DELIVERING
KNOWLEDGE
TO THE
COATING
APPLICATION
INDUSTRY
AWFI
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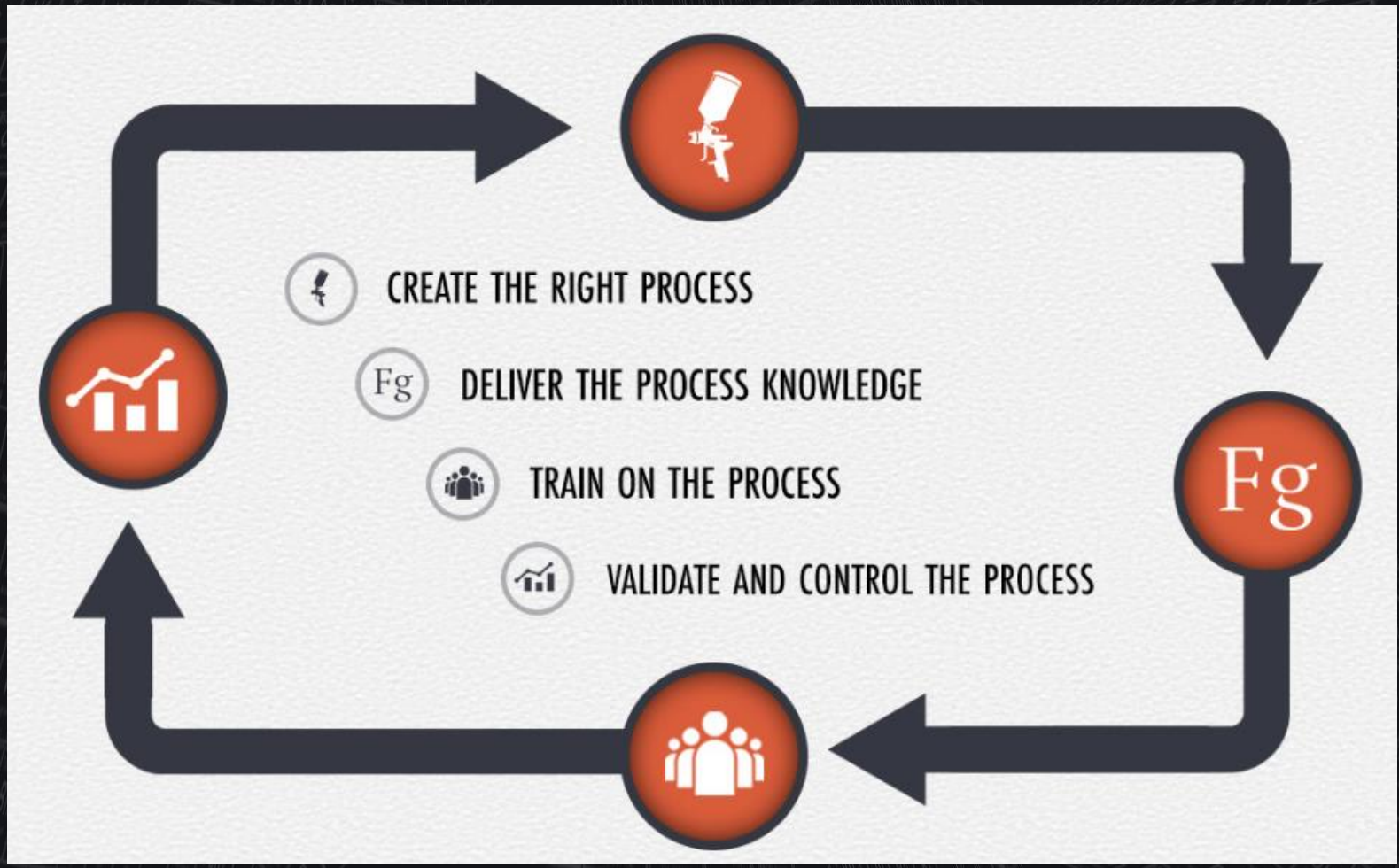
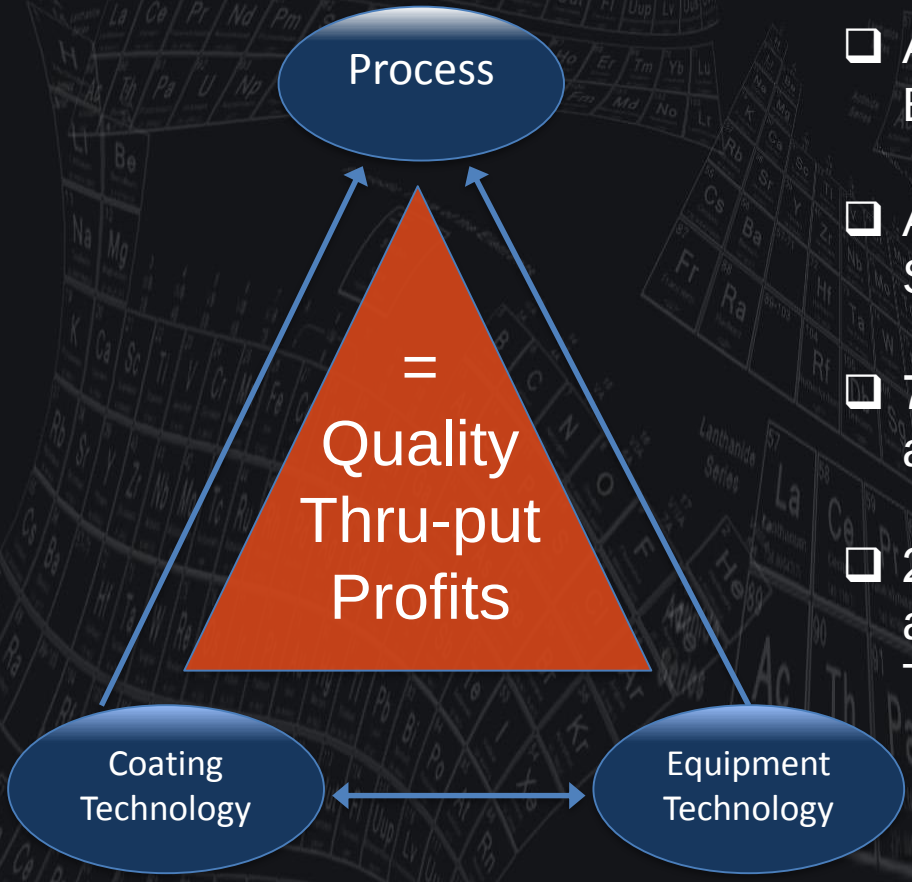
# DELIVERING KNOWLEDGE TO THE COATING APPLICATION INDUSTRY



