LABORATORY ROLL-TO-ROLL COATER

Compact and Fully Modular Roll-to-Roll Coater

The Laboratory Roll-to-Roll Coater from infinityPV is a high-precision, compact and fully modular system that enables high-precision processing of thin functional films from lab to small pilot scale. With customizable platform sizes and interchangeable components—including slot-die heads, slurry coaters, flexographic printers, air knives, pumps, drying and curing units, laminators, and surface treaters—it fits seamlessly into existing lab setups like gloveboxes or fume hoods. Capable of handling hundreds of meters of foil, it supports scalable production for applications such as batteries, fuel cells, printed solar cells, sensors and pharmaceutical applications. The system's CE certification and CSA/UL compliance underscore its reliability and adherence to international safety standards, ensuring consistent, high-quality results across a range of advanced applications.

Key Features

- **Compact and Versatile Design:** Compatible with gloveboxes and fume hoods.
- **Scalable:** Transition smoothly from lab-scale research to pilot production on the same platform.
- **Save Time:** Swap components for faster experimentation and reduced downtime.
- **Modular System:** Customize with slot-die heads, ovens, air knives, and more.
- **Multiple Coating Techniques**: Slot-die, bar, knife, pen, and flexo printing.
- **Modular Drying/Curing System:** Accommodates various drying and curing methods.
- **Option for PC Control:** Advanced control options for precision and repeatability.
- **Web Tension Control:** Ensures consistent quality across runs.
- **CE Certified - CSA/UL Compliant:** Meets international safety standards.

Technical Specifications

- **Power:** Single phase (240VAC) for smaller models; three-phase (400VAC) for larger models.
- **Coating Width:** Up to 180 mm (standard models), up to 280 mm (wide models).
- **Drying/Curing Length:** From 250 mm (LR2RC500) to 1250 mm (LR2RC1500).
- **Web Width:** Up to 200 mm (standard models), up to 310 mm (wide models).
- **Web Speed:** 0.05-2.8 m/min (forward and reverse).
- **Spindles:** Automatic compressed air spindles for 3-inch core diameters, adjustable cones for smaller cores in LR2RC500.

Length: 500 - 1500 mm

Drying Length: <1250 mm

Coating Width: ≤ 280 mm

0.05 - 2.8 m/min

PC Control Option

Glovebox Compatible

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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.

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.

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.

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.

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.

Adhesives

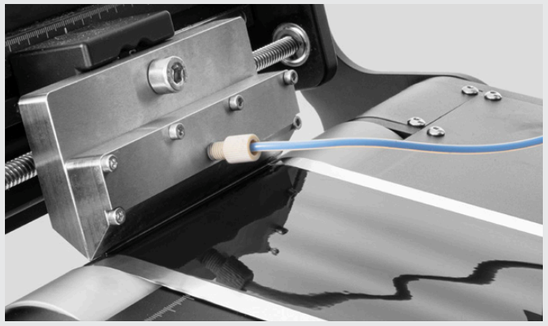
Functional coatings can be applied to polymeric or porous substrates with exceptional control over thickness and uniformity. This enables fine-tuning of properties such as selectivity, permeability, and chemical or thermal resistance.

