



## Ophthalmic optics.

- Anti-reflection (AR) coatings
- Fashion mirror coatings
- Hard coatings
- Rx & stock lens coatings
- Sun glass coatings
- Sports glass coatings



# Ophthalmic optics solutions by Bühler. **Latest anti-reflection technology and beyond.**

As one of the world leaders in thin-film technology, we develop and manufacture vacuum deposition equipment for a broad range of applications. The foundation for our firm's present-day success was laid by inventors Ernst Leybold and Wilhelm Carl Heraeus 160 years ago. Today, Bühler Leybold Optics is a globally active high-tech company, with the business area's headquarters in Alzenau (Germany) and subsidiaries in Cary (USA) and Beijing (China). Worldwide, we employ over 600 people. Since 2012, Leybold Optics has been part of the Bühler Group. Headquartered in Switzerland, Bühler is one of the world's leading suppliers of industrial equipment with a presence in over 140 countries. A top priority for us is innovation leadership.





## Perfect design and impeccable function – made possible with Bühler Leybold Optics solutions.

For decades, we have been at the forefront of ophthalmic coating technology development. Today, we offer the most comprehensive and competitive portfolio of anti-reflection batch coating systems on the market. We shaped the ophthalmic industry with a series of break-through innovations, starting with the first anti-reflective eyeglass coatings in the 1950s.

### Since then, numerous milestones have been achieved:

- 1960's** Introduction of bell-jar systems, enabling the first industrial ophthalmic optics applications
- 1970's** First successful anti-reflective and scratch-protection coatings on CR-39 lenses
- 1980's** Introduction of plasma-assisted deposition processes
- 2000's** Turnkey laboratory solutions with MINI LAB and EASY LAB
- 2003** Antistatic and superhydrophobic coatings
- 2009** Latest generation proprietary ion-source LION
- Since 2012** Bühler Leybold Optics displays by far the most ample systems portfolio and process library in the ophthalmic optics industry
- 2014** Introduction of BOXER 900, dedicated to mid- to high-volume production
- 2015** First drum coater type LEYBOLD OPTICS MIR
- 2016** Introduction of LEYBOLD OPTICS ECS
- 2018** Photochromic coating
- 2019** Ultra-fast AR process for high throughput
- 2020** Most durable AR coating  
Lowest reflection coating
- 2023** Robust variations
- 2024** Partnership with FISA

# As Bühler Leybold Optics we center our efforts on ensuring customers' success!



With over 160 years' experience, Bühler Leybold Optics is a leading supplier of vacuum thin-film coating technology. Our state-of-the-art solutions include: precision; ophthalmic and automotive optics applications, architectural and automotive glass for a wide range of energy saving applications, and roll-to-roll plastic film coatings for packaging, electronic and safety applications. All of our solutions are tailored for our customers' specific market demands.

We are continuously improving our key-component technology and know-how to offer 1<sup>st</sup> class coating solutions, process expertise and customer services. Presently we focus on digitalization of our products, as well as digitization our company to continue offering the best solutions and serving our customers most efficiently.

From anti-reflection coatings to complex interference filters, we support in the development of new products with optics technology. Every year we invest a significant amount on research and development to improve further our technology concerning quality, precision, sustainability, serviceability and the ecological footprint of our processes and machines. We like to welcome you in our state-of-the-art Application Center where you can test samples and processes to find the most suitable solution for your needs together with our experts.

We strive to maintain our benchmark position and to be an innovative and reliable partner for our customers.

I am looking forward to working together with you!

Sincerely yours,

**Antonio Requena**

Managing director

Bühler Alzenau GmbH

Business Area Leybold Optics







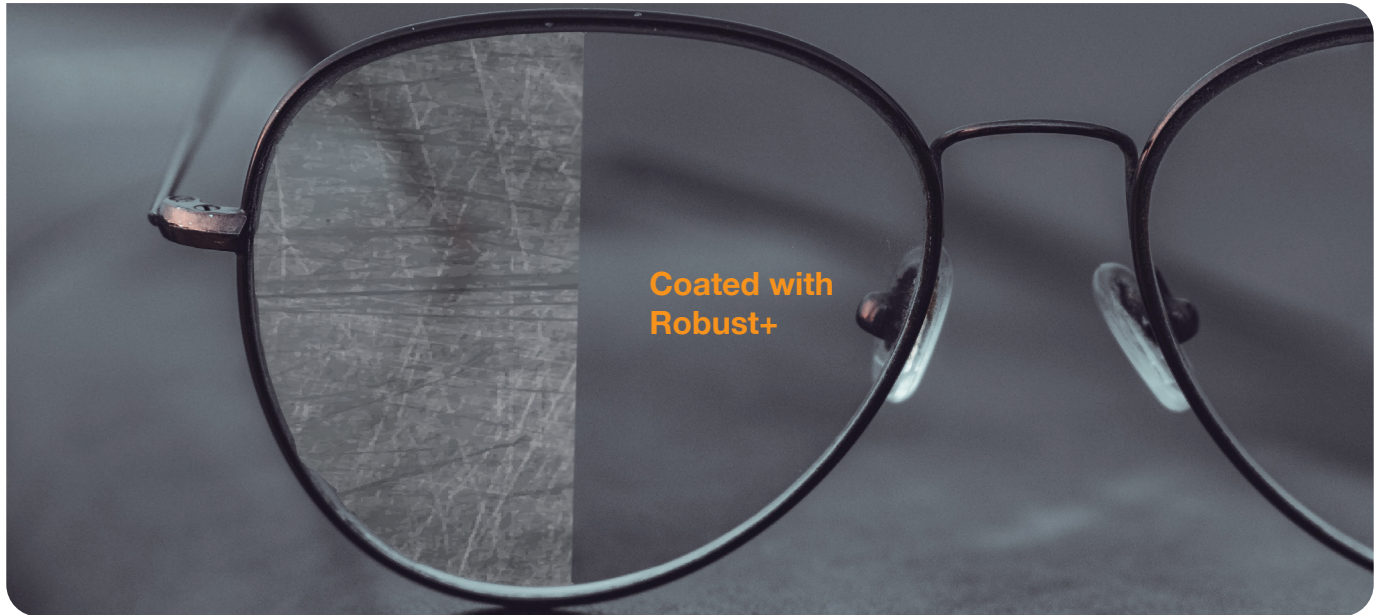
# Leybold Optics – advanced coating technology. **More efficiency, reliability and flexibility.**





# Leybold Optics sets up new benchmark. **From fast coating solutions to premium processes.**

**Robust+ for unmatched scratch resistance.**



**OptiFast - fastest process for highest productivity.**



# Leybold Optics processes. Highest quality AR coatings for any requirement.

With every Leybold Optics vacuum coater, your coating center will have all of the tools necessary to produce the highest quality coatings.