# Delivering Knowledge to the Coating Application Industry

## Knowledge Power



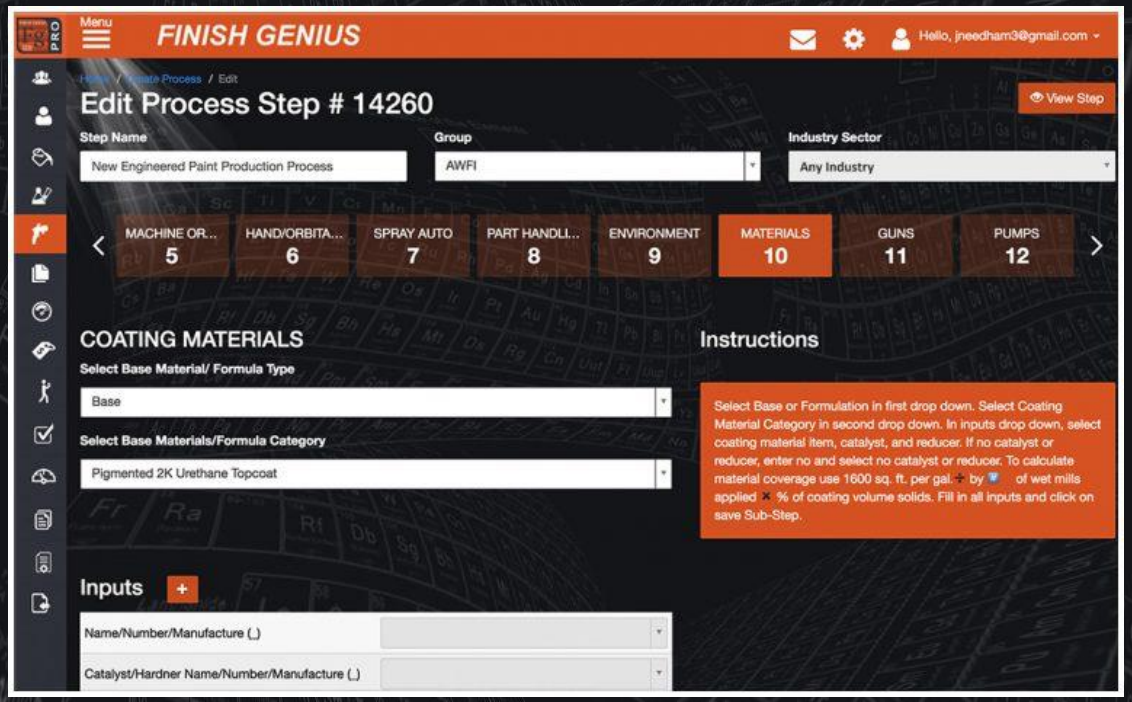

- Average Finish Process Consist of Between 100-145 Data Points
- Average Finish Process Use 8-10 Steps and Between 25-30 Sub-Steps
- 78% of Finisher's Human Resources are Spent on Process Metrics
- 22% of Finisher's Human Resources are Directly Related to Dexterity and Technique

# Delivering Knowledge to the Coating Application Industry

## Finishing By Numbers versus: Tribal Knowledge

### Process Configuration Automation

- Connecting the right coating technology with…..
- The right Equipment technology =
- Best Process for the job

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Connecting The Right Process with People

# Finishing By Numbers - White Wood Orbital Sanding

## Causes of Orbital Scratch Defects

- Wrong Grit
- Damaged Paper
- Surface Moisture High
- Wrong Orbit Size
- Poor Compressed Air Flow
- Wrong Technique
- Wrong Abrasive
- Sander Maintenance

## Process Metrics

| | |
|---|---|
| Hand Orbital Sander Name/Number/Manufacture (-) | Mirka ROS 3/16 Orbit-MR-5 (5") |
| Abrasives/Sanding Step (#1) (-) | Hafele P180 Alum. Oxide 5" Discs-005.33.164 |
| Abrasive Consumption #1 (Sq. Ft. Per Pc.) | 12 |
| Abrasives/ Sanding Step # (2) (-) | Mirka Goldflex-Soft Sponge 180 grit-23-145-180 |
| Abrasive Consumption #2 (Sq. Ft. Per Pc.) | 12 |
| Abrasives/ Sanding Step (#3) (-) | Mirka Gold Flex Soft Scuffing Pads-23-145-320 |
| Abrasive Consumption #3 (Sq. Ft. Per Pc.) | 12 |
| Sander Speed (RPM) | 12,000 |
| Sander Orbit Size (Inches) | 3/16 |
| Air Supply (PSI) | 90 |
| Manufacturer/ Item Name_Number (-) | Mirka 3" x 4" Orbital Finishing Sander-MR-34DB |
| Abrasives/Sanding Step (#1) (-) | Mirka Abranet 180 Grit 3x4" Abrasive-9A-129-180 |

| | |
|---|---|
| Abrasives/ Sanding Step (#3) (-) | Mirka Gold Flex Soft Scuffing Pads-23-145-320 |
| Abrasive Consumption #3 (Sq. Ft. Per Pc.) | 12 |
| Sander Speed (RPM) | 12,000 |
| Sander Orbit Size (Inches) | 3/16 |
| Air Supply (PSI) | 90 |
| Manufacturer/ Item Name_Number (-) | Mirka 3" x 4" Orbital Finishing Sander-MR-34DB |
| Abrasives/Sanding Step (#1) (-) | Mirka Abranet 180 Grit 3x4" Abrasive-9A-129-180 |
| Abrasive Consumption #1 (Sq. Ft. Per Pc.) | 0 |
| Abrasives/ Sanding Head # (2) (-) | No Abrasive-00 |
| Abrasive Consumption #2 (Sq. Ft. Per Pc. ) | 0 |
| Abrasives/ Sanding Step (#3) (-) | No Abrasive-00 |
| Abrasive Consumption #3 (Sq. Ft. Per Pc.) | 0 |
| Sander Speed (RPM) | 12,000 |
| Sander Orbit Size (Inches) | 3/16 |
| Air Supply (PSI.) | 90 |
| Notes: (-) | . |