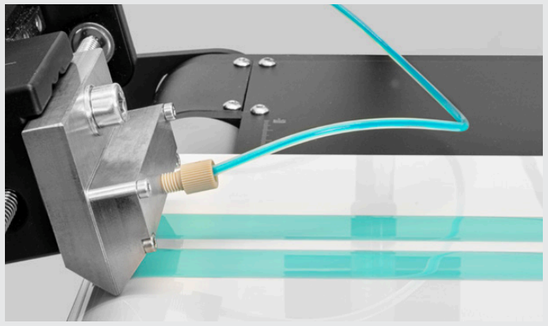
Packaging

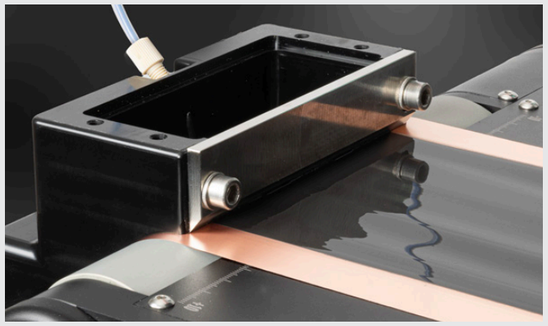
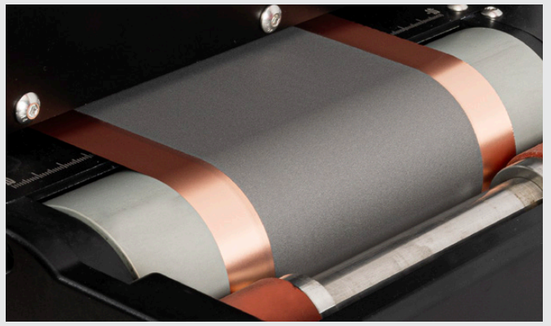
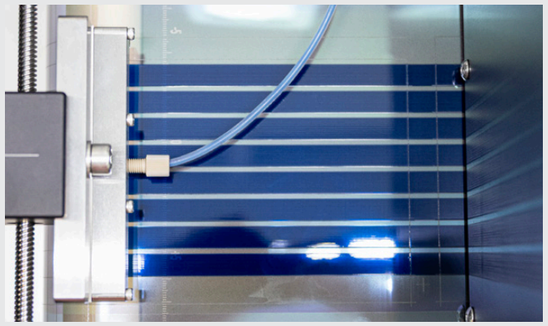
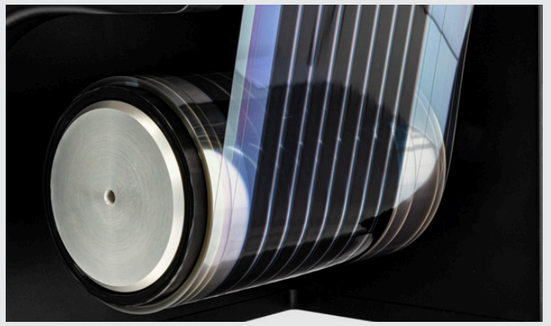
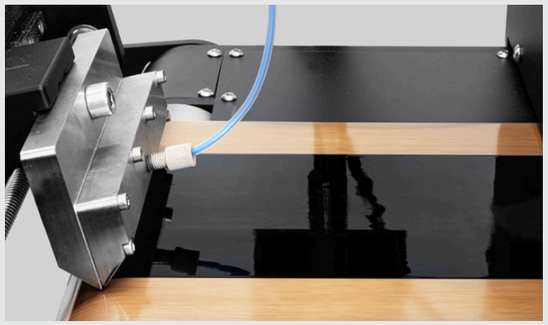
Functional coatings are applied to enhance barrier properties, extend shelf life, and improve visual appearance. The process also enables seamless integration of electronic components, supporting the development of smart and interactive packaging solutions.

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.






One Machine

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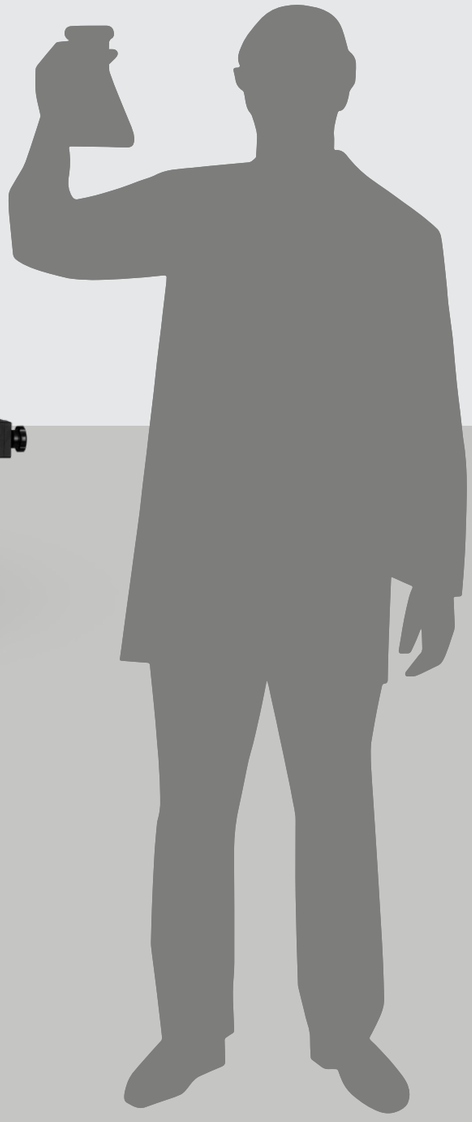
Infinite Possibilities



