



Canyon Creek Cabinet Company

Lean & Environmental Update

8/5/2008

Presented by John Earl

Vision of the Journey

- Agencies & companies working together
- How different processes can effect the environment
- Benefits from looking further
- Morale boost for everybody
- Management support

How did the grant help?

- Learn more on Value stream mapping and how to identify environmental wastes
- Dedicated time & effort to ideas that have been in the planning stage
- Help streamline processes and save money
- Increased product throughput

Stain Booth Before Lean Event



Stain Booth After Lean Event



Air emissions reduction

- 55,000 lbs composed of pollutants such as:
 - Xylene
 - Formaldehyde
 - Toluene
 - Methanol

VOC Reduction

- Maintained Synthetic Minor Permit and avoided Title V Permit

2006 - 172,182 (Adjusted for waste)

2007 – 139,912 (not adjusted for waste)

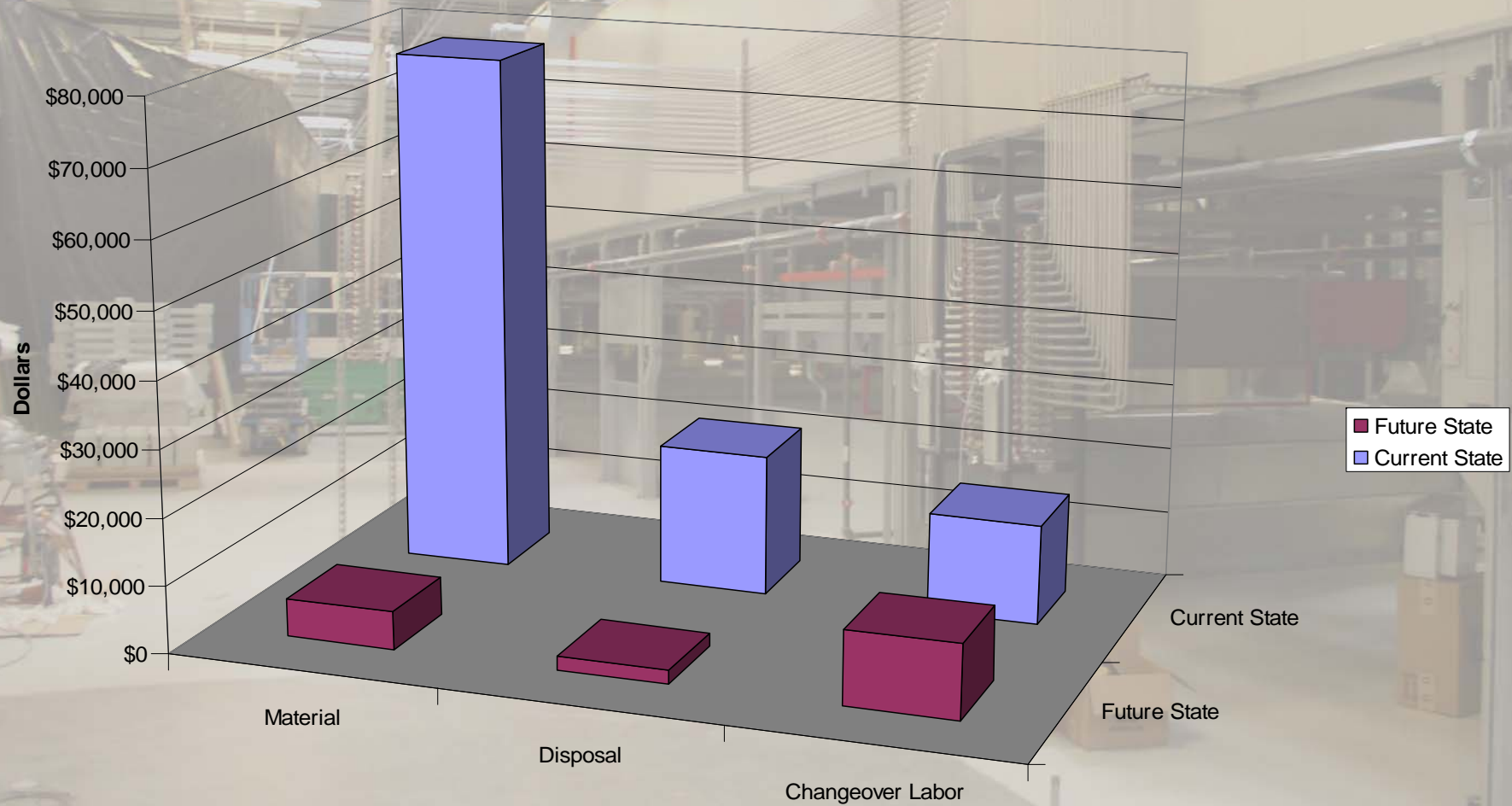
2008 – 145,599 (projected – not adjusted for waste)