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# Finishing By Numbers -White Wood Sanding

Automated Brush Sander

Orbital Sander

# Finishing By Numbers –Spray to Color Stains

## Causes of Stain Defects

- ❑ Stain Dry To Fast
- ❑ Stain Dry To Slow
- ❑ Incorrect Gun Flow Rate
- ❑ Air Pressure to Low or High
- ❑ Wrong Tip Size
- ❑ Wrong Technique
- ❑ Gun Setup Wrong
- ❑ Gun Maintenance
- ❑ Low CFM

## Process Metrics

| | |
|---|---|
| Dye Stain/Solvent (NGR) Name/Number/Manufacture (_) | Dark Brown-Dye Stain N |
| Reducer Name/Number/Manufacture (_) | Toluene (Reducer)_Toluene |
| Reducer Ratio (Fl. Oz./Gal:) | 6 |
| Additives (-) | ILVA Anti-Static Additive_PX85 |
| Additive Ratio (Fl. Oz./Gal:) | 3 |
| Application Viscosity (Sec.) | NA |
| Air Dry (Min./Hr. 78 °F/50% RH.) | 10 Mins |
| Volume Solids (%) | NA |
| Application Thickness (Wet Mils:) | Spray To Match Approved Color |
| Coating Application Temperature Range (°F/°C) | 68 °F -98°F |
| Surface Temperature Application Range (°F/°C) | 72°F-96°F |
| Notes: (-) | Spray To Match Approved Color |

| | |
|---|---|
| Manual HVLP Gun Name/Number/Manufacture (-) | SATAjet HVLP Pressure Feed-3000 K |
| Tip Name/Number/Manufacture (-) | SATA Jet 0.8 Tip-Jet 3000K 0.8 HVLP |
| Air Cap Name/Number/Manufacture (-) | Sata Jet 3000K Air Cap-Standard |
| Delivery System Type (-) | Low Pressure |
| Flow Rate (Oz./CC's/Grams Per Min.) | 90 Grams |
| Atomization Air (PSI Triggered) | 25 PSI |
| Fan Width (Inches) | 8" |
| Gun To Part Distance (Inches) | 8-10" |
| Gun Overlap (%) | 50 % |
| Number of Gun Passes (#) | 1 Box Coat |
| Gun Speed (-) | medium |
| Notes: (-) | Set flow rate to match standard. B: = ator |

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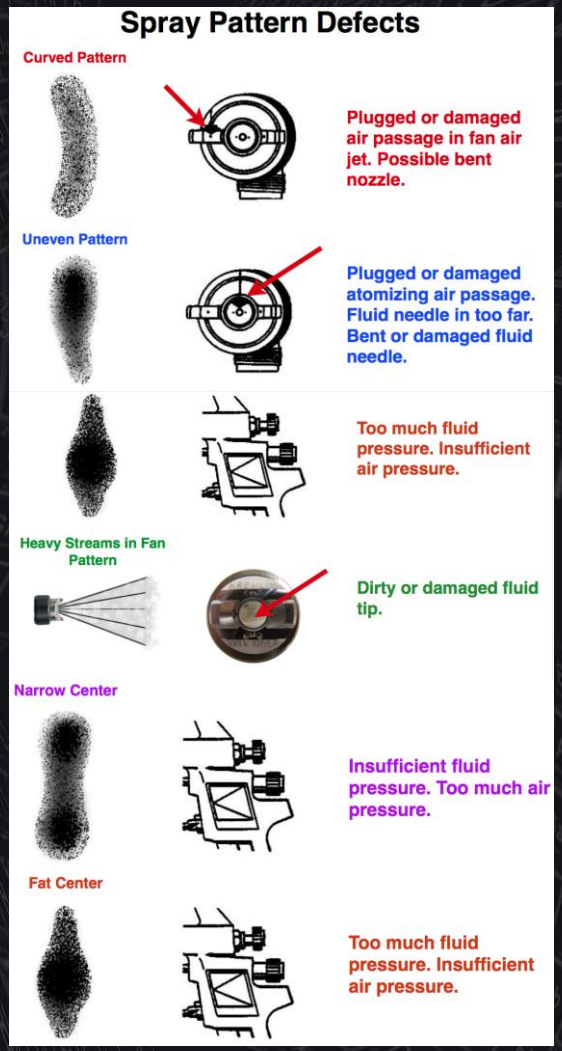
# Finishing By Numbers – Spray to Color Stains

**HVLP Gun Stain Pattern**



# Finishing By Numbers –Wiping Stains

## Causes of Stain Defects

- ❑ Stain Dry To Fast
- ❑ Stain Dry To Slow
- ❑ Wrong Stain Chemistry
- ❑ Air Pressure Wrong Tip Size
- ❑ Wrong wiping Technique
- ❑ Gun Setup Wrong
- ❑ Inconsistent Dwell Time on Part
- ❑ Wrong Rag Type

## Process Metrics

| | |
|---|---|
| Wiping Stain / Solvent Name/Number/Manufacture (.) | Valspar Mission Oak Graintone Plus Wiping Stain-VWS0560 |
| Reducer Name/Number/Manufacture (.) | |
| Reducer Ratio (Fl. Oz./Gal:) | 0 |
| Additives (-) | |
| Additive Ratio (Fl. Oz./Gal:) | 0 |
| Air Dry (Min./Hr. 78 °F/ 50% RH.) | 30-45 mins. To Re-Coat |
| Volume Solids (%) | NA |
| Application Thickness (Wet Mils:) | Medium Wet |
| Coating Application Temperature Range ( °F/°C) | 68-98 °F |
| Surface Temperature Application Range (°F/°C) | 0 |
| Notes: (-) | Apply wet with soft rag. Rub on against the grain first then with t |

| | |
|---|---|
| Manual AA Gun Name/Number/Manufacture (-) | Kremlin/Rexson Xcite AA Gun Manual-135.720.200-AA |
| Tip Name/Number/Manufacture (-) | Kremlin AA Tip-9.134 |
| Air Cap Name/Number/Manufacture (-) | Kremlin Xcite Air Cap-Standard |
| Delivery System Type (-) | Medium High Pressure |
| Hose Size ID (Inches ) | 3/16 |
| Flow Rate (Oz./CC's/Grams Per Min.) | - |
| Atomization Air (PSI Triggered) | 5 PSI |
| Fan Width (Inches) | 8" |
| Gun To Part Distance (Inches) | 6" |
| Overlap (%) | None |
| Number of Gun Passes (#) | 1 Pass |
| Gun Speed (-) | Medium |
| Gun TE (% of Material Material Coverage Per Gal. Applied ) | - |
| Notes: (-) | Spray one medium wet coat. |