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How to Customize Your Own Laboratory Roll-to-Roll Coater

1. Select a Platform

2. Select Your Components

3. Get a Quotation

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Which Setup Do You Need?

Choosing the right system is key to maximizing efficiency, flexibility, and the scale of your experiments. The *Laboratory Roll-to-Roll Coater* comes in four lengths, letting you pick the platform that best fits your research or production needs. Shorter platforms offer compact, versatile solutions for simple processes, while longer platforms provide space for multiple ovens and extended drying and curing, more coating options, and more advanced customization. Each platform can be tailored with our configurable components, from precision coating units to specialized drying and web-handling solutions, so your system grows with your ambitions.

Platform Comparison

Length	Application	Benefits
500 mm	Thin-film technologies with need for basic customization and short cure and dry time.	Compact, versatile, and cost-effective. Ideal for fast processing in tight spaces. Fits 1 oven.
750 mm	Allows moderate customization with extended curing and drying options.	Optimized balance of size and output. Combines functionality with efficiency. Fits 2 ovens.
1000 mm	Highly customizable setup with multiple processing options and long cure and dry time.	Robust drying designed to streamline coating and printing. Fits 3 ovens.
1500 mm	Maximum customization for long curing and drying or complex inline processing.	Expansive roll-to-roll line offering maximum space and full custom integration. Fits 5 ovens.

Watch Animation

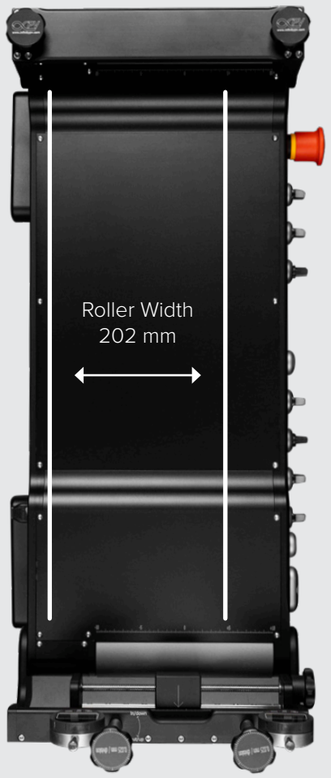
Still not sure which setup fits your project best? You can watch a short animation for an easy overview — and if you'd like to go deeper, we're happy to discuss your goals and guide you through the options.

Platforms

The *Laboratory Roll-to-Roll Coater* platform is available in four lengths, ranging from 500 mm to 1500 mm, and two widths of 350 mm and 460 mm. With a processing width of up to 180 mm, the standard platform presents an ideal solution for laboratories venturing into the realm of R2R processing. The wide platform revolutionizes processing with its capability to handle 12-inch / 305 mm wide substrates, making it the most compact Roll-to-Roll (R2R) platform globally for industrial-scale coating and printing. If you are uncertain about whether a standard or wide platform will best suit your needs, feel free to contact us.