Reductions in waste and purchases:

- Reduced hazardous waste by 47,705 pounds of methyl ethyl ketone (MEK) and Volatile Organic Compounds (VOC's) for a savings of \$20,493.
- Reduced purchase of stains and solvents, by 68,723 pounds for a cost savings of \$128,454.

Stain Booth Annual Waste



A photograph of an industrial factory interior, showing a long aisle with various pieces of machinery, pipes, and structural elements. The lighting is bright, and the overall atmosphere is that of a busy manufacturing environment. The text is overlaid on this image.

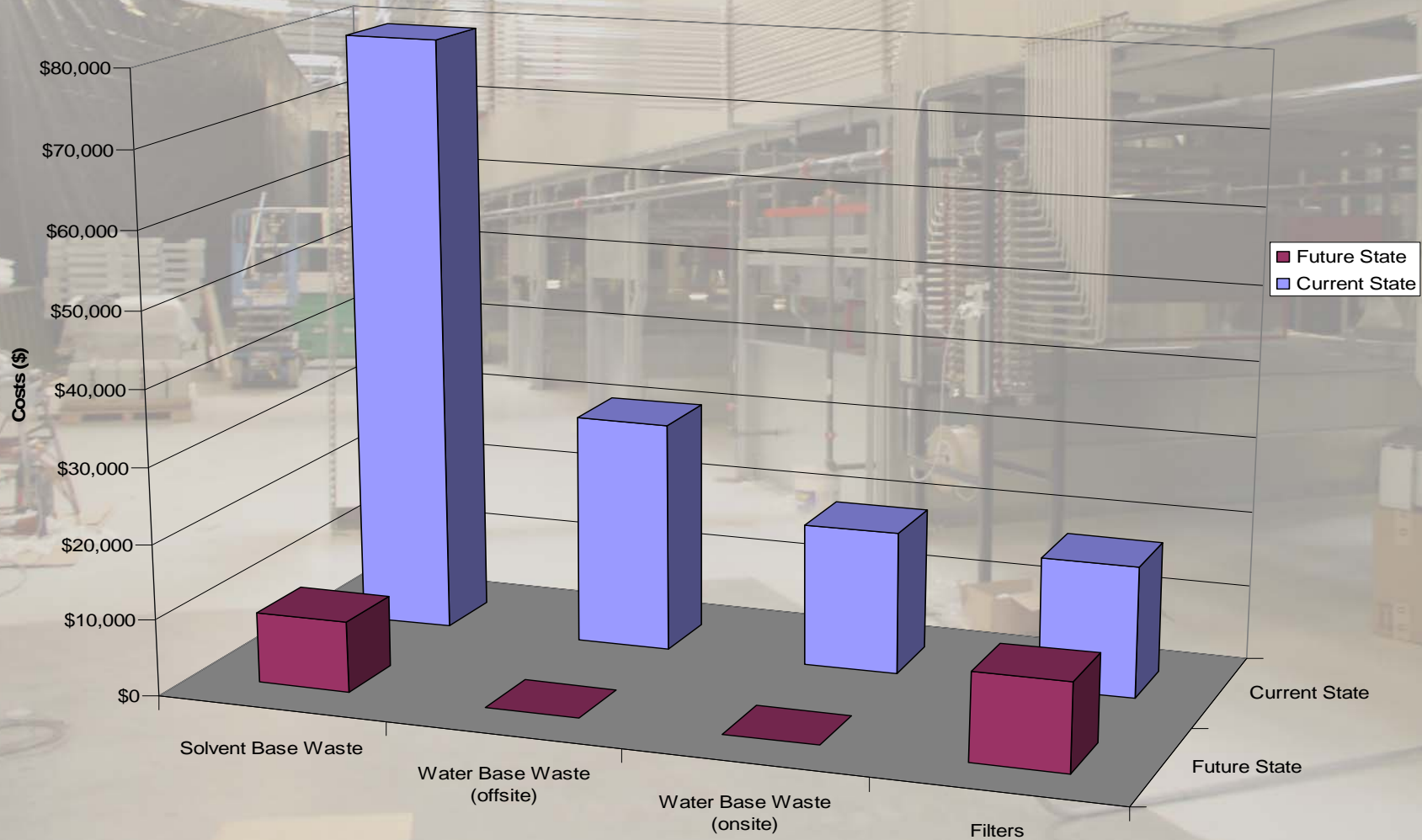
Topcoat Reformulation

Unicoat instead of First Seal, Second Seal, Topcoat

Minimized the use of Methanol

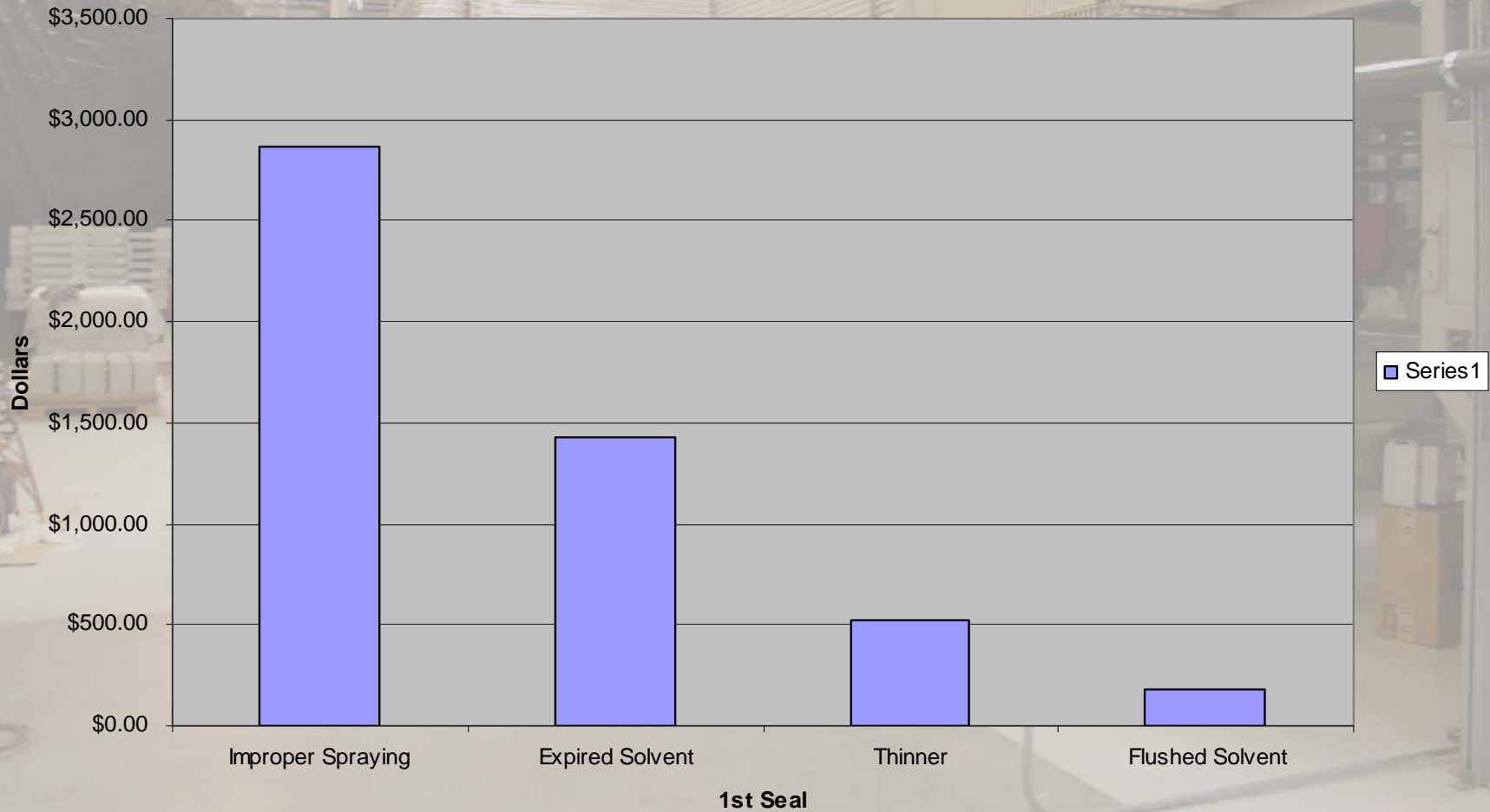
Decreased waste by standardizing the product used
at three different on-line spray booths

