# Webinar – 2K Mixing & Color Change Product Portfolio

September 30th, 2021

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# Carlisle Fluid Technologies: Experts Metering and Mixing Technology

What we'll cover today:

- What are plural-component coatings?

- Benefits of using electronic 2K equipment

- Next-generation IntelliFlow 2K product line

- Color change and meter mix accessories

- How to select 2K equipment and accessories

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# *What are plural component coatings, and why are they used?*

- **What are plural component coatings?**
  - Coatings that involve mixing 2 or more components immediately prior to application
  - Have many different chemical compositions, such as urethanes, epoxies, and acid-catalyzed

- **Why are these coatings becoming more popular?**
  1. Lower VOC's
  2. Increased durability, chemical and UV resistance
  3. Reduced curing needs

- **Almost every major industry now extensively uses plural component coatings**
  - Automotive
  - Industrial
  - Agriculture and Construction
  - Marine
  - Infrastructure
  - Wood
  - Electronics

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# *Plural Component Metering and Mixing (2K and 3K)*

**What is electronic 2K equipment?**

- Provides on-demand mixing and metering of plural-component coatings

- On-board controls automatically flush and change colors, regulate fluid pressure, and measure material usage and performance

**Why should you use it?**

- Mix on-ratio just as you need it: Eliminate wasted coating and off-ratio mixing

- Can save over $50,000 per year vs. hot-potting by eliminating coating and solvent waste, and costly rework

- Precisely control flowrate to the applicator for automatic applications

**When should you use it?**

- Carlisle Fluid Technologies range of 2K equipment is extremely flexible and can be used in almost any application

- Automotive, Industrial, ACE, Aerospace, Marine, Electronics, Wood

- Solventborne, Waterborne, Electrostatic

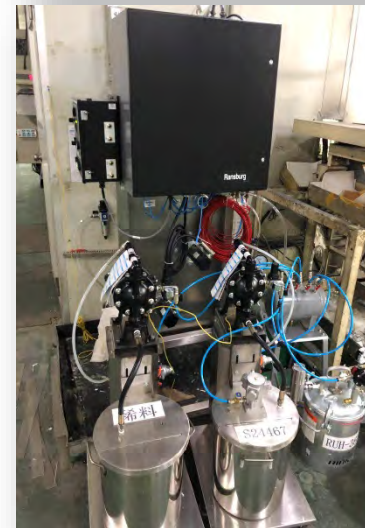- Manual or Automatic Spray, Low or High Pressure



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# *Why use 2K proportioning equipment over hot-potting?*

- The average high-production facility wastes $50,000 - $65,000 per booth every year hot potting: Electronic 2K units pay for themselves in less than 1 year

- What are the visible and hidden costs of hot potting:
  - Wasted material
  - Wasted solvent
  - Wasted time spent mixing
  - Product rework and quality issues due to off-ratio mixing
  - No guarantee your coating application is to spec
  - Increased VOC emissions and reporting

- Carlisle's Account Managers specialize in developing application-specific ROI calculations: We can prove the savings to the end-user



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# *Electronic 2K units form the cornerstone of automated processes*

- For larger, automated processes, proportioners are critical to maximize process speed and repeatability

- Carlisle's 2K units seamlessly integrate with robots, PLC's, and SCADA systems for centralized process control

- Proportioners can be used to manage:
  - o Flowrates
  - o Mix ratios
  - o Color changes
  - o Flushing
  - o Jobs and recipes
  - o Material usage tracking
  - o Process optimization



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# *Carlisle Fluid Technologies Next-gen 2K Family: IntelliFlow*

The new IntelliFlow product family represents best-in-class 2K performance and connectivity

**Next-gen performance:**

o Large, intuitive, full-color touchscreens

o Seamless communication and integration

o Dynamic mixing reduces coating and solvent waste

o Modular, scalable architecture

**Launching complete line through 2021-2022**

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# *Ransburg 2k Equipment Offerings*

**Premium**

**Ransburg RCS2**
- Premium Automatic or Manual spray
- Robots or premium manual applicators
- 10 colors, 1 catalyst
- Rapid triggering and responsiveness
- Custom configured product

**Flexibility**

**IntelliFlow RF2:**
- Flexible Manual or Automatic Spray
- Hand guns, reciprocators, or robots
- 30 colors, 6 catalysts
- 2K or 3K
- Up to 4 fluid panels
- Seamless communication and integration
- Distributed or custom configured product

