

Dry Filtration of Wet Paint Overspray

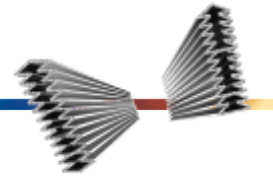
with

Herding Sinter Plate Filtration Technology

Johannes Goetz
Manager International Sales
Herding GmbH Filtertechnik

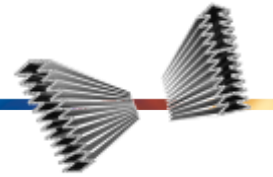
REINE PRODUKTIVITÄT





- Present Technology
- Precoat Technology
- Concept
- Economical and Ecological Potentials
- Test Unit
- Paint Tests / Results





Demands on air circulation

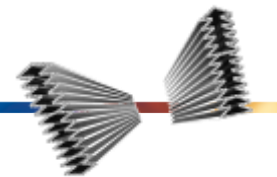
Fresh- or circulation air to booth

- dust capture
- adjustment of temperature and humidity
- solvent removal

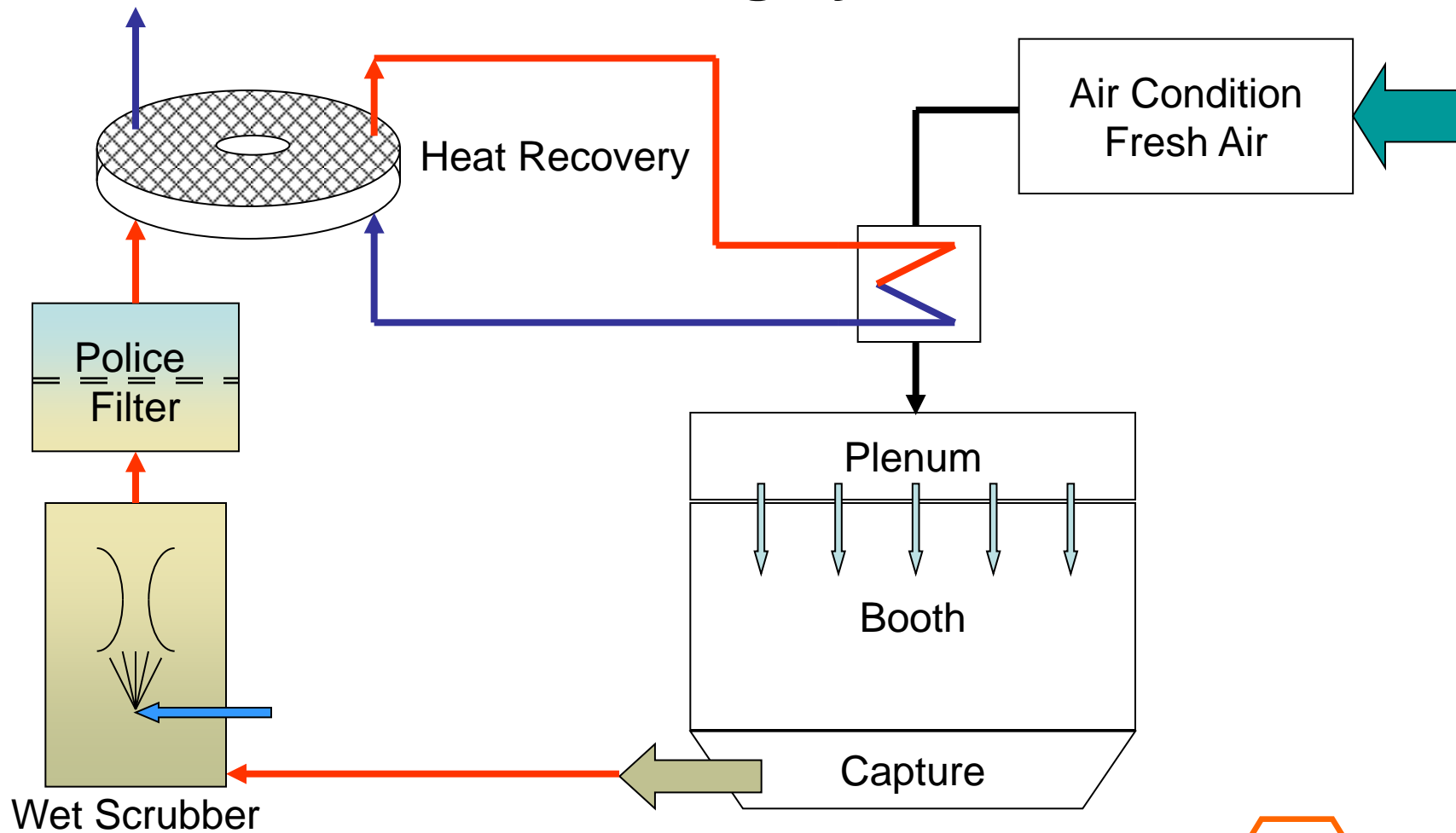
Off gas from booth

- reliable capture of overspray
- removal of solid- and liquid aerosols

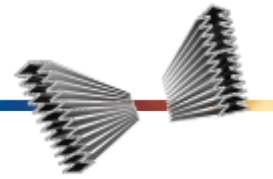




Principal arrangement of classic booth venting systems

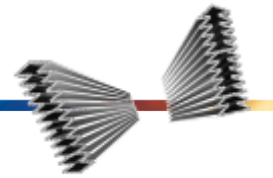