Top Coat Annual Waste



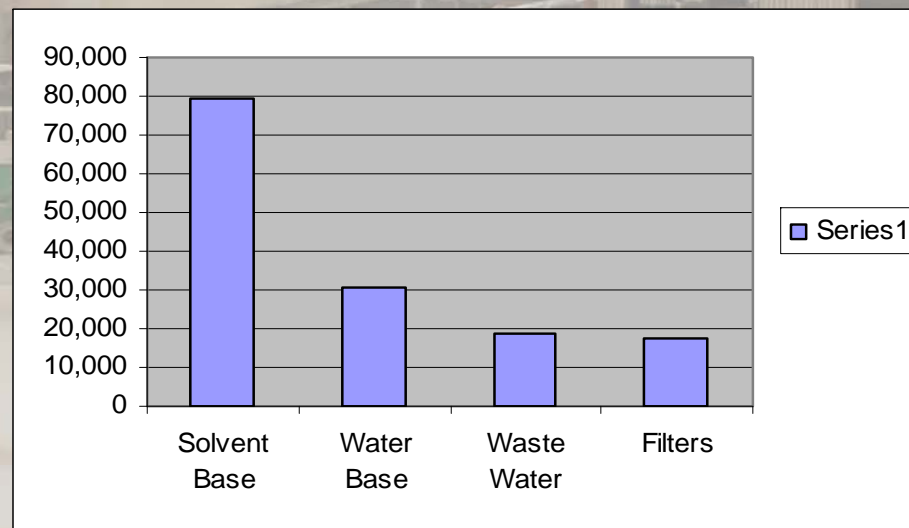
Waste Analysis - First Seal

1st Seal Annual Waste



Waste Analysis – Top Coat

Total = \$146,130/year



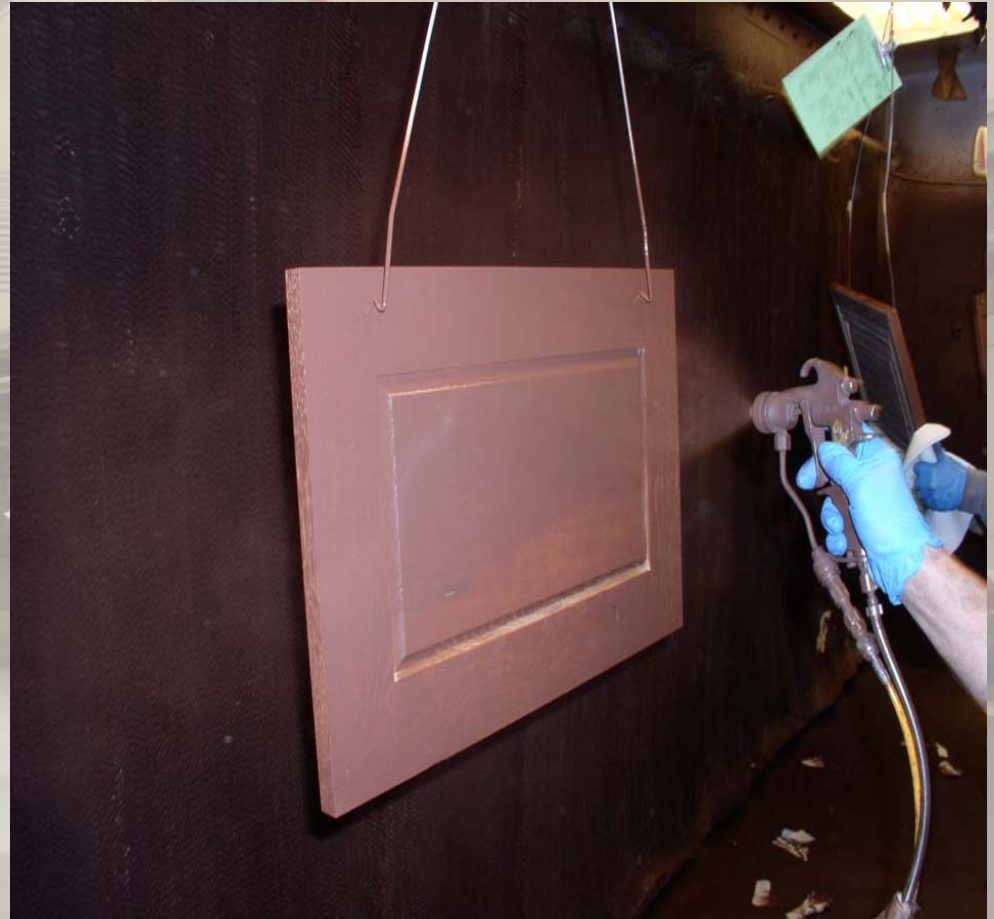
Training

- Purchased six LaserPaint training tools
- Received a government grant for training through PPRC
- 20 employees trained
- Laser tool in each of the clear coat booths for continuous training

“STAR Program”

Ken Grimm

Pacific Northwest
Pollution Prevention
Resource Center



New Independent Stain Line



New Glaze Line



Improved Inspection & Repair



Planning Ahead



- Continuous process improvement
- 1100 cabinets a day on one shift
- Reduce handling
- Improve quality
- Maintain Synthetic minor status

Miscellaneous Finish (before)