Coatings		CCS 610	CCS 610+ / CCS 700	BOXER 900	BOXER 1100	ECS 1350
AR Standard	JADE	Standard				
	BRILLIANT		Standard	Standard	Standard	Standard
	OPTIFLEX		Standard	Standard	Standard	Standard
AR Advanced	EMINENT		Standard	Standard	Standard	Standard
	OPTIFAST			Standard	Standard	Standard
AR Premium	ROBUST		Option	Standard	Standard	Standard
	ROBUST +				Option	
Topcoat	STANDARD TOPCOAT	Standard	Standard	Option	Option	
	KINGCLEAN	Option	Standard	Standard	Standard	Option
	SUPERCLEAN	Option	Standard	Standard	Standard	Standard
Antistatic	EMIXX		Option	Option	Option	Option
Mirror and Sun Coatings	OPAL		Standard	Standard	Standard	

■ Standard    ■ Option



## Anti-Reflection Coatings

	Characteristic	AR	SLR*	Hardness	Coating Material	Standard	Options	Versions
OptiFast	Fast < 25 minutes	< 1,0%	0.64%		LO Optiflex-based			
Brilliant	Flexible	1,1%	1.1%		ZrO <sub>2</sub> -based			
Optiflex	Compatibility	< 1,0%	1.0%		Ti <sub>3</sub> O <sub>5</sub> / LO Optiflex-based			
Eminent	High Durability	< 0,8%	0.52%		ZrO <sub>2</sub> / LO Eminent-based			
Robust	No scratch	<0.9%	0.58%		Confidential			
Robust+	No scratch	<0.9%	0.58%		Confidential			

\* Solar Luminous Reflectance

## Color Coatings

	Characteristic	Color	Options
Opal	Mirror	Blue; Silver; Gold; Red; Customized	

## Bühler Leybold Optics Properties



Super Hydrophobic



Anti-static



Achromatic



Blue AR



Blue Blocker



Low UV Reflection



Mirror Gradient



Green AR

# Leybold Optics – production portfolio overview.

## Smart solutions for Rx and stock lenses.



### LEYBOLD OPTICS CCS series

The LEYBOLD OPTICS CCS series is a unique concept, especially optimized for the needs of small to medium Rx laboratories. Its modular philosophy allows to start with a low initial investment. As business demand grows, a wide range of upgrades are available to adapt.

**Productivity: up to 200 pairs / 8h**

**Page 12**



### LEYBOLD OPTICS BOXER series

The LEYBOLD OPTICS BOXER series is a highly flexible, mid-size to high-volume platform for Rx and stock lens production. It excels with intelligent, robust design and a compact footprint.

**Productivity: up to 1000 pairs / 8h**

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### LEYBOLD OPTICS ECS series

The LEYBOLD OPTICS ECS series is focused on low-cost mass production. In this segment, its throughput per CAPEX ratio is the industry benchmark for stock lens production, but also suitable for Rx manufacturing.

**Productivity: up to 1000 pairs / 8h**

**Page 16**

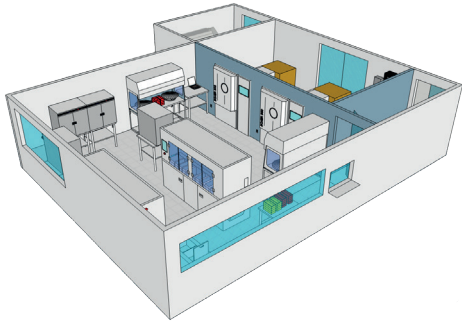


### LEYBOLD OPTICS MIR 1200

The drum coating system LEYBOLD OPTICS MIR 1200 is designed for production of highly curved lenses as well as the combination of gradient coating and full lens area coating.

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**LEYBOLD OPTICS LAB solutions**

Bühler Leybold Optics offers complete turnkey, tailored solutions for building up complete ophthalmic optics labs. Based on our broad machine portfolio and own process know-how, we are the partner of choice when entering the ophthalmic optics market.

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**LEYBOLD OPTICS Application center**

- Process Development
- Analysis & Quality Testing
- Quality Assurance Packages
- Sample Preparation
- Training & Lab solutions

**Page 24**



**Customer support and services**

Bühler Leybold Optics' relationship with its customer does not end when the machine is delivered, this milestone is the start and continuation of a close partnership. Wherever our customer is, there is Bühler to provide the best services to keep the machine running and meet customer requirements.

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# LEYBOLD OPTICS CCS series

(up to 200 pairs/8h).

## The unique modular coating platform.

Besides excellent AR processes, the LEYBOLD OPTICS CCS' unique modular concept enables you to start with a moderate initial investment, without compromising on quality. With our carefully designed upgrade packages, the machine can grow along with your business – turning the system into a powerful and versatile tool for a mid-size laboratory.



