

SLOT-DIE COATER



Compact Sheet Coater for Advanced Thin-Film Applications

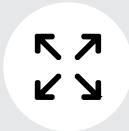
The *Slot-die Coater* from infinityPV is a high-precision, modular system designed for thin-film research in batteries, solar cells, fuel cells, pharma, and more. Its compact footprint fits seamlessly into gloveboxes and fume hoods, making it ideal for R&D. With optimized ink delivery, micrometer-accurate adjustments, and mounting systems for slot-die, bar, knife, pen, and flexo printing, it ensures uniform coatings across various applications. Engineered for ease of use, reproducibility, and global compliance, the *Slot-die Coater* is a versatile solution for advanced thin-film development.

Key Features

- **Compact and Versatile Design:** Compatible with gloveboxes and fume hoods
- **Modular System:** Customize with slot-die heads, air knives, flexo, and more
- **Multiple Coating Techniques:** Slot-die, bar, knife, pen, and flexo printing
- **PC Control & Vacuum Chuck:** Optional features for enhanced precision
- **Precision Syringe Pump:** Optimized ink delivery for consistent coating
- **Easy Operation:** Touchscreen interface and micrometer adjustments
- **Global Compliance:** CE-certified & CSA/UL compliant
- **Emergency Off Interface** (EMO Circuit)
- **Applications:** Batteries, solar cells, OLEDs, transistors, sensors, and more

Technical Specifications

- **Coating Width:** 100 x 280 mm (Mini) | 160 x 280 mm (Pro)
- **Coating Speed:** 1.2 – 33 mm/sec
- **Operating Power:** 110 – 240 VAC
- **Hot Plate Temperature Range:** RT – 140 °C
- **Vacuum Chuck Temperature Range:** RT – 100 °C
- **Size (WxDxH):** 440 x 360 x 400 mm (Mini) | 440 x 420 x 400 mm (Pro)
- **Weight:** 22 kg (Mini) | 24 kg (Pro)
- **Slot-die Head Adjustment Resolution:** 1 µm



≥ 340 x 420 x 400 mm



≥ 22 kg



≤ 160 mm width



Up to 140 °C



1.2 - 33 mm/s



PC Control Option



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Designed for All Types of Coating Applications



Batteries

Active materials are deposited onto flexible or rigid substrates to create electrodes for lithium-ion and other battery types. Precise and uniform coating enhances energy density, improves cycle life, and ensures consistent performance across large-scale production.



Pharma & MedTech

Biocompatible coatings and drug-eluting layers can be deposited onto medical devices with high precision and consistency. This ensures uniform surface coverage, reliable performance, and controlled release of therapeutic agents, supporting applications such as stents, implants, and diagnostic tools.



Membranes

Functional layers are deposited onto polymeric or porous substrates with high precision, tailoring properties such as selectivity, permeability, and chemical resistance. This controlled coating process supports applications in filtration, separation, water treatment, and energy devices.



Packaging

Functional coatings are applied to enhance barrier properties, extend shelf life, and improve visual appearance. The process also enables seamless integration of electronic components, supporting the development of smart and interactive packaging solutions.



Fuel Cells

Catalyst layers are deposited with controlled thickness and uniformity onto membranes and electrodes. This precision enhances electrochemical performance, improves fuel efficiency, and supports the durability of next-generation fuel cell technologies.



Solar Cells

Organic photovoltaics, perovskite solar cells, dye-sensitized cells, and tandem architectures can be fabricated through precise layering of active materials. Controlled deposition ensures optimal light absorption, efficient charge transport, and improved device stability.