Pater Noster

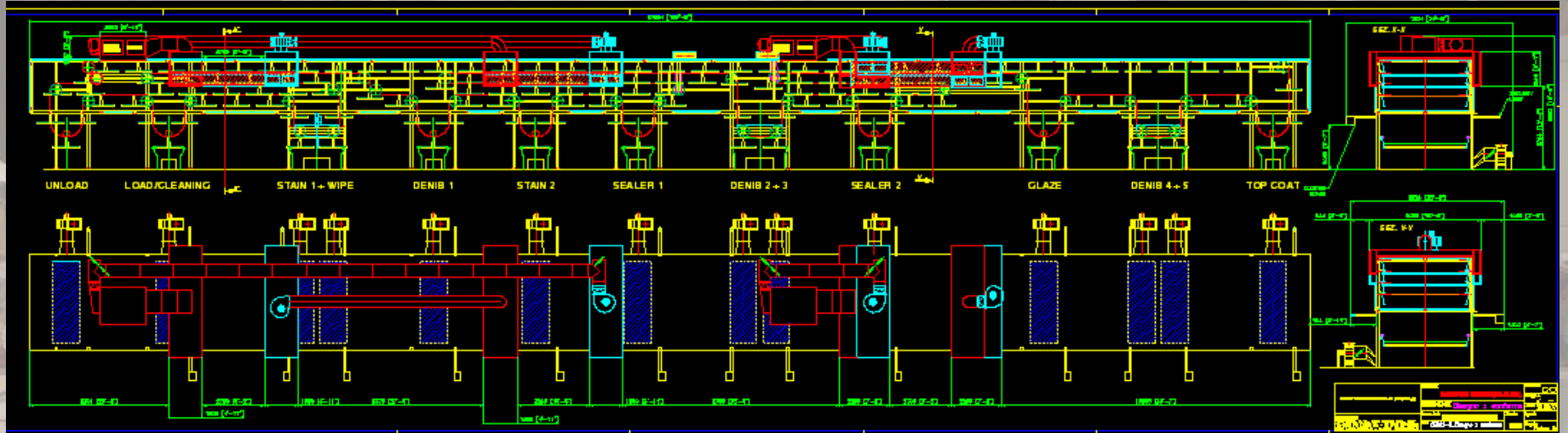
- Pivoted tray conveyor system



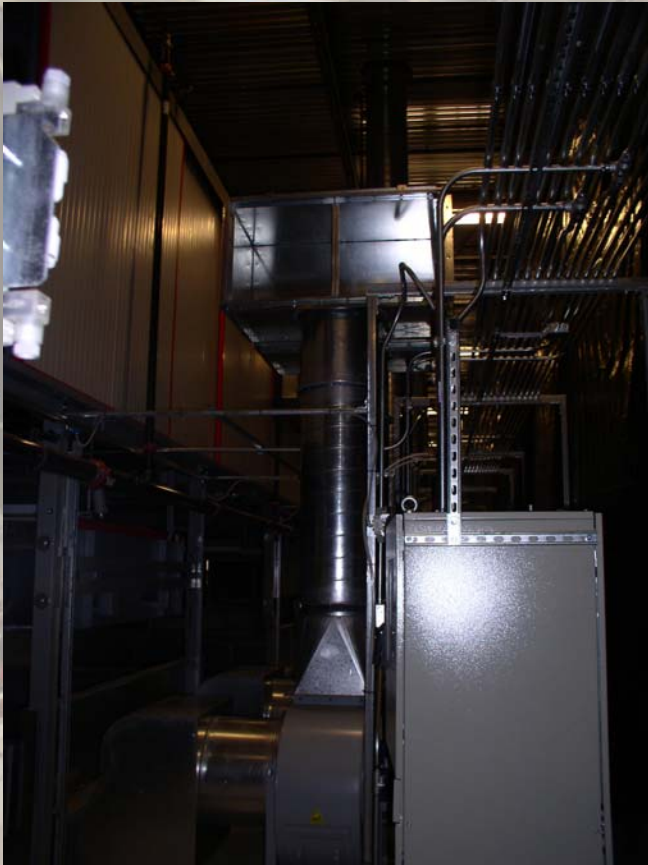
- 11 finishing stations
 - 1 load/unload
 - 2 stain
 - 1 glaze
 - 3 seal/topcoat
 - 4 denib/scuff sand



Pater Noster Layout



Pater Noster



- Denib/Scuff sand stations exhaust into dust boxes.
- Spray stations exhaust through the roof



Pater Noster

- There are light bars that sense when an operator is in a safety zone. When the light beam is broken the the Pater Noster trays can not advance



Pater Noster Expectations:

- Fed from a new miscellaneous cell located in the new addition
- Reduce miscellaneous finishing from two shifts to one shift
- Reduce the staffing necessary by 13 people
- Provide a finish line dedicated to miscellaneous accessories
- Allow for most of the accessory components to be kitted and finished together

Pater Noster Expectations:

- Improve color consistency from one part to the next
- Improve seal and topcoat curing
- Reduce handling damage
- Present the finished accessories to miscellaneous packaging in an organized manner