Two Different Widths

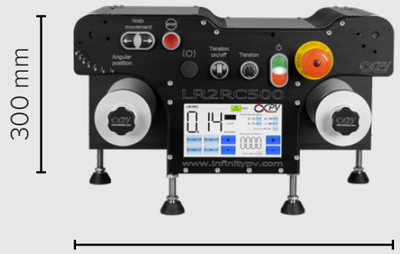
Standard



Wide

Top View

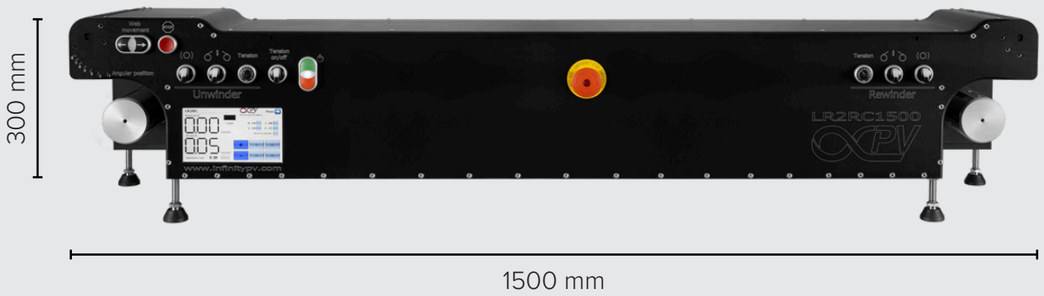
LR2RC500



LR2RC750

LR2RC1000

LR2RC1500



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.

Slurry Coater

The *Slurry Coater* is a fundamental wet film forming tool that enables lab scale production of advanced functional thin films. This includes thin film batteries, fuel cells and printed solar cells. The *Slurry Coater* is used for applying a viscous mixture (ideal for non-newtonian liquids and suspensions) in the form of a slurry, accurately and uniformly, onto a substrate, ensuring consistent quality and performance.

Laminator

This advanced laminator is designed to facilitate efficient encapsulation and the application of protective liners in R2R processing, supporting various adhesives, including PSA, hotmelt, and UV-curable types. Whether you're working on thin films for batteries, sensors, or other advanced materials, the *Roll-to-Roll Laminator* ensures high-quality lamination that can be easily scaled for pilot production.

View all components at www.infinityPV.com

Components

Pumps

Our pumps deliver precise and reliable fluid handling for research and production. The *Syringe Pumps* provide smooth, accurate ink delivery and can be combined for automated gradient or dilution experiments. The *Gear Pump* handles a wide range of fluids with steady flow, including non-Newtonian liquids, making it versatile for both low and high flow applications.

Ovens

Several oven systems for curing and drying thin films can be added to the *Laboratory Roll-to-Roll Coater*. With a minimum length of 230 mm, these compact systems are easy to install, remove, or replace. Options include hot-air, inert gas, UV-curing, UV-LED-curing, IR-curing, and combo ovens. For UV and IR curing, we offer various power levels and interchangeable sources (hard UV, UVA, UVB, UVC, clear, ruby, gold) to suit your needs.

Wet Processing Center

The *Wet Processing Center* enables precise roll-to-roll handling of foil while subjecting it to a variety of wet processes in a fully enclosed, safe, and versatile environment. Designed for research, prototyping, and pilot production, it supports immersion, spraying, and electrochemical treatments tailored to thin-film, printed electronics, solar cells, and other advanced materials applications.

View all components at www.infinityPV.com

Components

Laser Scriber

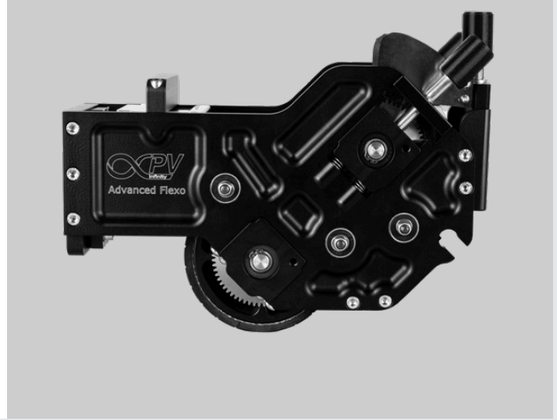
The Laser Scribing System offers a precise and efficient method for patterning of Indium Tin Oxide (ITO) based substrate used in the fabrication of Perovskite and other printed solar cells. The laser system allows for high resolution and customization, making it ideal for applications requiring intricate designs.

