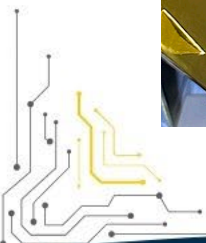
Helios Reactor Gold - example



Option for best performance and tunability

Dual Parabolic

Adjustable Spotlamps





Helios – Reactor Gold – Reconditioning

Helios can typically recondition your current gold components for approximately 70% of new cost



Damaged and reconditioned shown