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# Finishing By Numbers – Wiping Stains

**Automated Stain Spraying On Linear Parts**

# Finishing By Numbers – Sealers

## Causes of Sealer Defects

- ❑ Material, Substrate Cold
- ❑ Wrong Gun and Pump Set-Up
- ❑ Wrong Sealer Chemistry
- ❑ Wrong Tip Size
- ❑ Wrong Application Technique
- ❑ Insufficient Dry Time Between Coats
- ❑ To High Ambient Temps & % RH
- ❑ Poor Atomization
- ❑ Wrong Viscosity
- ❑ Wrong Mil Thickness

## Process Metrics

| | |
|---|---|
| Clear Vinyl Sealer Name/Number/Manufacture (_) | Sherwin Williams Sherwood Fast Dry Vinyl Sealer-T67FH64 |
| Catalyst/Hardner Name/Number/Manufacture (-) | Sherwin Williams Hi-Bild Precat Catalyst_V66V3-FGST |
| Catalyst Ratio (Fl. Oz./Gal:) | 4 |
| Reducer Name/Number/Manufacture (_) | Sherwin Williams Butyl Acetate "Reducer"_R6K18 |
| Reducer Ratio (Fl. Oz./Gal:) | 6 |
| Additives (-) | M.L. Campbell Acid Cure Flatting Paste_C15801-FGST |
| Additive Ratio ( Fl. Oz./Gal:) | 8 |
| Application Viscosity (Sec.) | 18-22 Ford #4 |
| Air Dry (Min./Hr. 78 °F/50% RH.) | 15-30 min to Flip or Sand |
| Volume Solids (%) | 18 % |
| Application Thickness (Wet Mils:) | 3-4 Wet Mils |
| Pot Life (Hrs./Mins.) | 0 |
| Coating Application Temperature Range (°F/°C) | 68-98 °F |
| Surface Temperature Application Range ( °F/°C) | 72°F-90°F |

| | |
|---|---|
| Manual AA Gun Name/Number/Manufacture (-) | Kremlin/Rexson Xcite AA Gun Manual-135.720.200-AA |
| Tip Name/Number/Manufacture (-) | Kremlin AA Tip-9.134 |
| Air Cap Name/Number/Manufacture (-) | Kremlin Xcite Air Cap-Standard |
| Delivery System Type (-) | Medium High Pressure |
| Hose Size ID (Inches ) | 3/16 |
| Flow Rate (Oz./CC's/Grams Per Min.) | NA |
| Atomization Air (PSI Triggered) | 18 PSI |
| Fan Width (Inches) | 8" |
| Gun To Part Distance (Inches) | 8" |
| Overlap (%) | 50% |
| Number of Gun Passes (#) | 1 Box Coats |
| Gun Speed (-) | Meduim Fast |
| Piston Pump Name/Number/Manufacture (_) | Kremlin AA Piston Pump-10-14 |
| Pump Ratio (-) | 10:1 |
| Pump Pressure (PSI=Fluid Hydraulic Pressure) | 55 PSI |
| Fluid Back Pressure PSI (PSI) | 550 |

# Finishing By Numbers – Sealers

**Automated Sealer Application**

©

# Finishing By Numbers – Wiping Glazes

## Causes of Glaze Defects

- ❑ Glazes Dry To Fast
- ❑ Glaze Dry To Slow
- ❑ Wrong Gaze Chemistry
- ❑ Finish Being Glaze Over Inconsistent
- ❑ Wrong Wiping Technique
- ❑ Inconsistent Dwell Time on Part
- ❑ Wrong Rag Type

## Process Metrics

| | |
|---|---|
| Wiping Glaze Name/Number/Manufacture (_) | Glaze Santorini Blue-VGN-17 |
| Reducer Name/Number/Manufacture (_) | Sherwin Williams Mineral Spirits (Reducer)_MS-SW-FGST |
| Reducer Ratio (Fl. Oz./Gal:) | 4 |
| Additives (-) | |
| Additive Ratio (Fl. Oz./Gal:) | 0 |
| Application Viscosity (Sec.) | 0 |
| Air Dry (Min./Hr. 78 deg F. 50% RH.) | 1-8 Hrs. To Re-coat or Over Night |
| Volume Solids (%) | 0 |
| Application Thickness (Wet Mils:) | Rag on and Wipe Off to Match Color Sample |
| Coating Application Temperature Range (deg F) | 68-98 deg F |