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.

Flexographic Printers

With the *Laboratory Roll-to-Roll Coater* platform, you get the option for both a simple and an advanced flexographic printer. The flexographic printers can be used for printing many types of materials on a wide variety of substrates. The *Simple Flexo Printer* is for short and narrow test runs and the *Roll-to-Roll Flexographic Printer* is specially designed for scaled R2R printing.



Components

Corona Surface Treaters

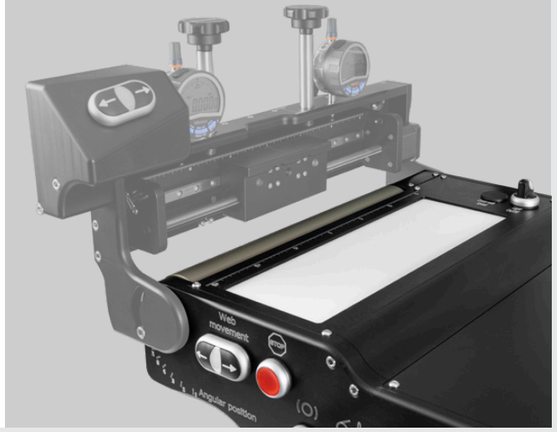
The *Corona Surface Treaters* improve surface energy and adhesion of substrates, enabling better ink, coating, or adhesive bonding. This treatment enhances print quality and coating performance, making it an essential tool for preparing substrates before processing in various applications, including flexible electronics and solar cells.

Edge Guide

The *Edge Guide* ensures precise web alignment during coating and printing processes, minimizing material waste and ensuring consistent quality. By keeping the web on track, it improves overall process efficiency, reduces downtime, and enhances product uniformity, especially in high-speed roll-to-roll operations.

Inspection Plate

To ensure the highest quality when coating and printing on transparent substrates, adding an inspection plate for immediate post-process inspection is highly advantageous. This versatile *Inspection Plate* supports both visual inspections and camera system installations. It can be included with your initial order or retrofitted later, providing flexible options to meet your quality control needs.



View all components at www.infinityPV.com

Components

Mounts

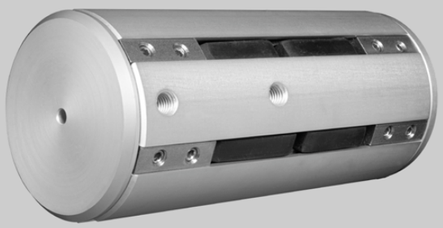
Our high-precision mounts are designed for slot-die heads, slurry coaters, or flexographic printers. They offer 0–90° angular adjustment (9 to 12 o'clock positions) for easy setup and coating. Options range from manual tilt and cross-web control to advanced models with digital micrometers, motorized axes, and PC control.

Inline Mount

The *Inline Mount* can be positioned anywhere along the web as an additional coating station for true inline processing. It supports both sequential layering with drying or curing between layers, as well as wet-on-wet slot-die coating, where multiple wet layers are applied in quick succession for advanced multilayer film fabrication in batteries, organic electronics, and other thin-film technologies.

Spindles

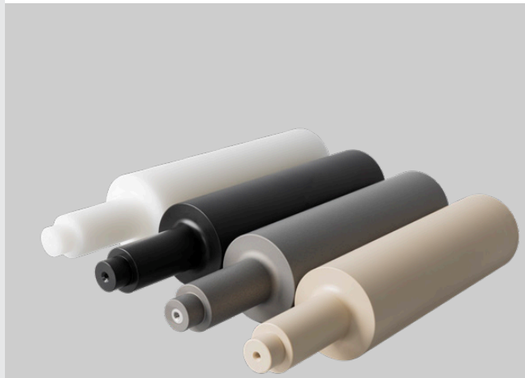
The *Laboratory Roll-to-Roll Coater* offers two spindle options. The LR2RC500 features adjustable cones for easy adjustments to core width, diameter, and position, supporting inner diameters from 35 mm to 90 mm. The LR-2RC750, LR2RC1000, and LR2RC1500 models are equipped with automatic compressed air spindles designed for 3-inch core diameters, providing efficient handling for larger setups.