Dry Filtration of Wet Paints

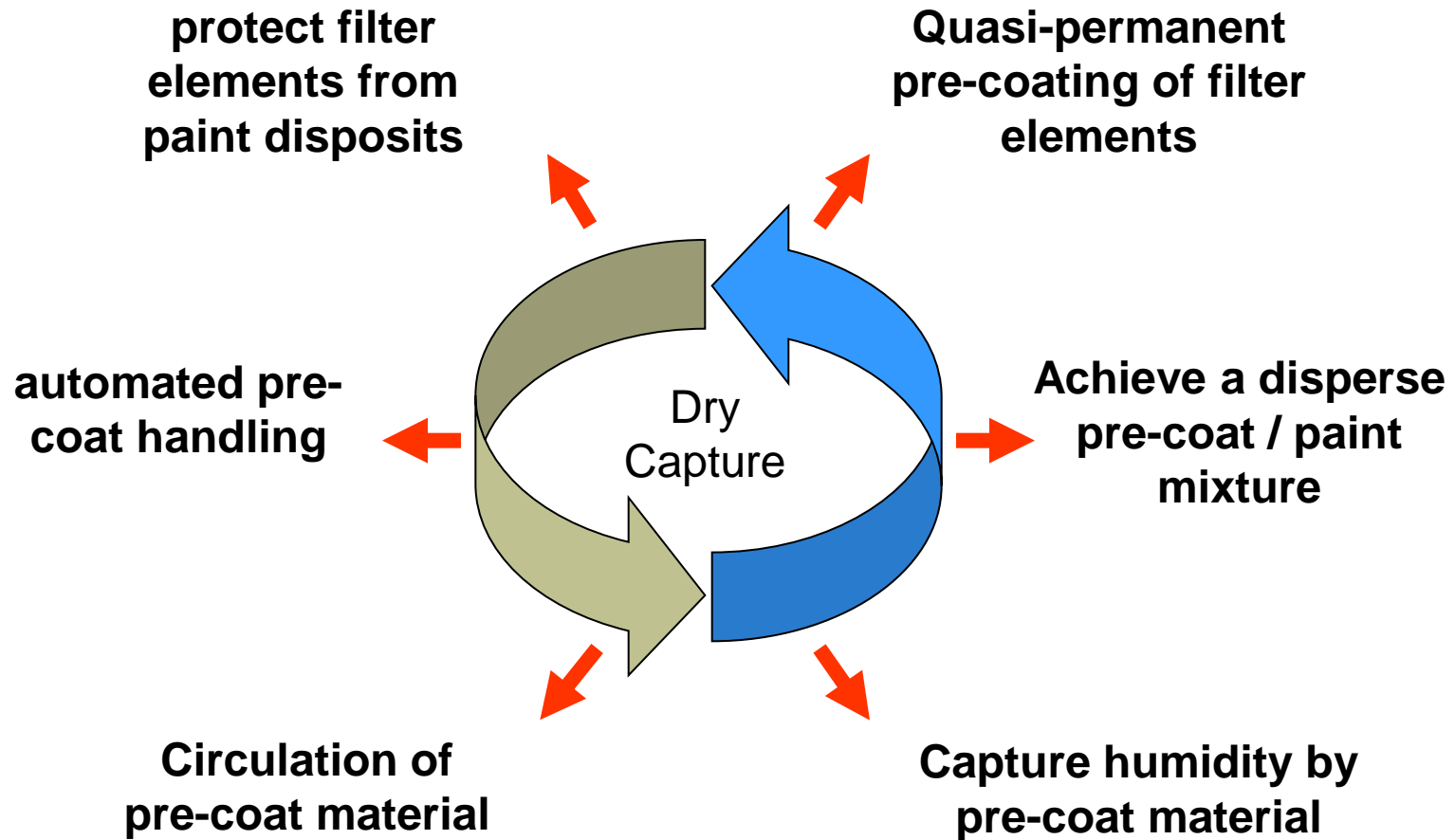


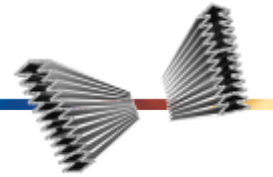
Herding: experience since 1994





Principal





Requirements:

Sufficient “Precoat” on filter elements

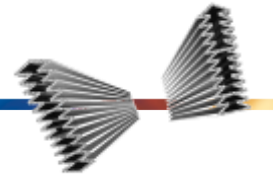
- **achieved by:**

- balanced pre-coat distribution on the filter elements
- no pre-coat back trace in application zone

- **Efficient use of pre-coat material**

- internal circulation
- “Precoat” Exchange after reaching paint specific saturation

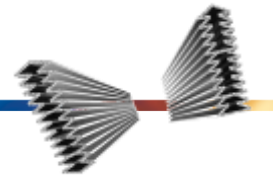




Waste-Water-Free Off-Gas-Treatment

- No need for chemicals for pacifying, disinfection and coagulation
- Avoid expensive disposal of liquid hazardous wastes
- Have only dry substances as unavoidable waste
- Save energy by not needing water treatment equipment

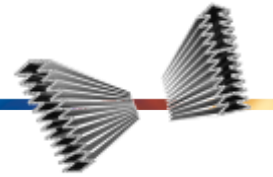




Air circulation in the booth venting

- Reduction of dry / liquid emissions down to 0,1 mg/m³
- High air circulation achievable at automated applications (reduction of fresh air ration down to 20%)
- Possibility for significant costs savings in the fresh air treatment
- Protection of down stream systems for thermal and/or adsorptive VOC removal

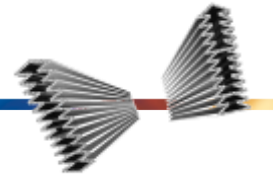




Unavoidable Waste in the Off-Gas-Treatment

- Filtration using Filtration Additives (“Precoat”, usually Lime Stone Powder)
- Efficient usage of the filtration additives by “Precoat”-Recirculation
- All generated waste (paint-laden Precoat) is dry
- Secondary and therefore environment-friendly usage of the waste can be used in other industries (i.e. cement) or according German Standards in most cases disposed as house hold waste