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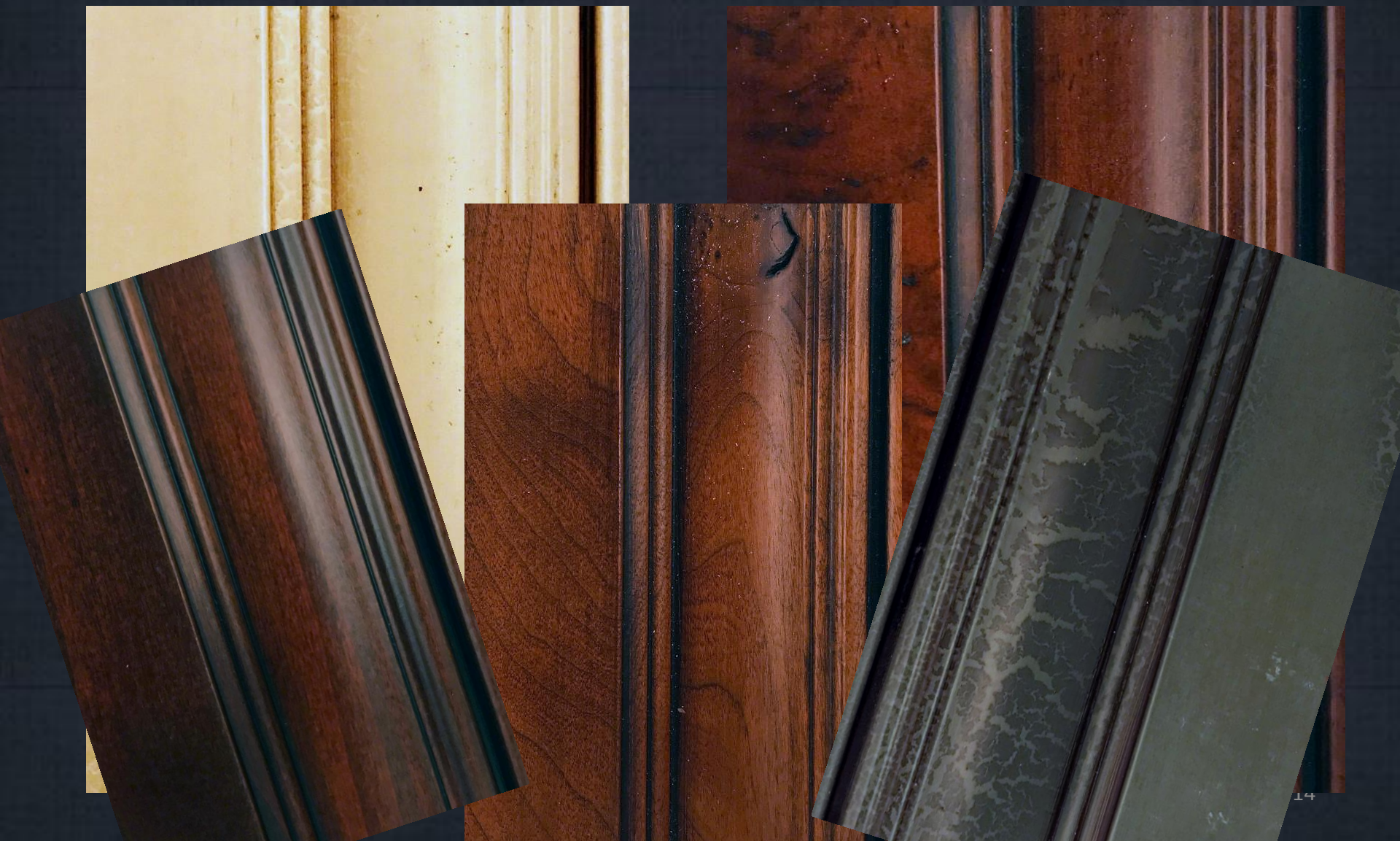
# Delivering Knowledge to the Coating Application Industry



# Finishing By Numbers – Topcoats

## Causes of Sealer Defects

- ❑ Material, Substrate Cold
- ❑ Wrong Gun and Pump Set-Up
- ❑ Wrong Topcoat Chemistry
- ❑ Wrong Tip Size
- ❑ Wrong Application Technique
- ❑ Gun, Pump Setup Wrong
- ❑ Insufficient Dry Time Between Coats
- ❑ To High Ambient Temps & % RH
- ❑ Poor Atomization
- ❑ Wrong Viscosity
- ❑ Wrong Mil Thickness