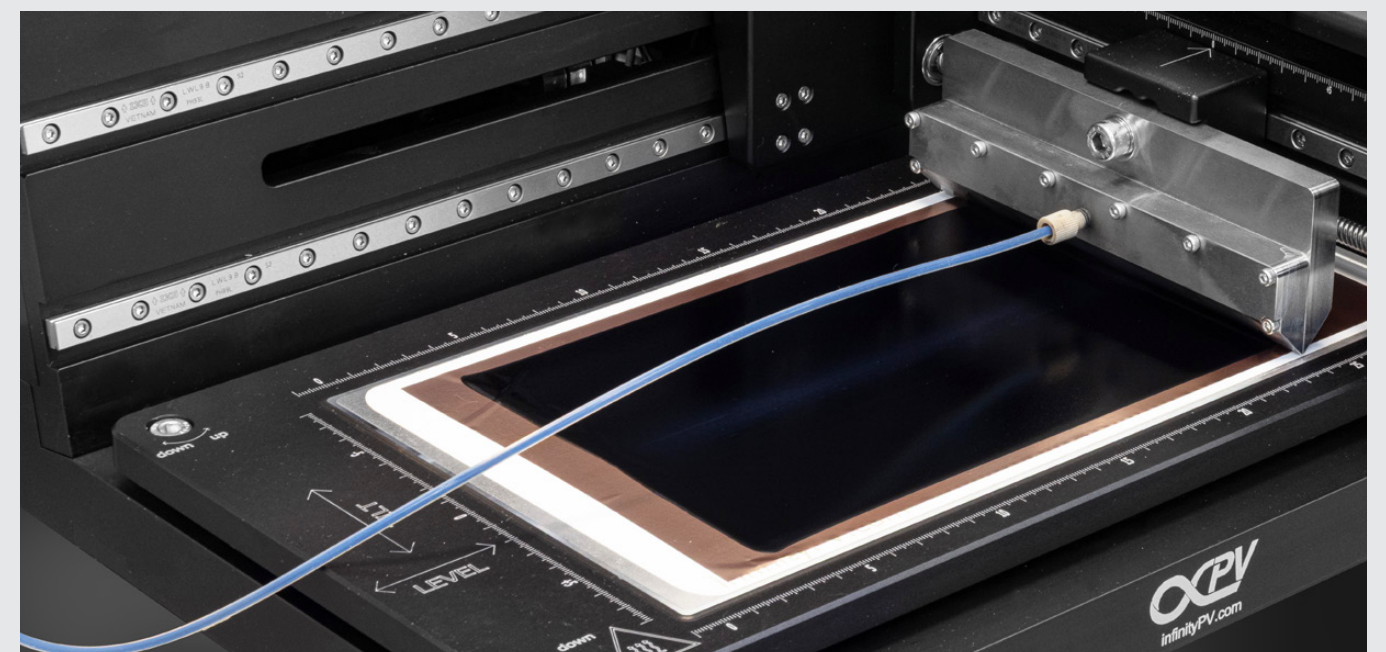
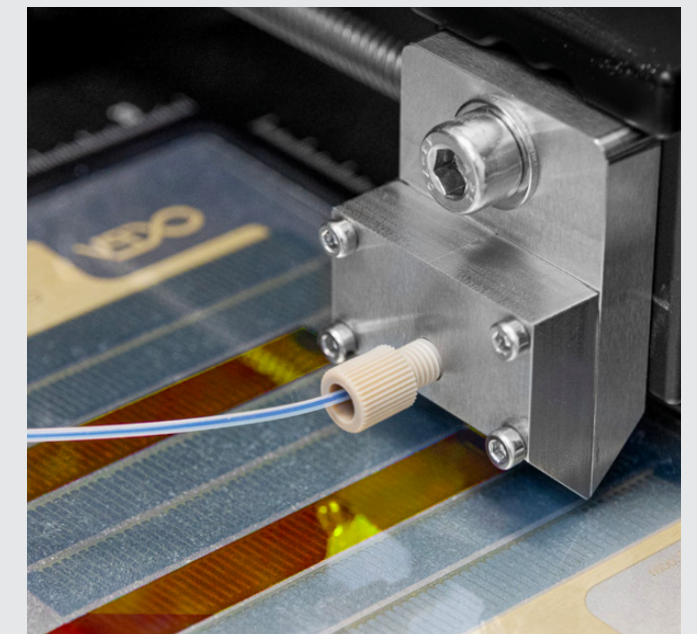
Adhesives