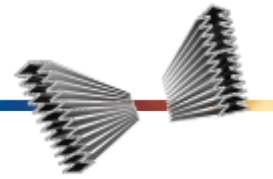




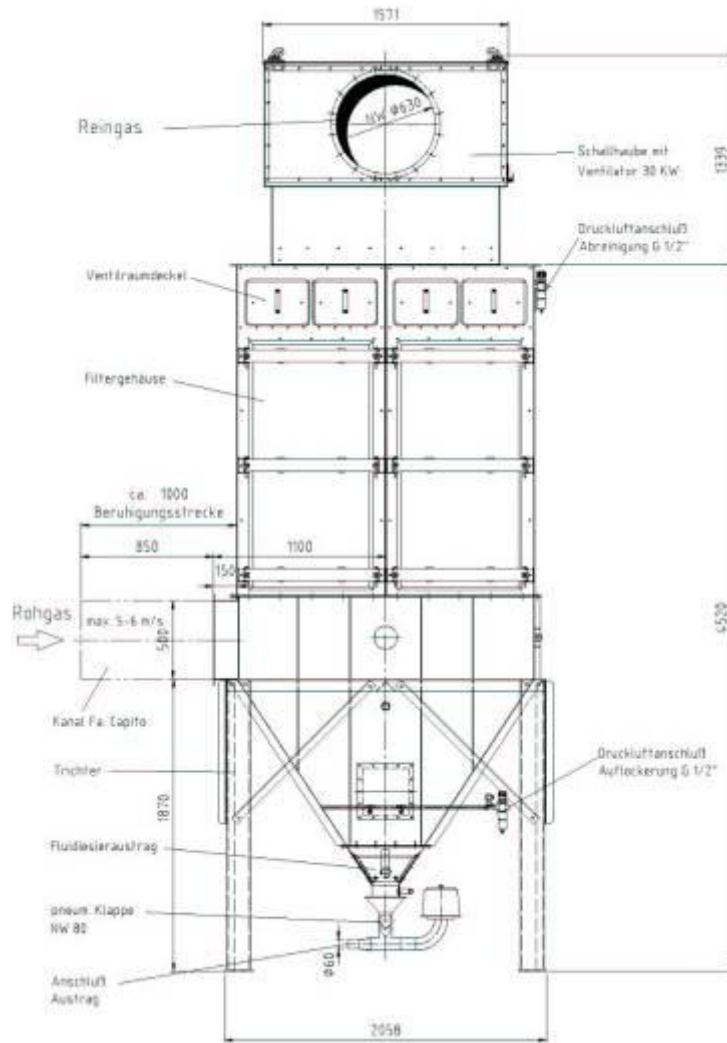
Concept

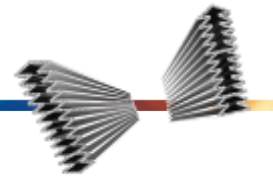
- Modular concept of filter units
- Fluidisation in filter hopper
- Automated pre-coat handling
- Precoat – Circulation of the “Precoat” and saturation control
- Pre-coat - demand: 1:1 up to 6:1 (depending on actual paint)