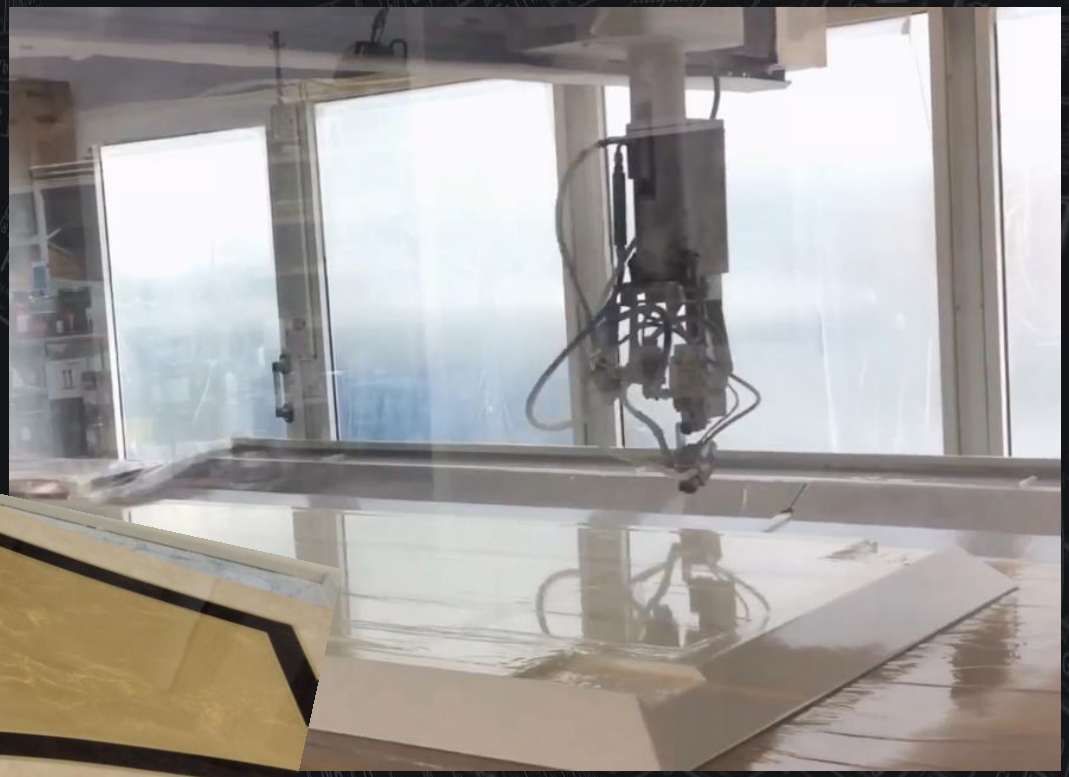
## Process Metrics

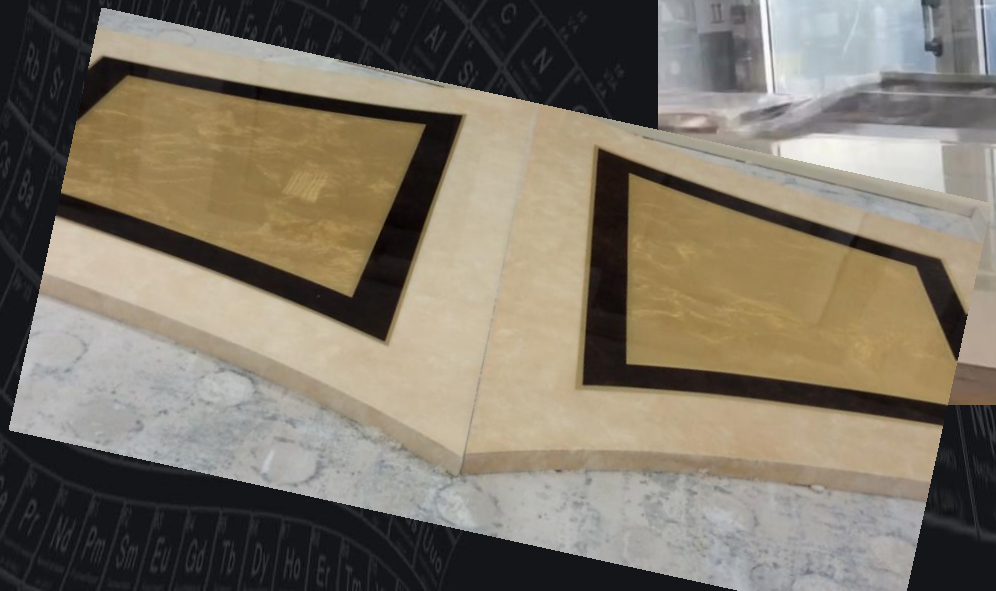
| | |
|---|---|
| Clear Conversion Varnish Topcoat Name/Number/Manufacture (_) | Sherwin Williams Water White Dull Rubbed Effect CV-V84F83 |
| Catalyst/Hardner Name/Number/Manufacture (_) | Sherwin Williams Kemvar Catalyst_V66V21 |
| Catalyst Ratio (Fl. Oz./Gal:) | 4 |
| Reducer Name/Number/Manufacture (_) | Sherwin Williams Butyl Acetate "Reducer"_R6K18 |
| Reducer Ratio (Fl. Oz./Gal:) | 6.4 |
| Reducer Name/Number/Manufacture (-) | Superior Wood Products Butyl Acetate Reducer_Bac-5-401-SWP |
| Reducer Ratio (Fl. Oz./Gal:) | 10 |
| Additives (-) | CM #99 Clear Flat-aid_99-FGST |
| Additive Ratio (Fl. Oz./Gal:) | 8 |
| Application Viscosity (Sec.) | 18-22 #2 Zahn |
| Air Dry (Min./Hr. 78 °F/50% RH.) | To Flip 2 Hrs. To Pack 8 Hrs. |
| Volume Solids (%) | 35 |
| Volume Solids (%) | 35 |
| Application Thickness (Wet Mils:) | 4 Wet Mils |
| Pot Life (Hrs./Mins. ) | 24hr |
| Coating Application Temperature Range (°F/°C) | 68-98 °F |
| Surface Temperature Application Range (°F/°C) | 0 |
| Notes: (-) | - |
| Default Base/Formula Qty (-) | 1 |
| Coverage (Sq. Ft. / Gal.) | 120 |

| | |
|---|---|
| Manual AA Gun Name/Number/Manufacture (-) | Kremlin/Rexson Xcite AA Gun Manual-135.720.200-AA |
| Tip Name/Number/Manufacture (-) | Kremlin AA Tip-9.134 |
| Air Cap Name/Number/Manufacture (-) | Kremlin Xcite Air Cap-Standard |
| Delivery System Type (-) | Medium High Pressure |
| Hose Size ID (Inches ) | 3/16 |
| Flow Rate (Oz./CC's/Grams Per Min.) | NA |
| Atomization Air (PSI Triggered) | 18 PSI |
| Fan Width (Inches) | 8" |
| Gun To Part Distance (Inches) | 8" |
| Overlap (%) | 50% |
| Number of Gun Passes (#) | 1 Box Coats |
| Gun Speed (-) | Meduim Fast |
| Piston Pump Name/Number/Manufacture (_) | Kremlin AA Piston Pump-10-14 |
| Pump Ratio (-) | 10:1 |
| Pump Pressure (PSI=Fluid Hydraulic Pressure) | 55 PSI |
| Fluid Back Pressure PSI (PSI) | 550 |

# Finishing By Numbers – Topcoats

**Automated Topcoat Application**





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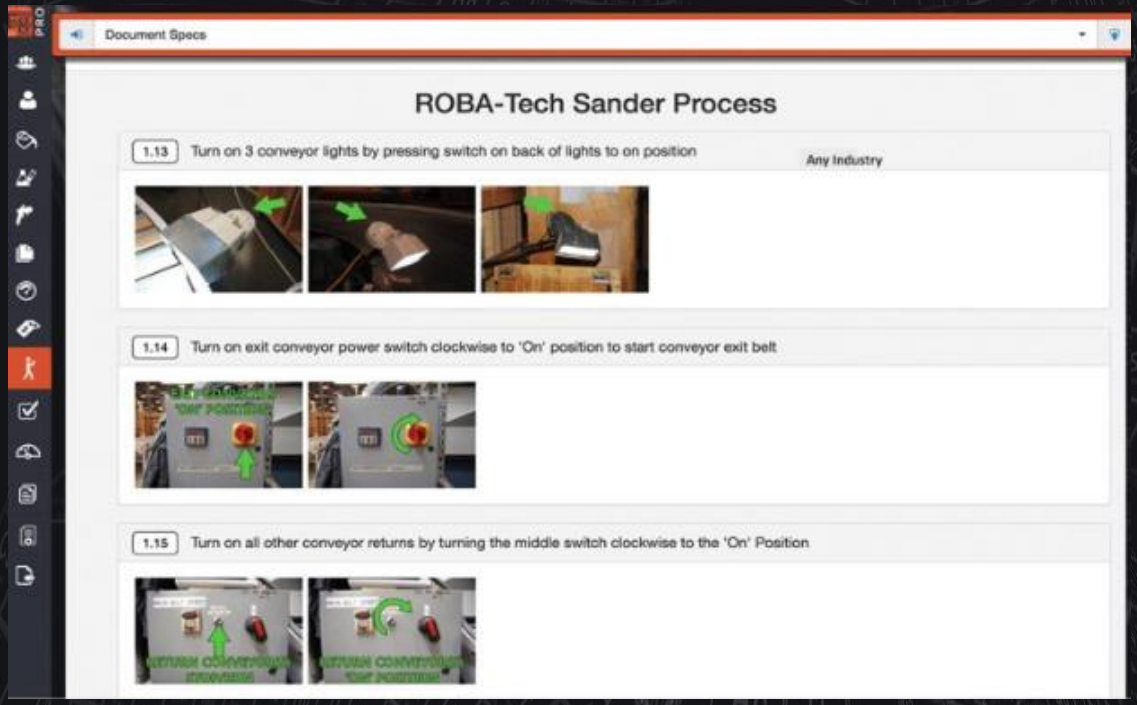
# Delivering Knowledge to the Coating Application Industry