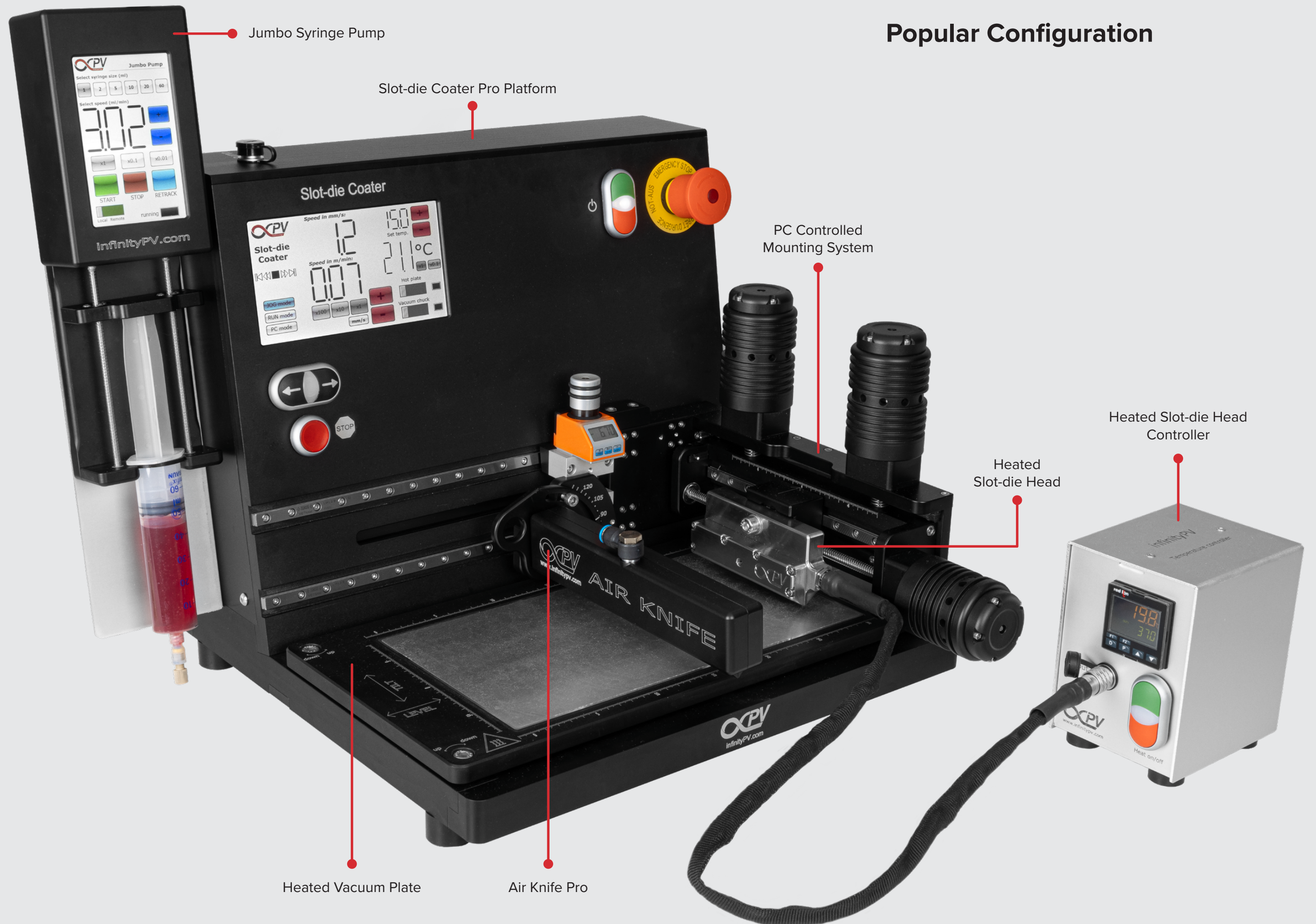
Functional coatings can be applied to polymeric or porous substrates with exceptional control over thickness and uniformity. This enables fine-tuning of properties such as selectivity, permeability, and chemical or thermal resistance.