**Entry-level**

**IntelliFlow RM2:**
- Entry-level manual spray
- 2 hand guns
- 7 colors, 1 catalyst
- Moving up from hot-potting
- Touch up or full production
- Distributed product

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# *Intuitive Controls*

## Large, full color touchscreens

- 10" or 15" screen depending on model
- Scratch-resistant and resists all major solvents

## Easy to learn and use

- App-like interfaces will feel natural to both new and experienced operators
- Both visual and numeric readouts to quickly visualize equipment status
- Simplified primary operation screens in front of full-functionality configuration and diagnostic screens

## Automate common processes and avoid costly mistakes

- Common operations like color changes, flushes, and flow adjustments can be done in 3 presses or less using customizable recipes
- Multi-level password protection to avoid accidental or unwanted process adjustments

## Visible alarms tell you what's wrong and how to fix it

- Visual and audible alarms with on-screen notifications
- Alarm pop-ups tell you what's wrong, and give step-by-step instructions to correct



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# *Seamless Connectivity*

**All IntelliFlow units come standard with Ethernet I/P connectivity**

- o Profinet, EtherCat, Device Net, CC Link and more also available
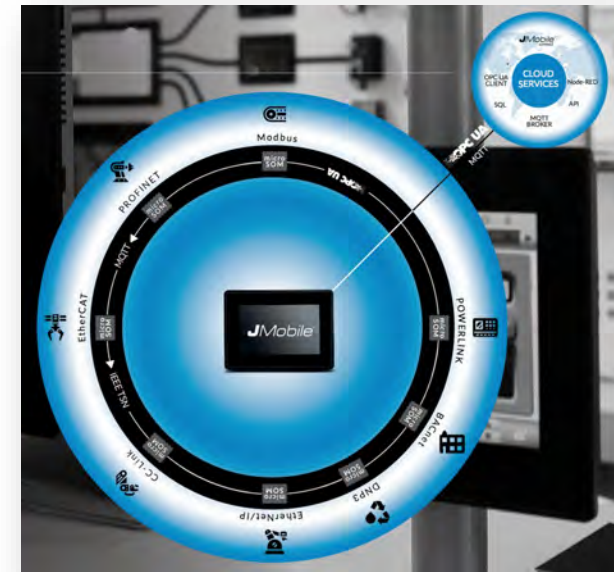
**Export process data in real-time or batches**

- o Track material and solvent usage, VOC's, ratio and flowrate actuals

**Send/receive data and control from central PLC or SCADA system**

- o Open PLC architecture can be quickly configured for retrofits or new installs
- o Send color change, ratio, and flowrate commands to the unit
- o Easily monitor equipment as a part of your whole process

**Remote monitoring capability for real-time diagnostics**

- o If enabled, CFT or your authorized distributor can remotely login to your equipment for troubleshooting and support
- o Don't wait for a service tech to arrive, get it fixed right away

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# Best-In-Class Fluid Performance

**Dynamic mixing reduces waste and maintenance time**

o Continuous ratio and flow control eliminates need for Integrator

o Saves coating and solvent waste on every flush

o Simple mix blocks flush well and are easy to maintain
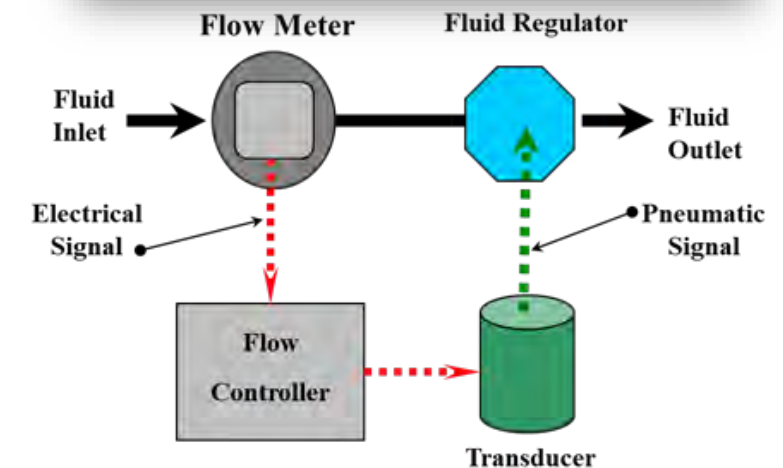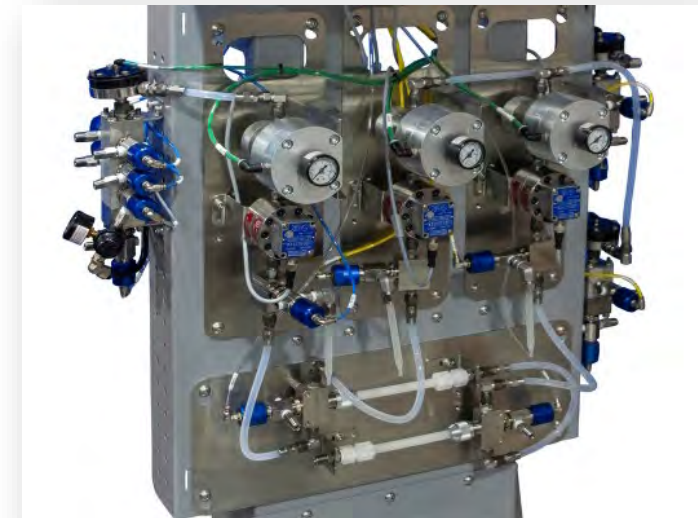
**Fluid solutions to meet any process requirement**