### Key benefits:

- One chamber size of 610 mm
- Unique concept for small to medium Rx laboratories
- Ergonomic top-loader design
- With flip-over system or full-dome
- Cylindrical chamber for quickest shield removal/ cleaning
- Small footprint





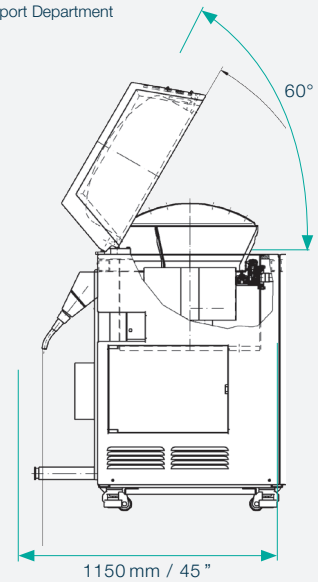
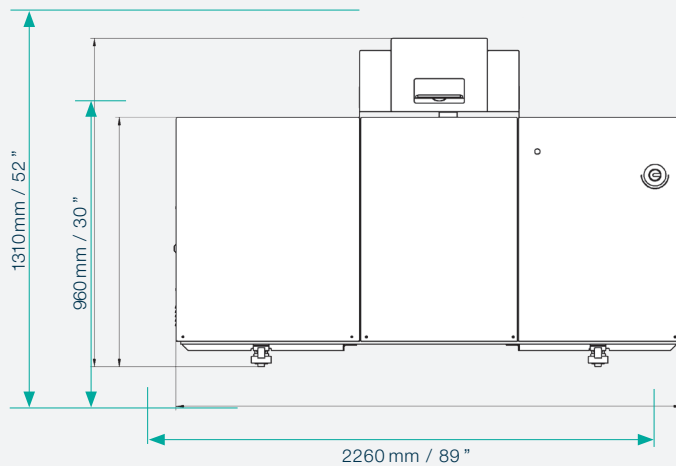
## Technical data

		<b>LEYBOLD OPTICS CCS 610</b> upgradable to CCS 610+	<b>LEYBOLD OPTICS CCS 610+</b>	<b>LEYBOLD OPTICS CCS 700</b>
Substrate holder		Flip-over	Full-dome	Full-dome
Loading capacity [pcs.]	Ø 65 mm	24	52	70
	Ø 70 mm	16	48	62
	Ø 75 mm	16	42	52
	Ø 80 mm	16	32	46
Process time	Single-side coated	--	35	35
	Both sides coated	55 min	65 min	65 min
Productivity	Both sides coated	Up to 100 pairs / 8 hours	Up to 150 pairs / 8 hours	Up to 200 pairs / 8 hours
Dimensions	Chamber diameter	610 mm / 24"	610 mm / 24"	610 mm / 24"
	Footprint	2.6 m <sup>2</sup>	2.6 m <sup>2</sup>	2.6 m <sup>2</sup>
Components	Electron-beam gun	LEYBOLD OPTICS HPE 6	LEYBOLD OPTICS HPE 6	LEYBOLD OPTICS HPE 6
	Pre-vacuum pump	RA 100 100 m <sup>3</sup> /h	RA 100 100 m <sup>3</sup> /h	RA 100 100 m <sup>3</sup> /h
	Ion source	Mark I+	Mark I+	Mark I+
	High vacuum pump	Turbomolecular pump HiPace 2300 2'050 l/s	Turbomolecular pump HiPace 2300 2'050 l/s	Turbomolecular pump HiPace 2300 2'050 l/s
	Cryogenic refrigerator	--	LEYBOLD OPTICS MCC 20	LEYBOLD OPTICS MCC 20
	Thermal evaporator	--	Optional	Optional

\* with Brilliant

Both CCS 610 and CCS 610+ can be upgraded to CCS 700, please contact our Customer Support Department

## LEYBOLD OPTICS CCS 610



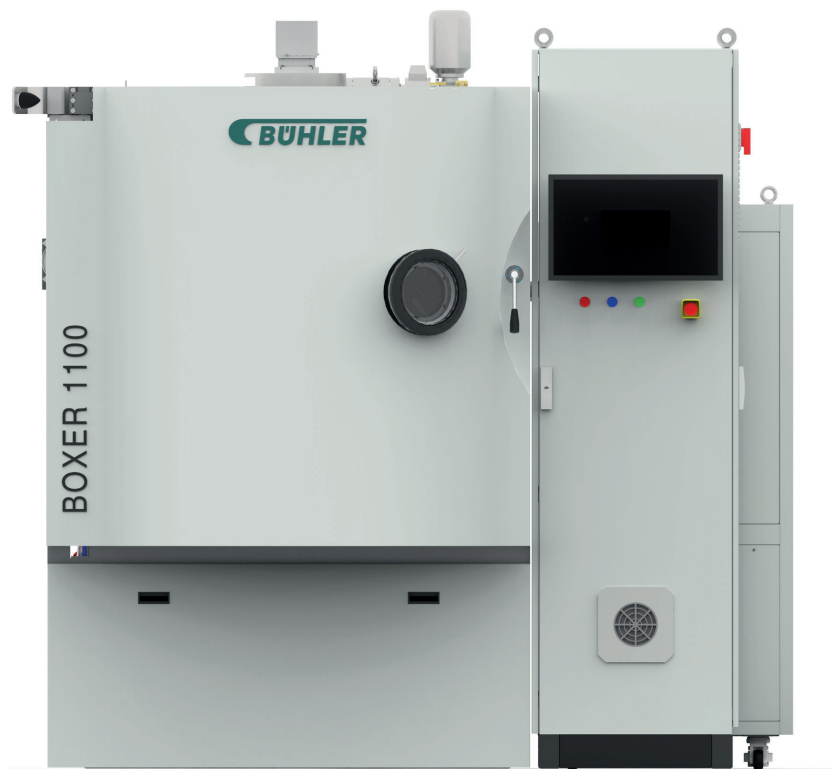
# LEYBOLD OPTICS BOXER series

(up to 1000 pairs/8 h).

**For versatile mid- to high-volume production.**

Uncompromising performance combined with an ingenious, compact design: this is LEYBOLD OPTICS BOXER series. Its design facilitates easy and quick handling and maintenance.

- Bühler Leybold Optics ion source control and power supply
- LEYBOLD OPTICS HPE series electron beam gun with multi-pocket crucibles
- Maximized cold trap surface area to optimize pumping of water vapor
- Optimized distribution masks system for highest rates and uniformity



## LEYBOLD OPTICS BOXER series- highly flexible solution for Rx and stock lens production

From classic broadband anti-reflection coating to mirror coatings – a great number of different processes can be carried out with LEYBOLD OPTICS BOXER 1100.