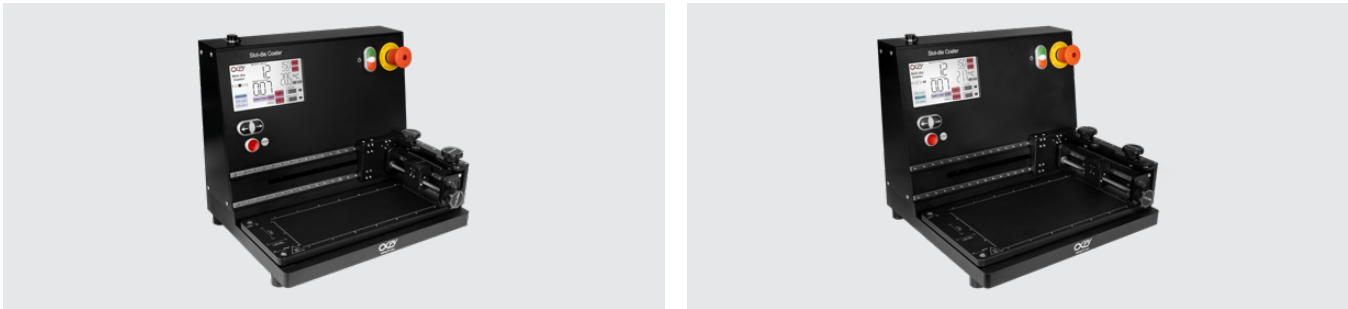
Sensors

Sensing materials are applied with high accuracy onto flexible substrates, enabling the production of lightweight and reliable sensors. Consistent coating enhances sensitivity, stability, and overall device performance across a wide range of applications.