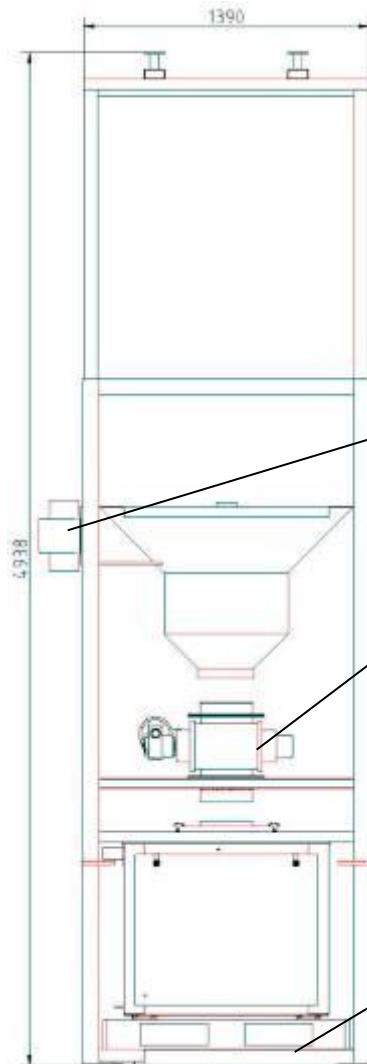


Filter Unit





Sender



Big-Bag for fresh Precoat

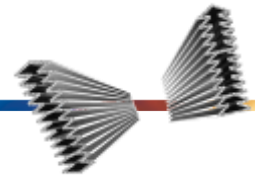
Agitator

Air Lock

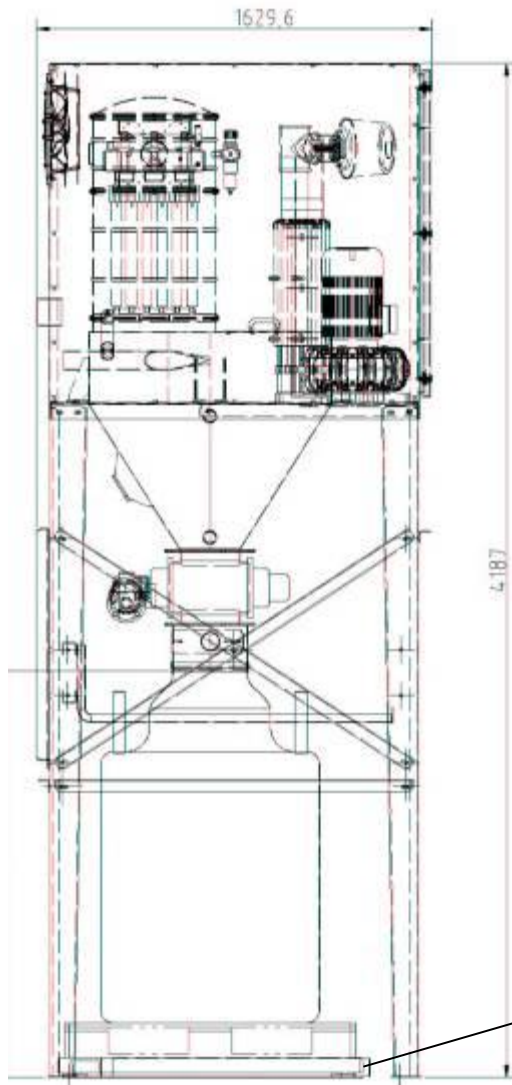
Multicoater with Dense Phase Pump

Balance





Receiver

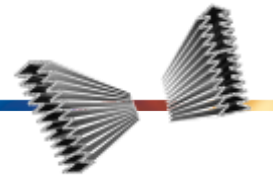


Sound Insulation

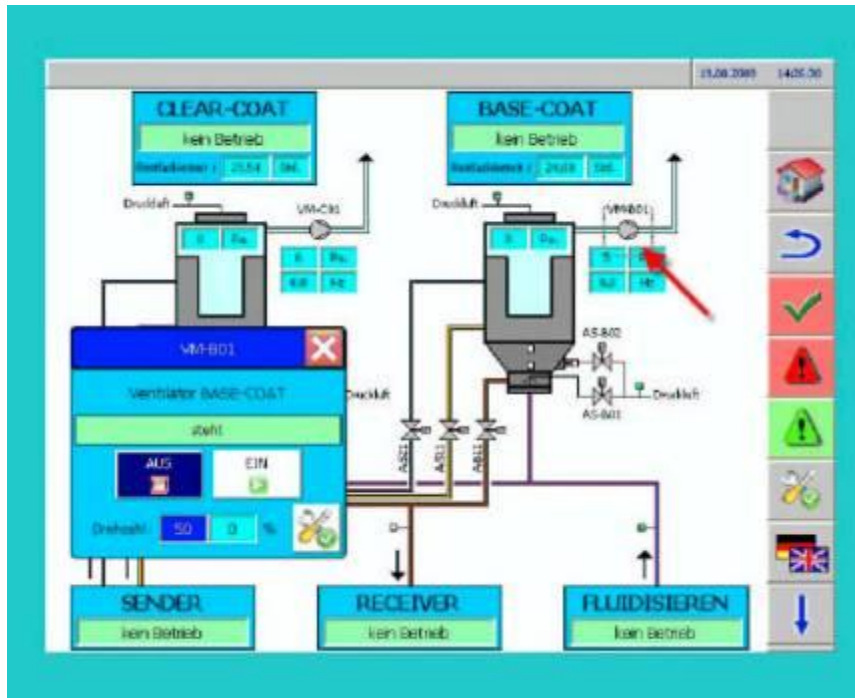


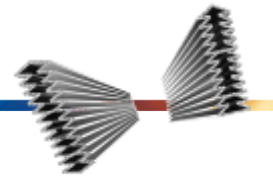
Balance



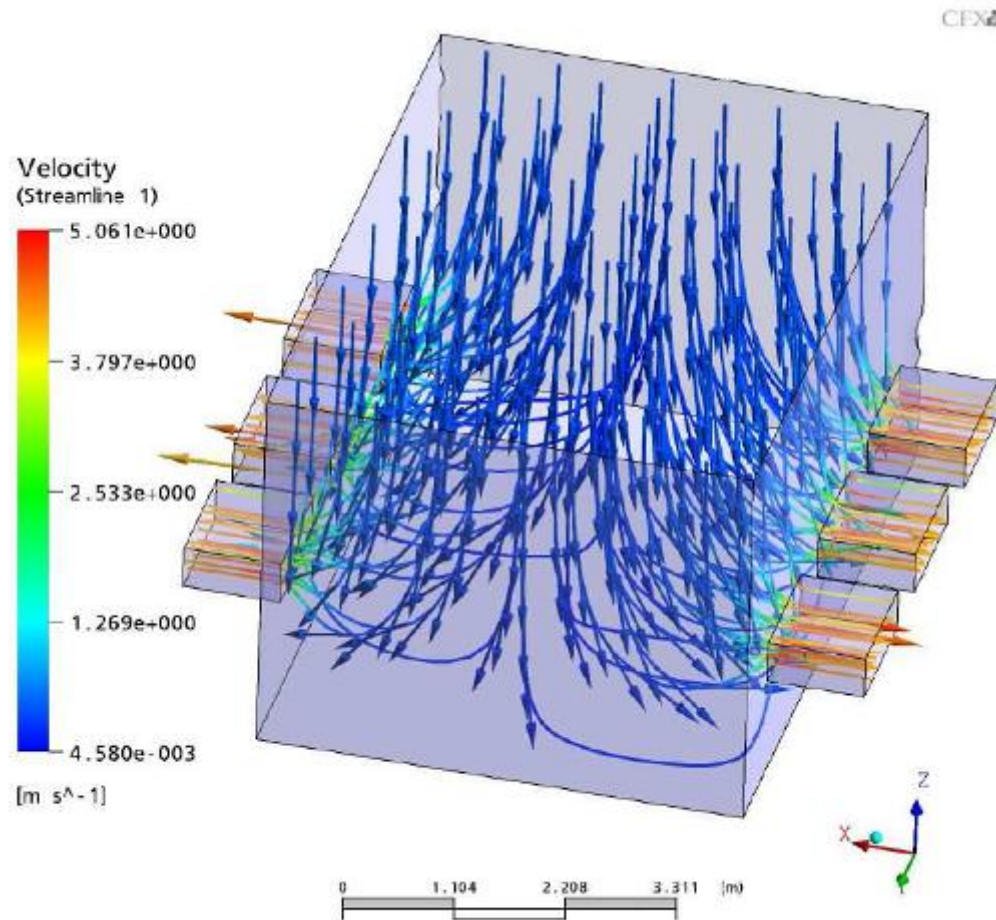


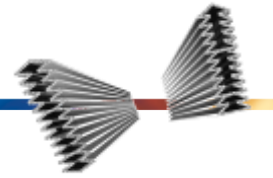
PLC / Electric Cabinet / Programming



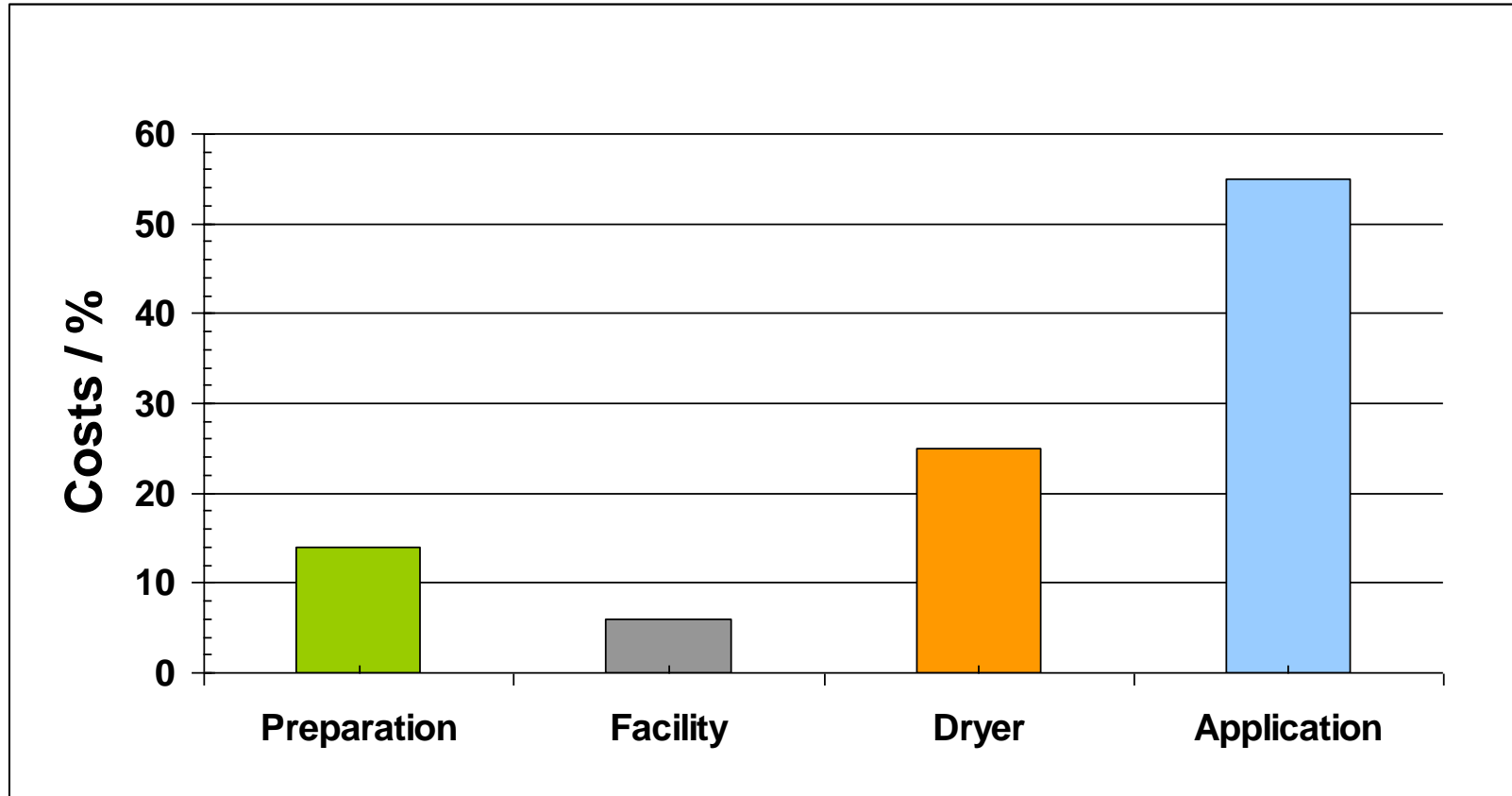