o Solvent or waterborne, electrostatic or non-electrostatic

o Wide range of flow control devices available to match your process and budget

o 1K, 2K, or 3K flow and/or ratio control

**New standard flowmeters increase ratio and flow control accuracy**

o Higher resolution for faster response rates and increased control

o Abrasion resistant internals, with option for acid-catalysts

o Coriolis meters also available for highly abrasive or sensitive materials

**High-speed processors increase responsiveness and reduce lag**

o Improved fluid components combined with faster controllers provides precise process control, even rapid triggering, low flowrates, and high ratio operation.



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# *Modular, Scalable, Easy to Order*

**Start small, expand later**

- o Accessories and add-on kits available to expand the capabilities of your system after first installation
- o Go from 1K to 2K, or 2K to 3K
- o Convert from manual to automatic spray
- o Swap to different fluid components as your process evolves

**One control architecture for the whole product range**

- o Easily install and use multiple different IntelliFlow products throughout your process

**Order turn-key configurations or custom-engineered solutions**

- o Single part number configurations, with shorter lead times and very competitive pricing, designed to meet the most common process needs
- o Or work with us to select a custom configuration

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# IntelliFlow RM2: Entry-level electronic 2K with extremely simple operation and wide process capabilities

- **Intuitive controls for easy operation by new or experienced users**
  - **10" full-color touchscreen** controls all process functionality
  - "3 presses or less for all common day-to-day operations"
  - Built-in troubleshooting for faults and errors to stay up and running

- **Reliable fluid panel can handle almost all common 2K hand gun applications**
  - **Up to 7 colors and 1 catalyst**
  - **1:1 to 100:1 material ratios**
  - Hardener flow rates as low as 2 cc/min
  - Low pressure capability at launch, with 3,000 psi coming in 2022
  - Coriolis flow meters also available for challenging materials

- **Increase efficiency and reduce coating and solvent waste**
  - **On-demand metering and mixing** with 1% flow and ratio accuracy drives significant reductions in coating waste. No integrator means less waste.
  - **Automatic color change and flushing** with programming for each color
  - **Standard air-solvent chop** uses 65% less solvent
  - **Track and export process data** such as paint and solvent usage, spray time, ratio and flowrates, alarms and faults

# *RM2 Configurations and Accessories*

**How to select your configuration:**

1. Choose 1 or 7 colors
2. Select pump size:
   a) If max catalyst flow is less than 100cc/min, select 300 pump
   b) If max catalyst flow is greater than 100cc/min, select 600 pump

**Low Pressure (250 psi)**

| Number of Colors | Number of Catalysts | Catalyst Pump Size | Part Number |
|:---:|:---:|:---:|:---:|
| 1 | 1 | 300 | RM2-11121 |
| 1 | 1 | 600 | RM2-11111 |
| 7 | 1 | 300 | RM2-11127 |
| 7 | 1 | 600 | RM2-11117 |

| Recommended Accessories |
|:---:|
| Floor Stand |
| Gun Flush Box Kit |
| 2 Gun Manifold |
| Remote Color Change Kit |
| Solvent Flowmeter Kit |
| Catalyst Flow Sensor Kit |

**All configurations include:**
- Air cutoffs for 2 guns
- Solvent air/chop flushing
- Gear flowmeter
- Stack light with buzzer
- Wall mounting