How to Build Your Own Slot-die Coater



1. Select a Platform



2. Select Your Components



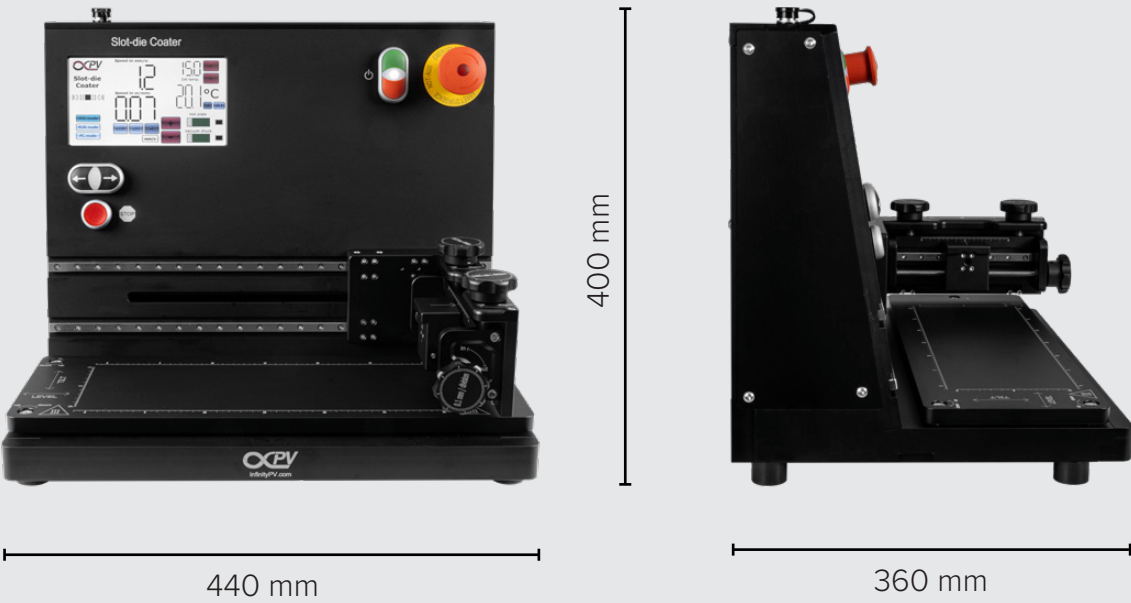
3. Get a Quotation

 Build Your Own at infinityPV.com

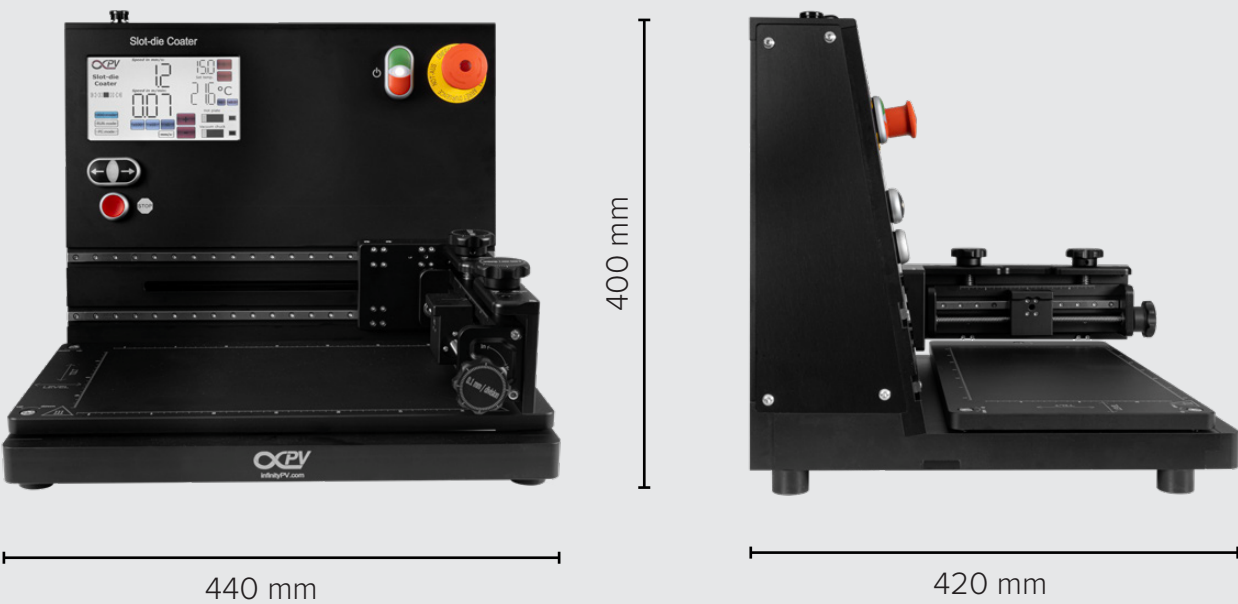
Platforms

The *Slot-die Coater* is available in two platforms: *Slot-die Coater Mini* and *Slot-die Coater Pro*. The *Slot-die Coater Mini* is designed for compact spaces, making it ideal for research environments with limited room. The *Slot-die Coater Pro* retains a small footprint but offers a larger coating area and expanded compatibility with more components such as the *Vacuum Chuck*, *Air Knife Pro*, *Advanced Mounting System*, and option for PC control, providing greater flexibility for diverse thin film applications.

Slot-die Coater Mini



Slot-die Coater Pro



The final configuration may vary in size depending on the components added to the platform.

Components

Slot-die Heads

The infinityPV slot-die heads are precision-engineered for consistent and uniform coating thickness, ensuring high-quality results. They are available in a range of sizes and materials, including stainless steel, titanium, and PEEK, to meet varying requirements for chemistry, weight, and thermal performance.



Syringe Pumps

Our syringe pumps are high-precision instruments designed for accurate and consistent ink delivery. Featuring intuitive touchscreen controls, they enable seamless flow configuration for both research and production applications. Multiple pumps can be integrated to automate gradient and dilution experiments, enhancing experimental flexibility. Our free syringe pump software allows for the rapid setup of both simple and complex workflows, ensuring precision and efficiency in every application.

Air Knives

Our *Air Knives* are a very powerful tool for rapid quenching of slot-die coated films with inert gas (important for e.g. perovskites). With the special air knife mount system, the angle and distance between the air knife and substrate can be changed very easily. Combine an *Air Knife* with an inert gas oven system to quench and anneal your roll-to-roll coated thin films in one go.



Components

Knife Coater

The *Knife Coater* features a high-precision anodized aluminum knife blade with a ground edge, providing a consistent coating width of 30 mm. The gap size between the substrate and blade can be easily adjusted using the micrometer screw, ensuring precise control over the coating process.



Flexo Printer

The *Flexo Roller* is ideal for printing various ink materials onto a range of substrates, making it perfect for short, narrow test runs. It is particularly well-suited for preparing single devices, such as back silver for inverted geometry devices. The system enables efficient processing of materials like silver and carbon pastes, conserving material usage during small-scale experiments.

Bar Coater

The *Bar Coater* for thin films features a spring-loaded system that compensates for minor alignment inaccuracies. Simply insert one of the five available bars (10, 25, 50, 100, or 250 microns) into the holder to achieve various wet thicknesses. The system allows precise coating of thin films with consistent thickness control, offering options of 10 microns, 25 microns, 50 microns, 100 microns, or 250 microns depending on the bar used.



Components

Simple Mounting System

With the *Simple Mounting System*, manual positioning of the slot-die head, bar coater, knife coater, or flexo roller is easy and precise. This system is included with the base *Slot-die Coater*.



Advanced Mounting System

The *Advanced Mounting System* features manual adjustment with digital micrometers to ensure precise head-to-substrate distance control. The system is perfect for positioning slot-die heads, knife coating setups, or a flexo printer.