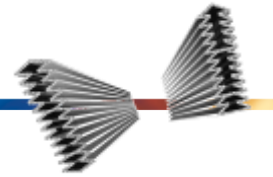
Stream line / Velocity distribution





Energy Costs

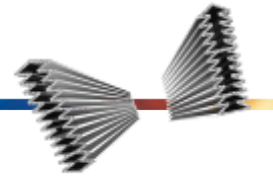




Process & Environmental Advantages

- emission reduction of dry / liquid aerosols down to 0,2 mg/m³
- protection of down stream systems for thermal and/or adsorptive VOC removal
- high air circulation achievable at automated applications (reduction of fresh air ration < 20%)
- internal circulation of pre-coat material
external waste treatment of saturated material
- waste water free process
- no chemicals for pacifying, disinfection and coagulation



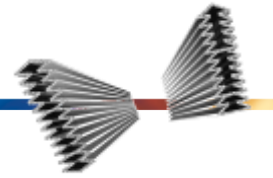


Advantage Energy Consumption

- Direct air circulation possible
- Energy saving by reduction of efforts for fresh air conditioning
- No need for waste water treatment plant

**Total possible energy savings up to 50 %
(depending on entire equipped system concept)**

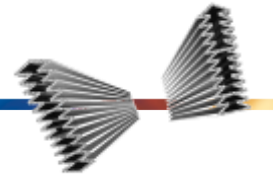




Wet Paint Test Application

- Pilot Filter Unit
- Automated sender- and receiver unit
- Pressurized paint application by compressed air gun
- PLC master control