## Training the Finisher by Numbers

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Digital Work Instructions
Formerly Known as
Standard Operating
Procedures

Connecting The Right Process with People

# Delivering Knowledge to the Coating Application Industry

## Training the Finisher With Videos

Digital Work Instructions Video

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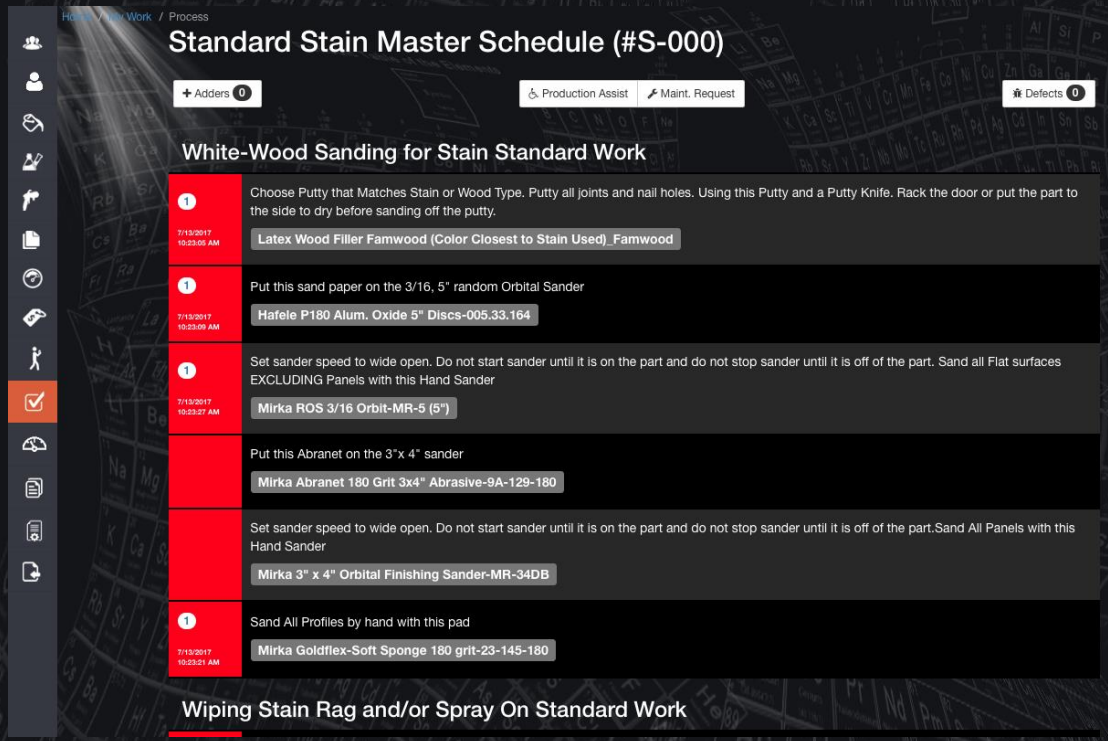
# Validating the Process by Numbers




- ❑ Enhanced Real-time Data Collection & Reporting
- ❑ Improves Operator Consistency
- ❑ Allows for Dynamic Process Adjustments
- ❑ Continuous Validation for Process Improvement
- ❑ Reduced Reworks & Labor
- ❑ Increases Product Quality & Throughput
- ❑ Enforces Process Order and Traceability

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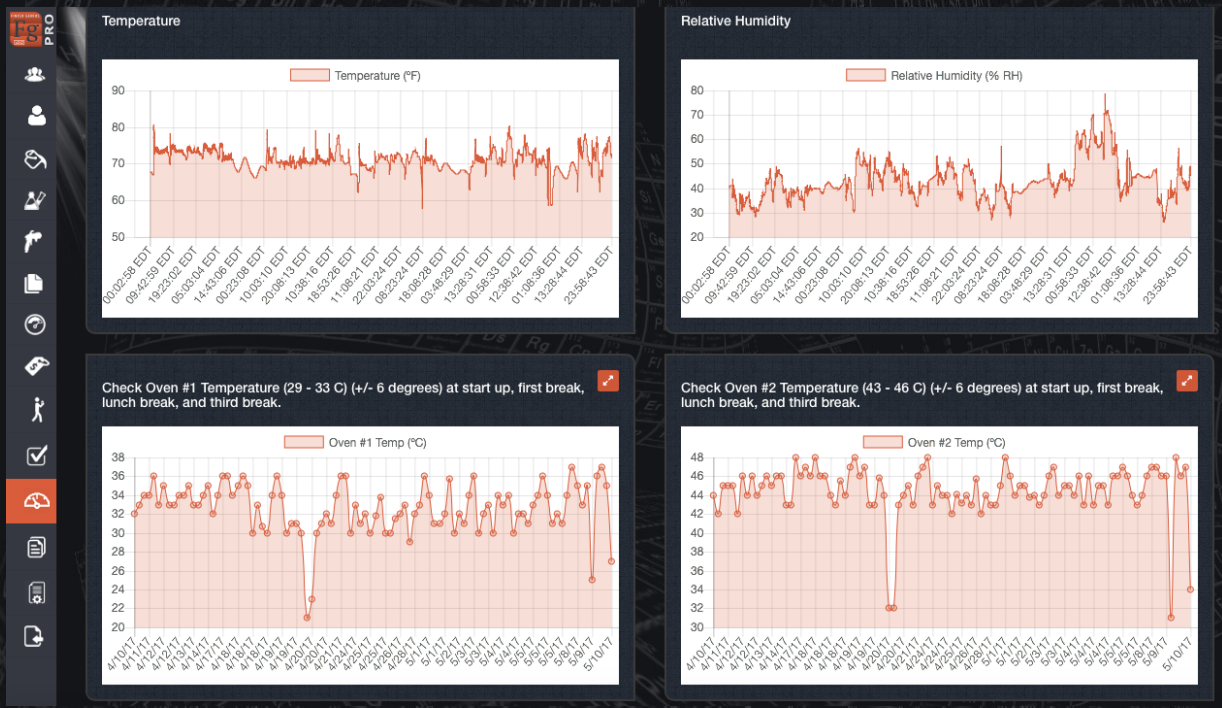
# Validating the Process by Data Recordkeeping