PC Controlled Mounting System

With the *PC Controlled Mounting System*, software control of the coating position is achieved through 3-axis motion control (side registration, up/down, forward/reverse). It is ideal for remote operation, whether working in a glove box or at synchrotron beamlines. With the included software, you gain comprehensive control over the entire process, including motion control for coating and printing positions, tension management, web speed and direction, and pumping systems. This level of control significantly enhances both the accuracy and repeatability of your process.



Components

Hot Plate

The *Hot Plate* is an integrated component of the *Slot-Die Coater*, providing convenient and efficient drying for thin films during the coating process. It reaches temperatures of up to 140 °C, ensuring uniform and effective drying, which enhances coating consistency and quality.



Vacuum Chuck

The *Vacuum Chuck* offers an advanced work-holding solution for thin foils and substrates. Upgrading from the *Hot Plate*, the *Vacuum Chuck* reaches temperatures up to 100 °C, providing precise control and minimizing deformation during coating and printing. Its ultra-smooth, diamond-milled surface ensures uniform coating and drying across large areas, optimizing the performance and quality of your thin-film processes.



Heated Slot-die Head Controller

The *Heated Slot-Die Head Controller* ensures precise temperature regulation for superior coating performance. Designed for high-precision applications like electronics and solar panels, it maintains uniform temperature across the slot-die head, improving film thickness consistency and reducing material waste. With enhanced process stability and energy-efficient technology, this durable controller boosts coating quality, increases productivity, and lowers operational costs.





From Precision Sheet Coating to Continuous Roll Processing, One Integrated Platform for Total Thin Film Control

Discover the *R2R Hybrid Coater*, the powerful combination of the *Slot-die Coater* and the *Laboratory Roll-to-Roll Coater*—an integration that offers unparalleled versatility for both research and production applications.

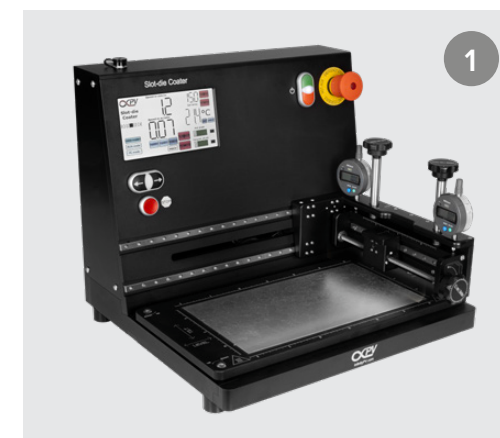
Dock the *Slot-Die Coater* onto the *Laboratory Roll-to-Roll Coater* platform and get the most advanced equipment in lab-scale thin film processing. The *R2R Hybrid Coater* merges the best of sheet coating and roll-to-roll coating into a single, innovative solution. This unique setup not only allows you to efficiently process large rolls of material but also offers the precision and control needed for detailed sheet applications.

What sets this system apart is the flexibility to operate the two pieces of equipment independently or together. This functionality provides total freedom in your research and processing, enabling you to tailor setups to meet specific project requirements.

Whether you're developing cutting-edge materials or seeking to optimize existing processes, the *R2R Hybrid Coater* is your gateway to innovation. Transform your lab with the ultimate coating solution and stay ahead of the industry curve.

How to Build the R2R Hybrid Coater

Building your ideal *R2R Hybrid Coater* is easy and customizable. Simply configure your *Slot-die Coater* to meet your specific thin-film technology needs, then select a *Laboratory Roll-to-Roll Coater* platform based on your production scale. Once configured, dock the *Slot-die Coater* on top of the *Laboratory Roll-to-Roll Coater* for a fully integrated system. Enhance your system with options like advanced controls, vacuum chucks, air knives, and drying modules for a flexible, future-ready solution.



Slot-die Coater



Laboratory Roll-to-Roll Coater



R2R Hybrid Coater

Precision Slot-die Heads



Premium Materials

Our slot-die heads are available in high-quality materials such as PEEK, Stainless Steel (316/316L), and Titanium, ensuring durability and compatibility with a variety of demanding applications.



Optimized Dead Volumes

The innovative design of our slot-die heads minimizes dead volume, ensuring efficient material usage and reducing waste. This feature is crucial for applications where material cost is a consideration, enhancing the overall sustainability of your coating processes.



Customizable Options

We understand that every application is unique. Our slot-die heads can be customized to fit your specific requirements, providing the versatility needed for a wide range of thin-film technologies, including batteries, fuel cells, solar cells, transistors, and LEDs.