Components

Stripper Unit

The *Stripper Unit* allows for removal of a protective liner or other foil just before the coating or printing station. It comes with compressed air spindles, tension control and automation of nip engagement.



Rollers

The *Laboratory Roll-to-Roll Coater* features 60 mm diameter anodized aluminum rollers as standard, offering durability and cost-efficiency for 95% of applications. With low runout, these rollers ensure precise results. For specific needs, we provide POM (black or white) or PEEK rollers for chemical resistance, and stainless steel rollers for extreme corrosion resistance.

Nip Rollers

Located prior to the rewinder, the *Laboratory Roll-to-Roll Coater* has the possibility for a very flexible nip roller that is available in numerous configurations. The simplest has a full rubber roller with manual control of both nip pressure and tilt. Advanced versions include adjustable nip rollers, automation of nip engagement, nip pressure and pressure points. They can easily be used for very simple manual packaging of many devices with little work.

View all components at www.infinityPV.com

The Ultimate Coating Solution

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.

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.

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.

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.

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.

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.

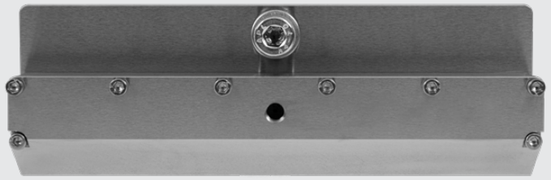
Heated Slot-die Heads

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.

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
Platform Dimensions	**LR2RC500:** 500 x 350 x 300 mm (30 kg) **LR2RC750:** 750 x 350 x 300 mm (40 kg) **LR2RC750 Wide:** 750 x 460 x 300 mm (50 kg) **LR2RC1000:** 1000 x 350 x 300 mm (50 kg) **LR2RC1000 Wide:** 1000 x 460 x 300 mm (60 kg) **LR2RC1500:** 1500 x 350 x 300mm (80 kg) **LR2RC1500 Wide:** 1500 x 460 x 300 (100 kg)	Total weight and dimension of a complete *Laboratory Roll-to-Roll Coater* setup depends on the final configuration
Operates From	**LR2RC500:** Single phase (240VAC) **LR2RC750:** Single phase (240VAC) **LR2RC750 Wide:** Single phase (240VAC) **LR2RC1000:** 3-phases (400 VAC) **LR2RC1000 Wide:** 3-phases (400 VAC) **LR2RC1500:** 3-phases (400 VAC) **LR2RC1500 Wide:** 3-phases (400 VAC)	
Drying or Curing Section Length (cm)	**LR2RC500:** 250 mm **LR2RC750:** 500 mm **LR2RC750 Wide:** 500 mm **LR2RC1000:** 750 mm **LR2RC1000 Wide:** 750 mm **LR2RC1500:** 1250 mm **LR2RC1500 Wide:** 1250 mm	The drying or curing length depends on the selected oven systems
System Control Options	Touch Screen Manual Adjustment Buttons PC Control	
Web Width	Up to 200 mm (Standard) Up to 310 mm (Wide)	
Foil Length	Up to 100 m	Depends on thickness of substrate
Web Speed	0.05-2.8 m/min (Forward and Reverse)	Additional web speeds are available upon request
Tension Control	Manually	Control can be uniform for both unwinder and rewinder or set individually, depending on the configuration
Coating Width	Up to 180 mm (Standard) Up to 280 mm (Wide)	
Spindles	Automatic Compressed Air Spindles 3-inch Core Inner Diameters	The LR2R500 comes with adjustable cones that accept core inner diameters from 35 mm up to 90 mm

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, 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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