Streaming Real Time Data to Dashboard

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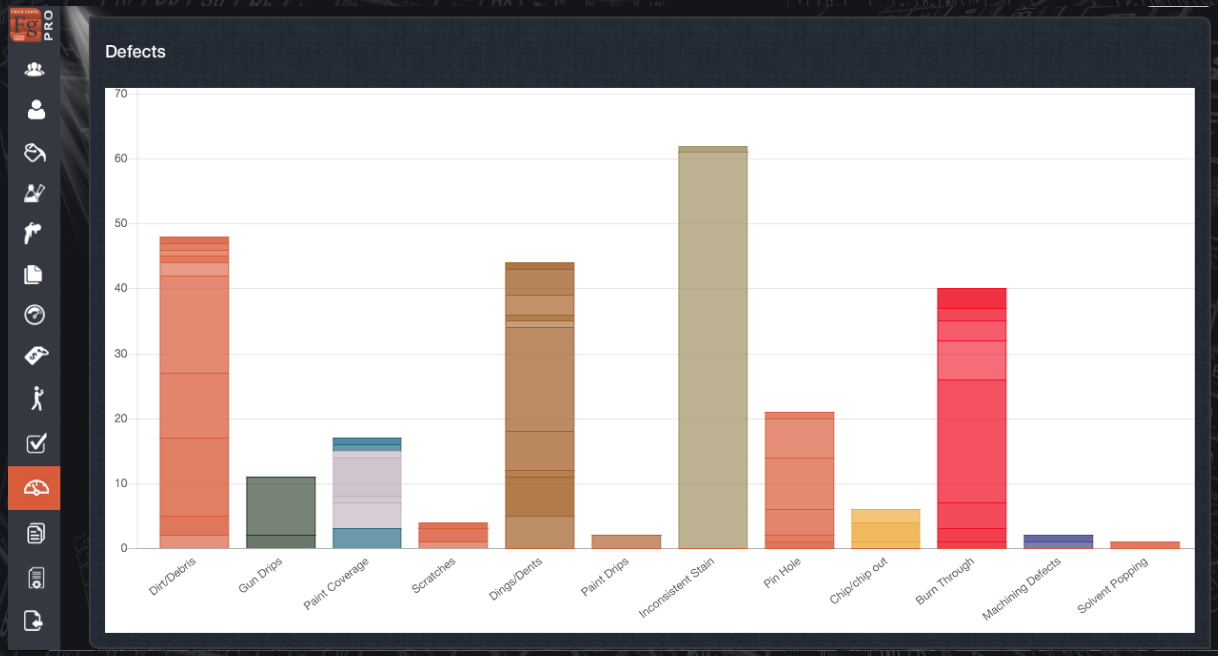
# Validating the Process by Data Recordkeeping




Know How to
Prevent Defects
In Real Time

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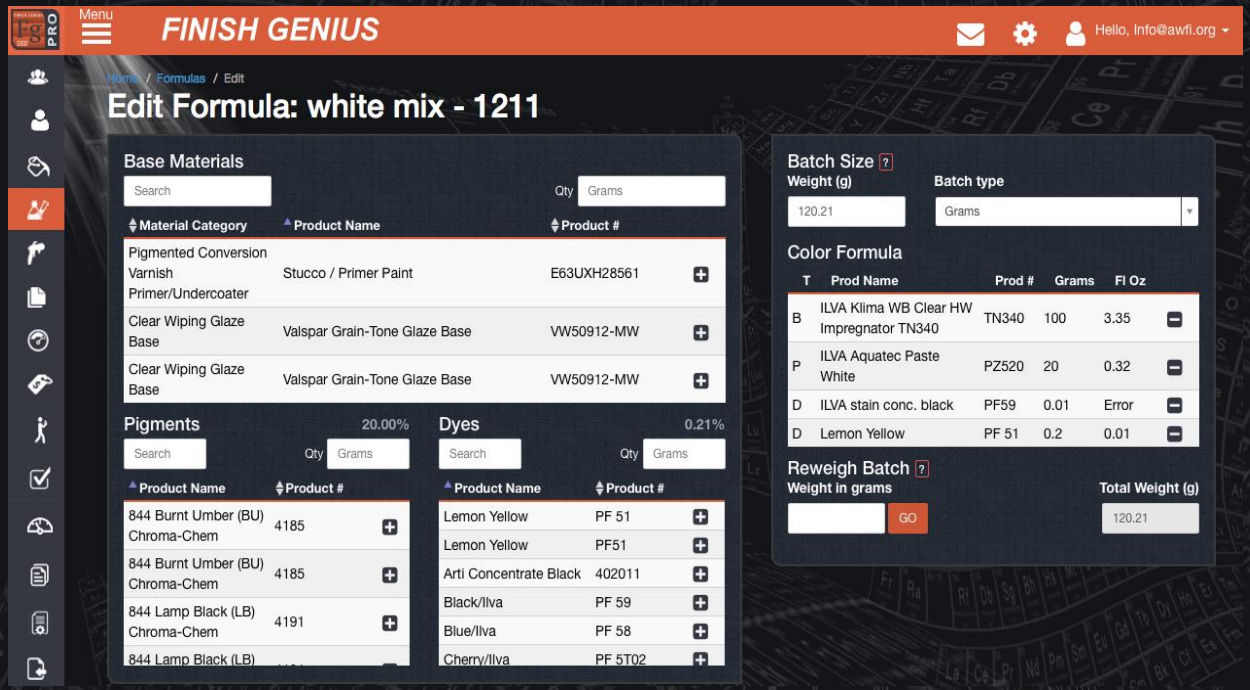
Connecting The Right Process with People

# Validating the Process by Data Recordkeeping




- ❑ Secure and Consistent Data Storage
- ❑ Accurate Batching
- ❑ Easy to Find Formulas
- ❑ Reduced Waste Stream From Color Mismatches
- ❑ Accurate Formulas

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Connecting The Right Process with People

# Delivering Knowledge to the Coating Application Industry

## Knowledge Power

Providing Success for Your Finisher

Give Your Team the Tools For Success

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