Heated Slot-die Heads

Our heated slot-die heads provide precise temperature control for improved material flow and uniform coating, ideal for high-viscosity materials and temperature-sensitive processes. Consistent heating enhances film quality and reduces defects.



Versatile Coating Widths

Available in standard widths ranging from 40 mm to 305 mm, these slot-die heads offer flexibility for any coating process. Whether you're working on small-scale prototypes or large production runs, we have the right solution to meet your needs.



Easy to Assemble and Clean

Designed with user convenience in mind, our slot-die heads allow for straightforward assembly and disassembly. This means quicker changeovers and less downtime between runs, maximizing productivity in your laboratory or production environment.



Precision and Control

Achieve consistent and uniform coatings with our slot-die heads, which are engineered to provide precise control over film thickness and deposition rates. This level of accuracy is essential for high-performance applications, ensuring that your end products meet the highest quality standards.



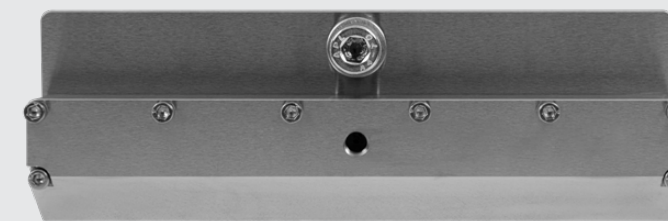
40 mm Slot-die Head
(10/13 mm Coating Width)



65 mm Slot-die Head
(50 mm Coating Width)



115 mm Slot-die Head (100 mm Coating Width)



165 mm Slot-die Head (150 mm Coating Width)



195 mm Slot-die Head (180 mm Coating Width)



305 mm Slot-die Head (280 mm Coating Width)

Technical Specifications

Item	Technical Parameter	Remarks
Dimensions (WxDxH)	Slot-die Coater Mini: 440 x 360 x 400 mm Slot-die Coater Pro: 440 x 420 x 400 mm	Depends on final configuration
Weight	Slot-die Coater Mini: 22 kg Slot-die Coater Pro: 24 kg	Depends on final configuration
Coating Area	Slot-die Coater Mini: 100 x 280 mm Slot-die Coater Pro: 160 x 280 mm	
Coating Speed	1.2 – 33 mm/sec	
Operating Power	110 - 240 VAC	Depends on final configuration
System	Touch Screen	Depends on final configuration
Control	Manual Adjustment PC Control	Depends on final configuration
Base Plate Temperature	Hot Plate: RT – 140 °C Vacuum Chuck: RT – 100 °C	
Thin Film Processing Options	Slot-die Coating Heated Slot-die Coating Knife Coating Bar Coating Simple Flexo Printing	
Slot-die Coating Width	5 mm – 150 mm	Patterned or full coating
Slot-die Head Position	12 o'clock	
Height Adjustment (Head to Substrate)	5 mm	
Sideways Travel Length	Slot-die Coater Mini: 100 mm Slot-die Coater Pro: 160 mm	
Slot-die Head Material	Stainless Steel (M315 and 316L) PEEK Titanium	
Tubing and Connector Material	PTFE (Tubing) and Peek (Connector)	



Pioneering Printed Electronics for Over 25 Years

We are infinityPV, a Danish company with a global footprint, pushing the boundaries of what’s possible in printed and flexible electronics. Innovation and sustainability are at the heart of everything we do. We specialize in designing and manufacturing compact, state-of-the-art laboratory equipment that bridges the gap between research and industrial-scale production.

What We Offer

Our product range includes high-precision slot-die coaters, roll-to-roll systems, and expertly engineered slot-die heads. These are tailored to support the development of advanced technologies such as flexible solar cells, printed batteries, fuel cells, LEDs, OLEDs, sensors, and pharmaceuticals. With deep-rooted expertise in slot-die coating and roll-to-roll processing, we deliver more than just equipment—we enable the future of electronics and materials science.

Our Commitment

We understand that every project is unique, and we are committed to meeting your specific needs. With a well-stocked inventory, we ensure fast access to essential components and materials. We invite you to visit our production site and experience our solutions firsthand before making any commitments. Customer satisfaction is our priority. We provide lasting support for all our products and clients, ensuring that spare parts are always available or quickly manufactured when needed. At infinityPV, we stand by our technology and our customers—we leave no one behind.



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