Fluid Delivery



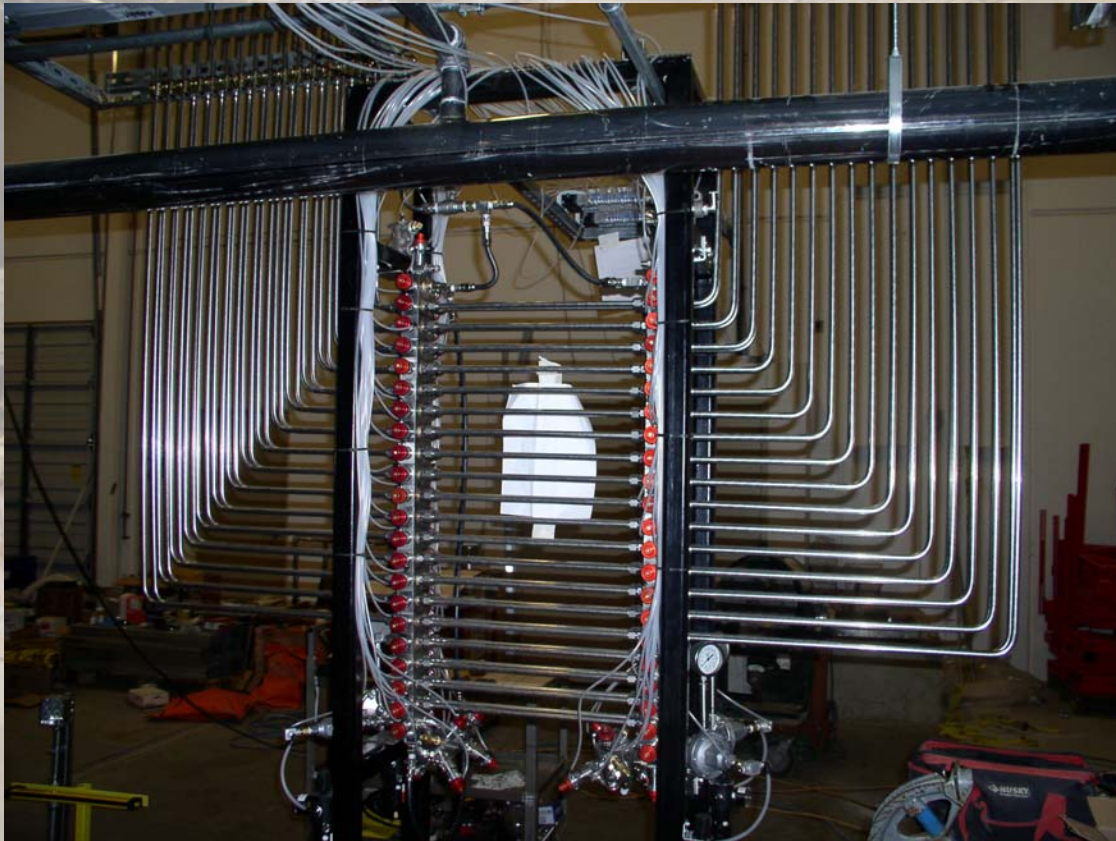
Extended the stainless steel fluid lines from the paint kitchen and along the main stain booth to the Pater Noster



Fluid Delivery (cont.)

- Added stainless steel tubing to existing stain lines
 - Requires only 6 new pumps(primers) to supply the Pater Noster and new accessory booth with all materials
- Reconfigured pumps to strategically position stains
 - High volume users in the kitchen(55 gal. drums), and low volume users at the stain booth(5 gal. buckets)
 - Converting waterbase lines to solvent, Sherwin Williams to Akzo, & 1-step to 2-step
- Modified pumps at stain booth
 - Reduced fluid pressure for HVLP
 - Increased fluid flow for recirculation
- Added stainless tubing for clear coat supply to Pater Noster

Color Changer

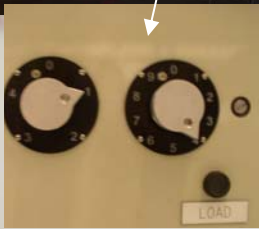


- Each stain station will have access to a 40 color color changer.

Color Changer (cont.)

- Use Programmable Logic Control (PLC) to automate the process of purging, flushing, and loading stains into spray guns
- All materials are available for each gun
- Standardized, controlled process
- No opportunity for settling
- Guns are flushed clean every change
- Number of guns required per booth – 2 versus 32

Color Selector



- The color to be sprayed is displayed on the computer screen. The color corresponds to a number on the color changer.

Flush Boxes



- During each color change the spray guns are placed in flush boxes, where one gun is purged of stain and another is loaded.
- While one gun is spraying, the other is in the flush box being flushed with solvent.

Stain Guns Conversion

- From Air-assisted Airless (AA) to High Volume Low Pressure (HVLP)
- Designed for low solids, low viscosity materials
- Allows for more precise control of fluid flow
- Key equipment strategy for pre-stains/2-step colors

Future Projects Working On

- Add drawer box cell
- Extend Independent Stain Line
- Proportioners
- Still
- Ovens
- More Color Changers