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# *New Accessory: 2-gun Manifold*

- 2-gun manifold allows independent, air-piloted control of coating distribution to each gun

- Only load, spray, or flush 1 gun when necessary, then quickly switch to 2 gun operations

- No managing ball valves to distribute flow

- Spray with 1 port, batch mix into cup from other port

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# IntelliFlow RF2

# *IntelliFlow RF2 Automatic: Maximize process savings with an incredibly intuitive, reliable, and flexible plural-component system*

- **Intuitive, seamless operation by an operator, central PLC, or SCADA**
  - **15" full-color touchscreen** controls all process functionality
  - **Open communication:** Ethernet, Profinet, Device Net, CC Link, Wi-Fi, and more
  - Fluid panel can be located in-booth, and remote operator panel allows in-booth control

- **Reliable, flexible fluid panel meets all major process needs**
  - **Closed-loop ratio and flow control** for almost any solvent or waterborne, electrostatic or non-electrostatic coating
  - **Up to 30 colors and 6 hardeners** with programmable changes, flushes, and recipes
  - **Low and high pressure configurations**, with wide viscosity and flow rate ranges
  - Gear, Coriolis, and piston flow meters available to meet your specific coating needs
  - Full 3K capability

- **Increase efficiency and reduce coating and solvent waste**
  - **On-demand metering and mixing** with 1% flow and ratio accuracy drives significant reductions in coating waste. No integrator means less waste.
  - **Optional remote monitoring and troubleshooting** reduces risk of unexpected downtime
  - **Track and export process data** such as paint and solvent usage, spray time, ratio and flowrates, alarms and faults

Features subject to change. Not all features available at launch

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# *RF2 Auto vs Manual vs Multi-Channel*

| | RF2 Auto | RF2 Manual | RF2 Multi-Channel |
|---|---|---|---|
| **Process Capability** | **Automatic Gun Flow Control + Ratio Control** | **Manual Gun (Demand Mode) Ratio Control** | **Automatic or Manual** |
| Mixing/Flow Control | 1K, 2K, 3K | 2K, 3K | 1K, 2K, 3K |
| **Number of channels** | **2 or 4** | **2 or 4** | **6 or 8** |
| Number of colors/catalysts/3K | Standard: 12/4/3    Max: 30/6/3 | Standard: 12/4/3    Max: 30/6/3 | Up to 60/12/6 |
| Ethernet I/P connectivity | Standard | Standard | Standard |
| In-booth fluid panel | Optional | Optional | Optional |
| **Flow Devices** | **1K: DR-1    2K: MVR    3K: MVR** | **Pulse** | **DR-1, MVR, or Pulse** |
| Flowmeter | Gear, Coriolis, Fiberoptic | Gear, Coriolis, Fiberoptic | Gear, Coriolis, Fiberoptic |
| Inlet pressure control | Standard | Optional | Optional |

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# RF2 Turn-key standard packages cover the most common 1K and 2K applications: Competitive pricing and lead times as low as 2 weeks

**How to select your configuration:**
1. Select 1K or 2K
2. Select low or high pressure
3. Select number of colors and catalysts (If desired combination is not listed, select 1 color 1 catalyst configuration and add color stacks separately)
4. Select material compatibility

**2K Low Pressure (300 psi)**

| Number of Colors | Number of Catalysts | Standard Materials Part Number | Isocyanate Materials Part Number |
|---|---|---|---|
| 1* | 1* | RF2-LA2-01-01-S | RF2-LA2-01-01-C |
| 4 | 1 | RF2-LA2-04-01-S | RF2-LA2-04-01-C |
| 7 | 2 | RF2-LA2-07-02-S | RF2-LA2-07-02-C |
| 12 | 4 | RF2-LA2-12-04-S | RF2-LA2-12-04-C |

**2K High Pressure (3,000 psi)**

| Number of Colors | Number of Catalysts | RF2 Part Number |
|---|---|---|
| 1* | 1* | RF2-HA2-01-01-S |

**1K, 2 Channels, Low Pressure (300 psi)**

| Number of Colors | Number of Catalysts | RF2 Part Number |
|---|---|---|
| 1* | 1* | RF2-LA1-01-01-S |

* Order color and catalyst stacks separately
** Low pressure, multi-color systems only

**All packages include:**
- Inlet pressure regulators**
- Gear flowmeters
- MVR flow control
- Solvent air/chop**
- Flushable dynamic mix block
- Wall mounting