### Key benefits:

- Mid- to high-volume Rx and stock lens production
- Best access for easiest batch exchange
- Calotte segmented into 3 light-weight parts
- Quick removal of protection shields for cleaning
- Very fast pumping down to process pressure
- Economic pumping stack arrangement

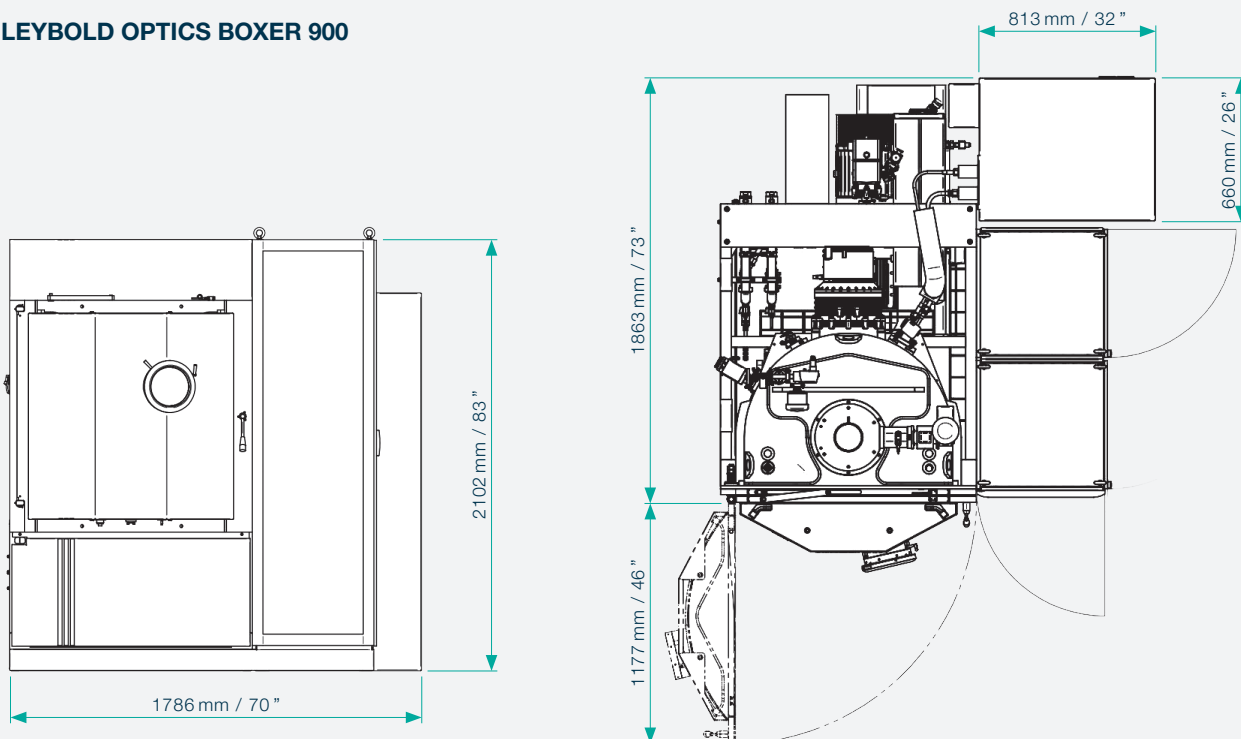


## Technical data

		<b>LEYBOLD OPTICS BOXER 900</b>	<b>LEYBOLD OPTICS BOXER 1100</b>	<b>LEYBOLD OPTICS BOXER 1350</b>
Substrate holder		3-segment calotte	4-segment calotte	4-segment calotte
Loading capacity [pcs.]	Ø 65 mm	114	168	252
	Ø 70 mm	96	144	220
	Ø 75 mm	81	128	188
	Ø 80 mm	72	108	172
Process time*	Single-side coated	23 min	23 min	22 min
	Both sides coated	51 min	51 min	49 min
Productivity*	Both sides coated	Up to 460 pairs / 8h	Up to 700 pairs / 8h	Up to 1000 pairs / 8h
Dimensions	Chamber diameter	900 mm / 35.4"	1100 mm / 43.3"	1350 mm / 53.1"
	Footprint	3.3 m <sup>2</sup>	5.6 m <sup>2</sup>	7 m <sup>2</sup>
Components	Electron-beam gun	LEYBOLD OPTICS HPE 6 LEYBOLD OPTICS HPE 12/10**	LEYBOLD OPTICS HPE 6 LEYBOLD OPTICS HPE 12/10**	LEYBOLD OPTICS HPE 12/10
	Pre-vacuum system	2x rotary vane pump RA 100 2x 100 m <sup>3</sup> /h	Dry screw pump 300 m <sup>3</sup> /h	Dry screw pump 300 m <sup>3</sup> /h
	High vacuum pump	Turbomolecular pump HiPace 2300 2050 L/s	2x turbomolecular pump HiPace 2300 2x 2050 L/s	2x turbomolecular pump 4304LMC 2x 4200 L/s
	Ion source	Mark II+	Mark II+	Mark II+
	Plasma source		Optional	Optional
	Cryogenic refrigerator	LEYBOLD OPTICS MCC 20	LEYBOLD OPTICS MCC 32	LEYBOLD OPTICS MCC 32
Thermal evaporator	Optional	Optional	Optional	

\* with OptiFast  
\*\* optional

## LEYBOLD OPTICS BOXER 900



# LEYBOLD OPTICS ECS series

(up to 1000 pairs / 8h).

## High performance, cost-effective production.

The LEYBOLD OPTICS ECS series is Bühler Leybold Optics' offering for mass-production of eyeglass coatings where optimum value for investment is an fundamental requirement.

- Optimized equipment configuration
- Network connection and remote access
- Fully modular concept
- Compact footprint
- Bühler Leybold Optics plasma sources and evaporators
- Quartz-crystal monitoring



### LEYBOLD OPTICS ECS 1350 –

#### Highest throughput and unbeatable cost-per-lens

Designed for large batches, both for classical stock lens mass production and for Rx production, this coating tool excels with unsurpassed cost-benefit ratios.