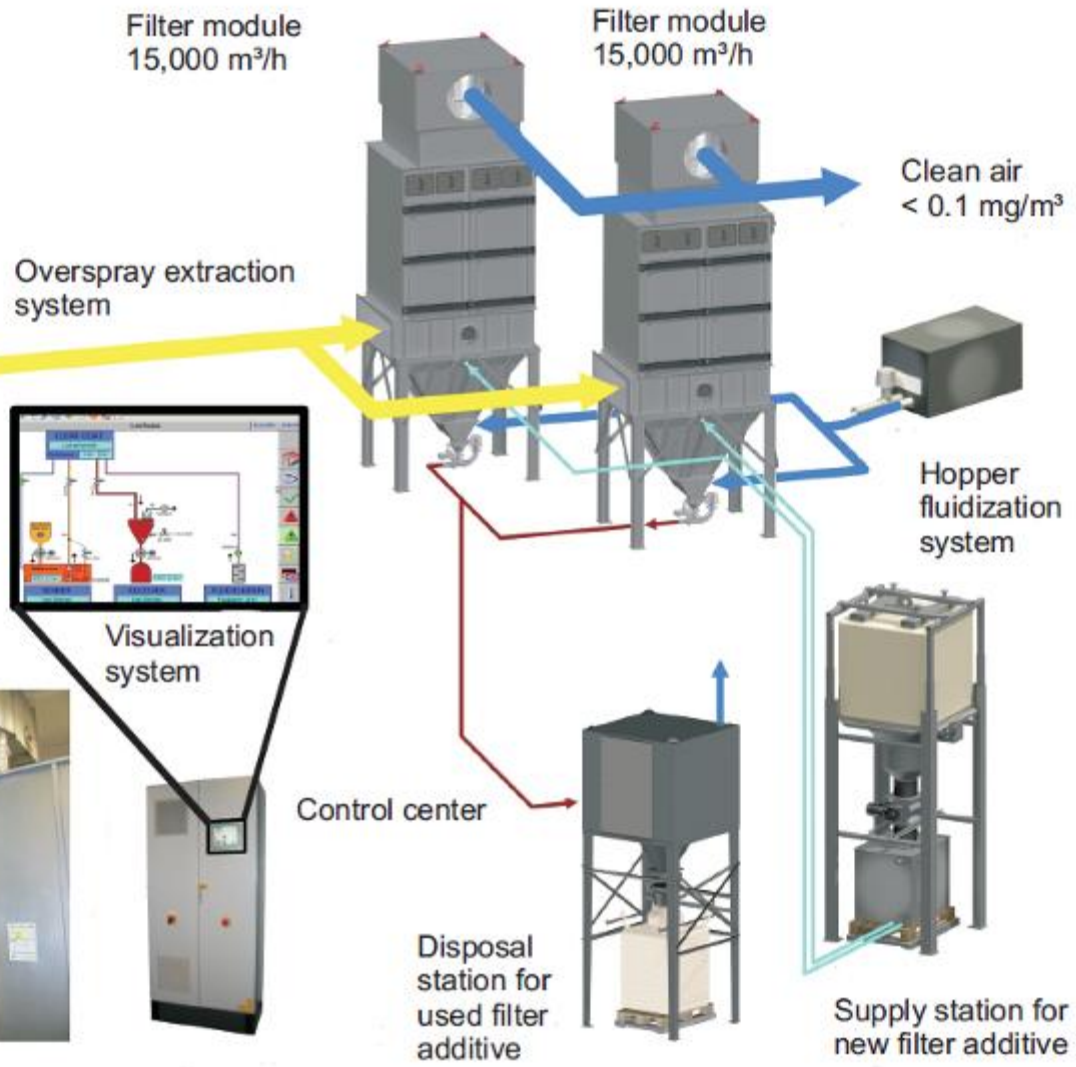
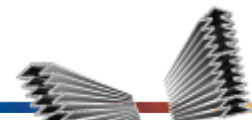




- The Dry Filtration of Wet Paint is strongly depending on the drying and polymerisation properties of the paint
- Use of filtration additives in order to passivate the wet paint overspray
- Depending on the actual paint type and properties the ratio between additive and paint mist is usually in the range of 2-6:1
- The shown advanced precoat system for permanent recirculation and injection of filtration additive into the raw gas stream can lead to reductions of filtration additive consumption by 20 – 40% compared to conventional precoat systems
- This technology is especially efficient for high overspray loads as well as for applications in which small parts are painted



Summary



Pure Productivity with Herding® Filtertechnik

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REINE PRODUKTIVITÄT



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Herding GmbH Filtertechnik – Dry Filtration of Wet Paint

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