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# *Ransburg RCS2: Premium Performance*

## Overview

- Precision 2K for the most demanding manual, automatic, and robot coating applications

- Magnetically-coupled fluid metering pumps for accurate control even at very low flow rates

- Up to 10 colors, 1 catalyst

- Datalogging capabilities

## Competitive Edge

- Unmatched trigger and flow control response increase production efficiency

- Coat complex or small parts more quickly and more consistently

- 15" touchscreen can display and control up to 4 fluid panels at once

## Applications

- Manual or Automatic spray, flow control

- 300 psi

- 2K, 8 flow channels, 4 fluid panels

- Automotive "Class A", Industrial, ACE

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# *Metering and Mixing Accessories*

# Low pressure color change valves (CCV)

- 1 to 30 colors, with solvent valve and optional air push

- Low pressure applications

- 304 Stainless Steel

- Modular design for customization

- Low cost

- Easy to maintain and rebuild

# *High pressure color change valves (CCVHP)*

- High pressure applications. Up to 3,000psi fluid pressure

- 316 Stainless Steel

- 1-30 colors available

- Acid compatible

- Easy to maintain and rebuild



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# MCV2 color valve family

**SPECIFICATIONS**

**Electrical / Physical**

**Operating Pressure:**
Fluid    300 psi max. (20.68 bar)

**Operating Temperature Range:**    55°F (12.8°C)
    130°F (54°C)

**Fluid Tube (Metric):**
Inlet    10mm ODT
Circulation    8mm ODT
Solvent/Air Purge    10mm ODT
End Plate Outlet    1/4-inch NPSM "AN" Style

**Air Tube (Metric):**
Actuation    4mm ODT Inlet

**Fluid Tube (Fraction):**
Inlet    3/8-inch ODT
Circulation    5/16-inch ODT
Solvent/Air Purge    3/8-inch ODT
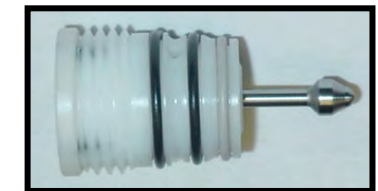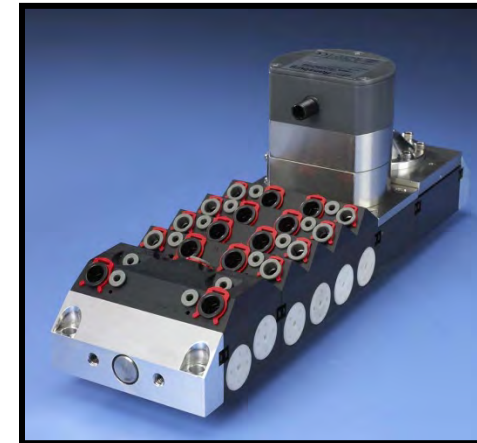End Plate Outlet    1/4-inch NPSM "AN" Style

**Air Tube (Metric-Fraction):**
Actuation    5/32-inch (4mm) ODT Inlet

**Air Actuating Pressure:**    75-120 psi (5.2-8.3 bar)

**Maximum Number of Colors:**    32

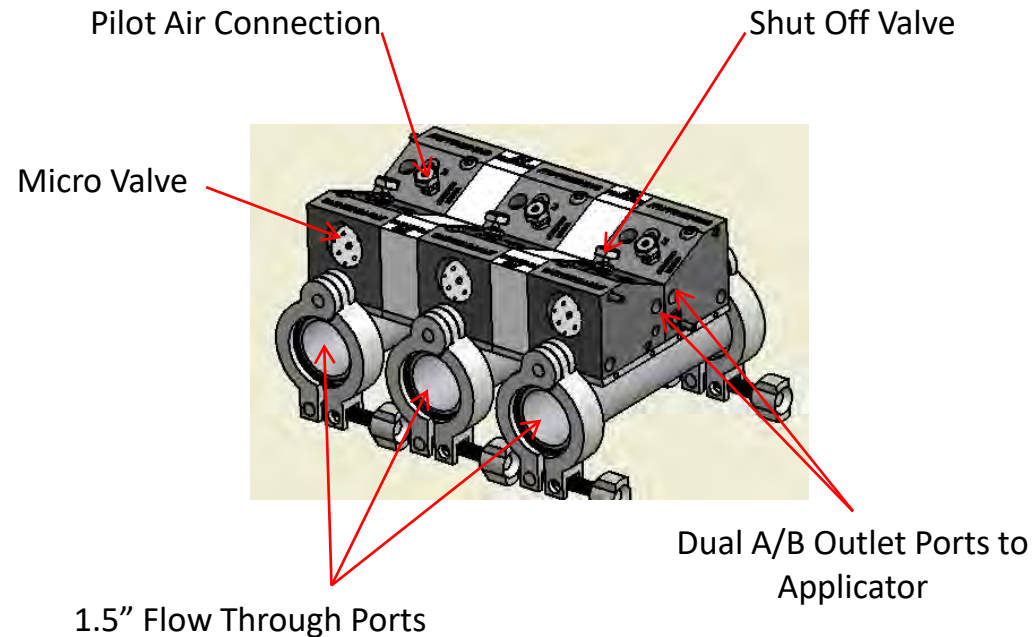**Construction Materials:**    Stainless Steel
    UHMW