##### Key benefits:

- For mid- to high-volume stock lens production
- Optimum CAPEX performance ratio
- Proprietary Leybold Optics processes available

### LEYBOLD OPTICS ECS 2050 –

#### Highest throughput for fashion coatings

This system is best suited for mirror coatings onto visors, goggles and sport glasses.

##### Key benefits:

- High loading capacity for large size substrates
- High throughput and cost performance
- Large variety of coating processes

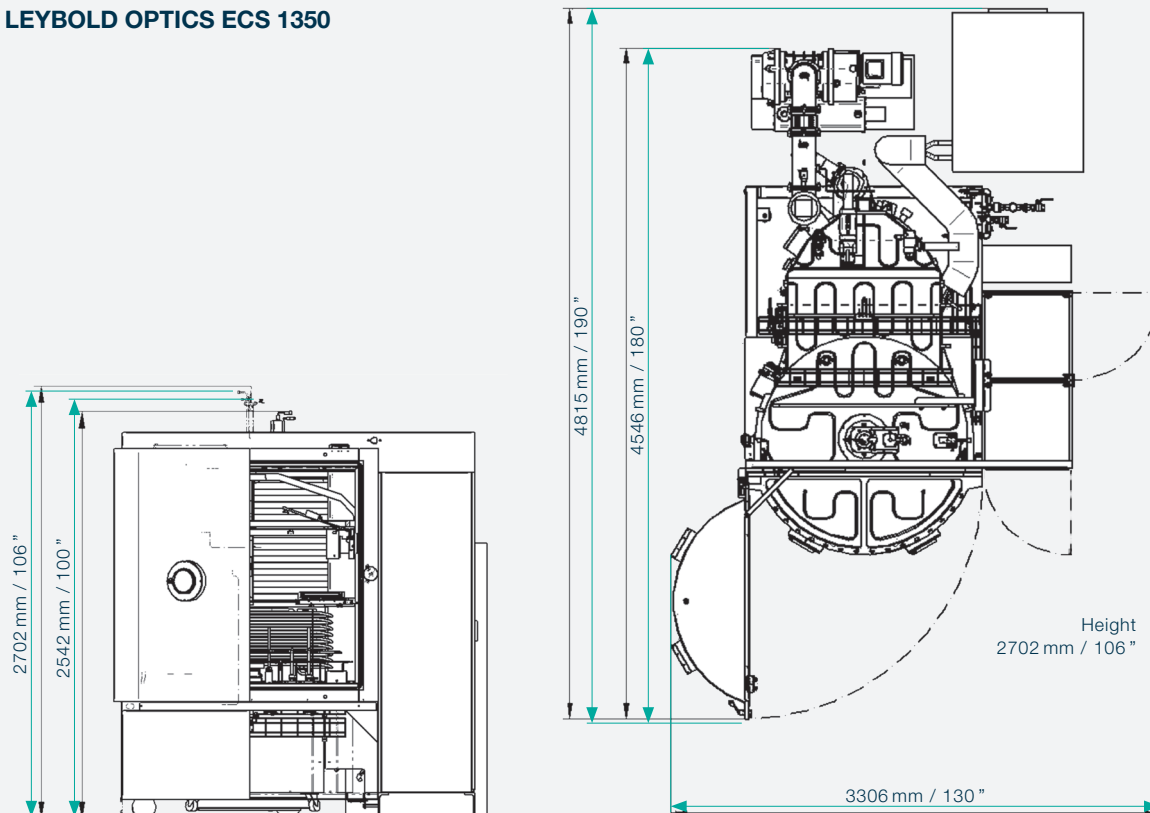


## Technical data

		<b>LEYBOLD OPTICS ECS 1350</b>	<b>LEYBOLD OPTICS ECS 1350 TMP</b>	<b>LEYBOLD OPTICS ECS 2050</b>
Substrate holder		4-segment calotte or full dome	4-segment calotte or full dome	Satellite system for toric lenses, others on request
Loading capacity [pcs.]	Ø 65 mm	293/252	293/252	Upon request
	Ø 70 mm	252/220	252/220	Upon request
	Ø 75 mm	223/188	223/188	Upon request
	Ø 80 mm	195/172	195/172	Upon request
Process time*	Single side coated	22 min	22 min	depends on coating process
	Both sides coated	49 min	49 min	N/A
Productivity*	both sides coated	Up to 1000 pairs / 8h	Up to 1000 pairs / 8h	N/A
Dimensions	Chamber diameter	1350 mm / 53.1"	1350 mm / 53.1"	2090 mm / 82,28"
	Footprint	7 m <sup>2</sup>	7 m <sup>2</sup>	20 m <sup>2</sup>
Components	Electron beam gun	LEYBOLD OPTICS HPE 12/10	LEYBOLD OPTICS HPE 12/10	LEYBOLD OPTICS HPE 12
	Pre-vacuum system	Rotary vane NES 300 300 m <sup>3</sup> /h + roots pump + EH 1200 + 1200 m <sup>3</sup> /h	Rotary vane NES 300 300 m <sup>3</sup> /h + roots pump + EH 1200 + 1200 m <sup>3</sup> /h	Rotary vane SV 630 640 m <sup>3</sup> /h + EH 4400 + 4400 m <sup>3</sup> /h
	High vacuum pump**	Diffusion pump DIP 20'000 20'000 L/s	2x turbomolecular pump 4304LMC, 2x 4'200 L/s	Diffusion pump 2xDIP 30'000 60'000 L/s
	Ion source	Mark II+	Mark II+	2x Mark II+
	Cryogenic refrigerator	LEYBOLD OPTICS MCC 32	LEYBOLD OPTICS MCC 32	LEYBOLD OPTICS MCC 50
	Thermal evaporator	Optional	Optional	Optional

\* with OptiFast

## LEYBOLD OPTICS ECS 1350



# LEYBOLD OPTICS MIR 1200.

## Ideal for mirror coatings on curved substrates.

LEYBOLD OPTICS MIR 1200 is designed for production of highly curved lenses as well as the combination of gradient coating and full lens area coating. Typical coating materials are  $\text{SiO}_2$  and  $\text{TiO}_2$  to produce interference mirrors.

- Drum
- Electron beam evaporator
- Cold trap
- Quartz crystal monitoring
- Glow discharge



### LEYBOLD OPTICS MIR 1200 – the drum coating solution for outstanding products

It is the perfect solution to produce sun lenses, sport glasses, ski goggles, helmed visors or helmed HUD with absorbing layers in different colors, dielectric layers, mirror coatings, gradient coatings and AR coatings.

#### Key benefits:

- Fast loading and unloading of the complete drum
- High loading capacity
- Variety of substrates: suitable for flat and curved substrates

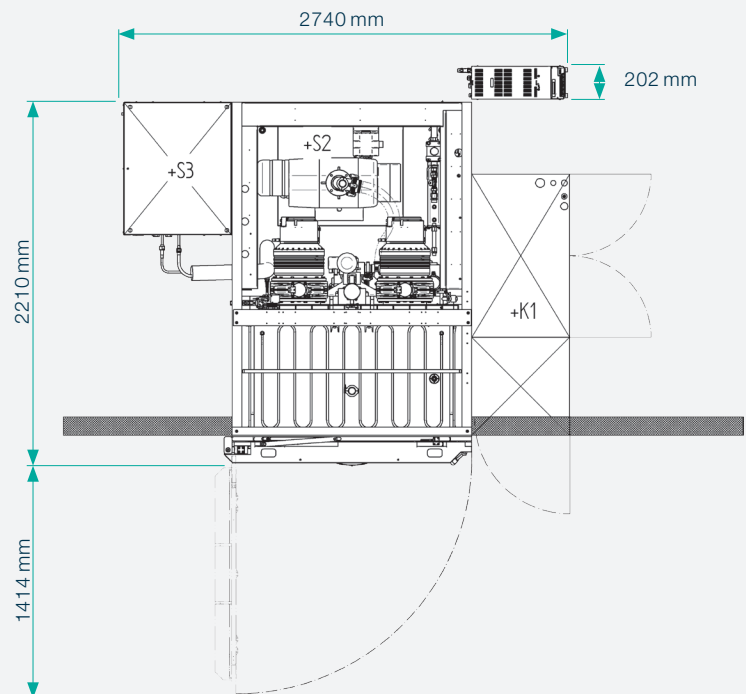
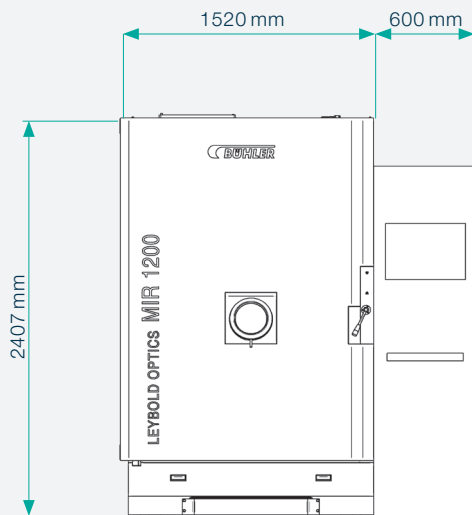


## Technical data

		LEYBOLD OPTICS MIR 1200	
Substrate holder	Drum		
Loading capacity [pcs.]	Round lenses up to Ø 75 mm	296	
	Thorical lenses	Upon request	
	Visors	Upon request	
	Sports goggles	Upon request	
Process time*	Single side coated	70 min	
	Both sides coated	N/A	
Productivity*	Single side coated	Up to 1900 / 8h	
Dimensions	Chamber size	1200 x 1800 x 800 mm (W x H x D)	
	Footprint	6.1 m <sup>2</sup>	
Components	Electron-beam gun	LEYBOLD OPTICS HPE 12/10	
	Pre-vacuum system	Rotary vane pump D65B 65 m <sup>3</sup> /h	Roots pump WS501 505 m <sup>3</sup> /h
	High vacuum pump	2x Turbomolecular pump HiPace 2300 2050 L/s	
	Ion source	Glow discharge	
	Cryogenic refrigerator	LEYBOLD OPTICS MCC 32	

\* with Red Mirror

## LEYBOLD OPTICS MIR 1200



# Leybold Optics – components.

## Assured productivity through high quality.



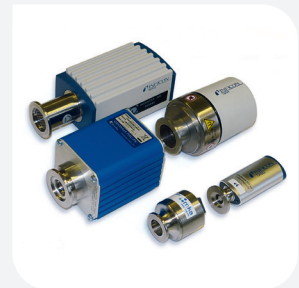
Chamber width



Pre-vacuum systems



High-vacuum systems



Vacuum measuring



Media supplies



Refrigeration systems



Meissner traps



Substrate handling

	Pre-vacuum systems		High-vacuum systems		Refrigeration systems		Meissner trap		Substrate handling				
	Dry pump	Rotary vane pump	Rotary vane pump and roots blower	Diffusion pump	Turbomolecular pump	LEYBOLD OPTICS MCC	Polycold / Maxcool	Shield type	Tube type	Full dome	Segmented dome	Flip-over	Drum
<b>CCS 610/610+/700</b>		Standard			Standard	Standard	Option		Standard	Standard		Option	
<b>BOXER 900</b>		Standard	Option		Standard	Standard	Option		Standard	Option	Standard		
<b>BOXER 1100</b>	Option	Option	Option		Standard	Standard	Option	Option	Standard	Option	Standard	Option	
<b>BOXER 1350</b>	Option	Option	Option		Standard	Standard	Option	Option		Option	Standard		
<b>ECS 1350</b>			Standard	Standard		Standard	Option	Option		Option	Standard		
<b>ECS 2050</b>			Standard	Standard		Standard	Option	Option			Option		
<b>MIR 1200</b>	Option		Standard		Standard	Standard	Option		Standard				Standard