- Uses the sealed Microvalve design
- Fitting-less tubing connections
- Low pressure applications
- 304 Stainless Steel
- Modular design for customization up to 32 colors
- Lightweight, can be mounted on robot arm
- Metric and Fractional versions available
- Easy to maintain and rebuild
- Optional accessories include DR2 fluid regulator and flow meter



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# *Piggable Color Change Valves*

## What is Piggable?

- "Piggable" means you can flush the entire circulation system quickly and easily and load a new color into that system with no cross contamination.

- This is done by pushing the old material out with a plug (pig).

- The old material is collected back into the supply to be reused.

- No material is lost during a system flush. It can all be reused.



Pilot Air Connection

Shut Off Valve

Micro Valve

Dual A/B Outlet Ports to Applicator

1.5" Flow Through Ports

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# Remote color change modules and gun flush boxes



## Remote Color Change

- Allow operators to change colors, flush, and control equipment functions from inside the booth

- Increase efficiency and production speed

## Gun Flush Boxes

- Automatically flush hand guns during color changes

- Avoid messes and simplify cleanup

- Increase production speed



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# How to select the correct 2K equipment

| Criteria | RM2 | RF2 | RCS2 |
|---|---|---|---|
| Manual spray | ✔ | ✔ | ✔ |
| Automatic spray with flow control | | ✔ | ✔ |
| High pressure (3,000 psi) required | ✔ | ✔ | |
| More than 7 colors | | ✔ | ✔ |
| More than 1 catalyst | | ✔ | |
| Catalyst flowrates less than 10 cc/min | ✔ | | ✔ |
| 3K required | | ✔ | |
| More than 2 guns per controller | | ✔ | ✔ |
| PLC or robot integration required | | ✔ | ✔ |
| Very rapid triggering and flowrate adjustment | | | ✔ |

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# *Once the unit is selected, now select the configuration*

- Each 2K unit has slightly different configuration requirements, but below are key process parameters to know:
  - Material ratios
  - Material flowrates
  - Applicator types and quantities
  - Triggering frequency
  - Material supply equipment
  - Spray pressure
  - Material types and compatibility (PDS, SDS, MDS datasheets)
  - Number of colors
  - Number of catalysts
  - PLC or robot integration requirements

- Then work with your Carlisle Fluid Technologies Account Manager to help select the optimal configuration for your application

# *The Brands You Trust*

**BGK™ A CARLISLE BRAND**

*BGK*™ products deliver precision-engineered curing capabilities for a full range of coatings including liquid, powder, wax, UV and adhesives.

**BINKS® A CARLISLE BRAND**

*Binks*® products boast innovative spray gun and air cap design along with industry leading pumps and controls.

**DeVILBISS® A CARLISLE BRAND**

*DeVilbiss*® products include low pressure manual and automatic spray guns and related spraying accessories. *DeVilbiss* products are widely acclaimed for ergonomics and innovative spray gun design.

**HOSCO® A CARLISLE BRAND**

*Hosco*® products deliver smooth bore, "cavity free" stainless steel fittings and accessories designed for use in paint circulating and application finishing systems.

**ms® A CARLISLE BRAND**

*ms*® products include powder coating systems and equipment. ms is recognized throughout the world for quality, efficiency and durability.

**Ransburg® A CARLISLE BRAND**

*Ransburg*® manual and automatic electrostatic finishing products offer spray finishing solutions to industrial and automobile manufacturing markets.

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# Thank you!