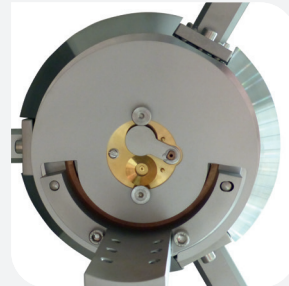
Heating systems



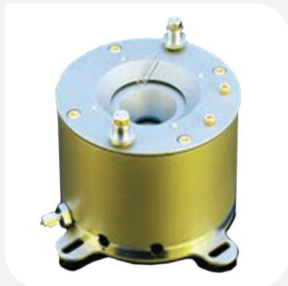
Electron beam guns



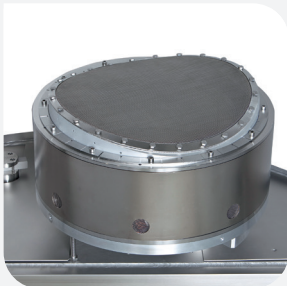
Thermal evaporators



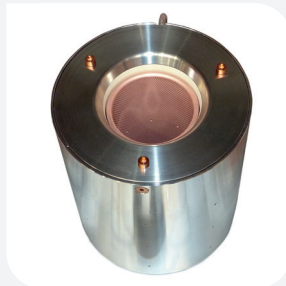
Thickness measuring



Mark II+ ion sources



Ion sources



APSpray ion sources



PC systems

Substrate handling	Heating systems		Electron beam guns		Thermal evaporators		Thickness measuring			Ion sources		Plasma sources		
Rotary Drums	Degassing	Process support	HPE 6	HPE 12/10	Top coat	Single boat	Single quartz	Double quartz	6-fold quartz	Mark I+	Mark II+	Glow discharge	APSpray	
			■		■		■			■				CCS 610/610+/700
	■	■	■	■	■	■	■	■	■		■			BOXER 900
	■	■	■	■	■	■	■	■	■		■	■	■	BOXER 1100
■	■	■		■	■	■		■	■		■	■	■	BOXER 1350
■	■	■		■	■	■		■	■		■			ECS 1350
■	■	■		■	■	■		■	■		■			ECS 2050
	■	■		■			■					■		MIR 1200

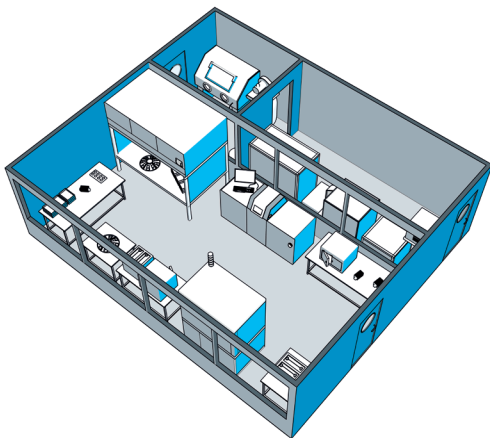


# Leybold Optics LAB solutions. Turnkey installations for Rx lens production.

Since 2000 Leybold Optics has installed various sizes of customized lab solutions. From entry-level up to advanced versions Leybold Optics' lab portfolio consists of fully equipped lab solutions based on proprietary anti-reflection coating systems – but tailored to the demands of every single customer in all aspects. A brief site inspection enables us to offer the optimum lab setup for your individual business case.

## MINI LAB.

AR & Hard Coating by Spinning



## EASY LAB.

AR & Hard Coating by Dipping



### Productivity overview

	Hard coating system	AR Coating system (e.g.)
<b>MINI LAB</b>	Spinning	CCS 610+: Up to 200 pairs / 8h
<b>EASY LAB</b>	Dipping	BOXER 900: Up to 500 pairs / 8h  BOXER 1100: Up to 700 pairs / 8h

### Recommended lab setups

	MINI LAB	EASY LAB
Inspection prior to loading before coating	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
DI water system	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Automated ultrasonic cleaning system	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Automated ultrasonic cleaning and hard-coating system	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Spin hard coating	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Curing and /or degassing oven	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Clean-air flow bench with ionizing-air gun	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Warm-water system	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Electrical transformer	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Water chiller	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Stripping unit	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Final quality inspection	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Quality Kit Control with Spectrophotometer	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Gas regulator kit	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Bead (sand) blaster	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

The pictures left are showing examples. Leybold Optics engineers will develop the best matching solution that fits customer needs and ambient requirements.

# Leybold Optics LAB solutions.

## AR testing services and kits.

### Do-it-yourself. Lens test kit.

Perform quality testing in-house, detailed easy-to-follow instruction manual, showing you how to carry out the tests and how to log the results. The kit comes with everything you need to get started and includes on-site training.

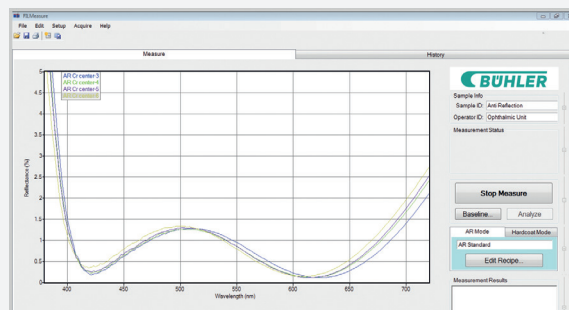


### AR color and hard-coat. Thickness measurement kit.

Maintain your quality inspection by checking the AR reflection color spectrally and minimize returns by checking your hard coat thickness.

#### Kit contains:

- F10AR/HC spectrophotometer
- Easy to use QC software
- Laptop computer preconfigured and ready-to-go



Test Nr.	Name designation	International Standards or Bühler-SOP
T1	Optical inspection	DIN-EN-ISO 9211-4
T2	Reflection color	DIN-EN-ISO 8990
T3	Cross hatch test	DIN-EN-ISO 9211-4
T4	Surface tension	Bühler-SOP
T5B	Steel wool test (#2)	COLTS-SOP L-11-12-05
T6	Eraser test	DIN-EN-ISO 9211-4
T8	Salt water boiling 10 cycles	DIN-EN-ISO 9211-4
T13	Environmental test	Bühler-SOP
T15	QUV test	Bühler-SOP
T17	Bayer test (Colts)	COLTS-SOP L-11-12-08
T18	Cheese cloth test	DIN-EN-ISO 9211-4

# Bühler Leybold Optics Application Center. **For your product development.**

## **Process Development**

- Process optimization
- Comparative studies
- R&D projects
- Customized process development

## **Analysis & Quality Testing**

- From visual inspection to QUV long-term tests
- On all kind of thin-film layers  
(hard-, AR-, mirror-, gradient coatings)
- Detailed sample evaluation

## **Quality Assurance Packages**

- Emergency tests
- Long-term testing agreements
- Training on a large variety of testing tools

## **Sample Preparation**

- Hard coatings
- Anti-reflective coatings
- Mirror coatings
- Spezialized coatings

## **Training & Lab solutions**

- Customized training
- Laquering and Anti-reflective process
- Facility and workflow management



Be it production of qualification samples, development of new processes for new applications, reliability testing of new components or just for training purposes, our Application Center located in Alzenau/Germany, Raleigh/USA and Beijing/China are dedicated to provide an excellent level of support and service to our customers. Our engineers and R&D experts are already curious to know how they can support our customers in their development.



# Customer support and services. **CS 4.0 – from customer support/service to customer solutions.**

**Bühler is where the customer is – connecting machines worldwide to our specialized centers.**



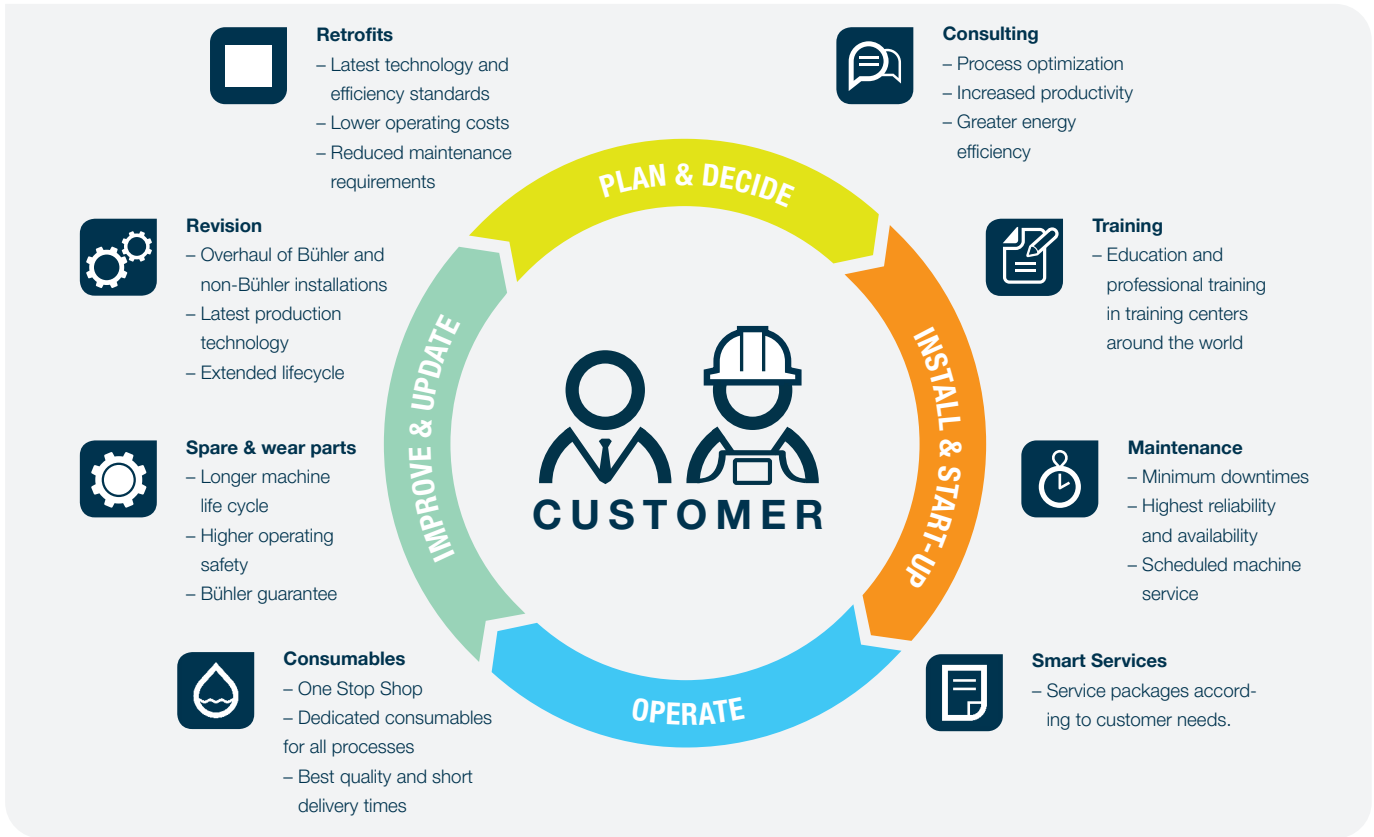
Bühler Leybold Optics' relationship with its customer does not end when the machine is delivered, this milestone is the start and continuation of a close partnership. Wherever our customer is, there is Bühler to provide the best services to keep the machine running and meet customer requirements. With a constant roll out of unique and innovative solutions, Bühler helps customers achieve success on the marketplace.

**Bühler's commitment to its customers:**

- Ensuring right support by running your machine in the most efficient way
- Creating customers experience
- Designing customer solution
- Creating customer success







**Smart Service Packages**

Bühler Leybold Optics has smart packages adapted to your needs.

We offer annual contingency allowance of hours, which can be selected in different packages: bronze, silver and gold or even total care.

Need something different?  
We will design the ideal service contract to fit your requirements.

**Consumables**

You can view our complete catalog of consumables by using the QR code.



**Bühler Insights Anytime and anywhere**

Optimize your production by using our IoT solution.

Connecting your machine to our platform can give you the possibility to verify machine status and address problems.



## **Bühler Alzenau GmbH**

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