



Paint and Final Assembly Systems

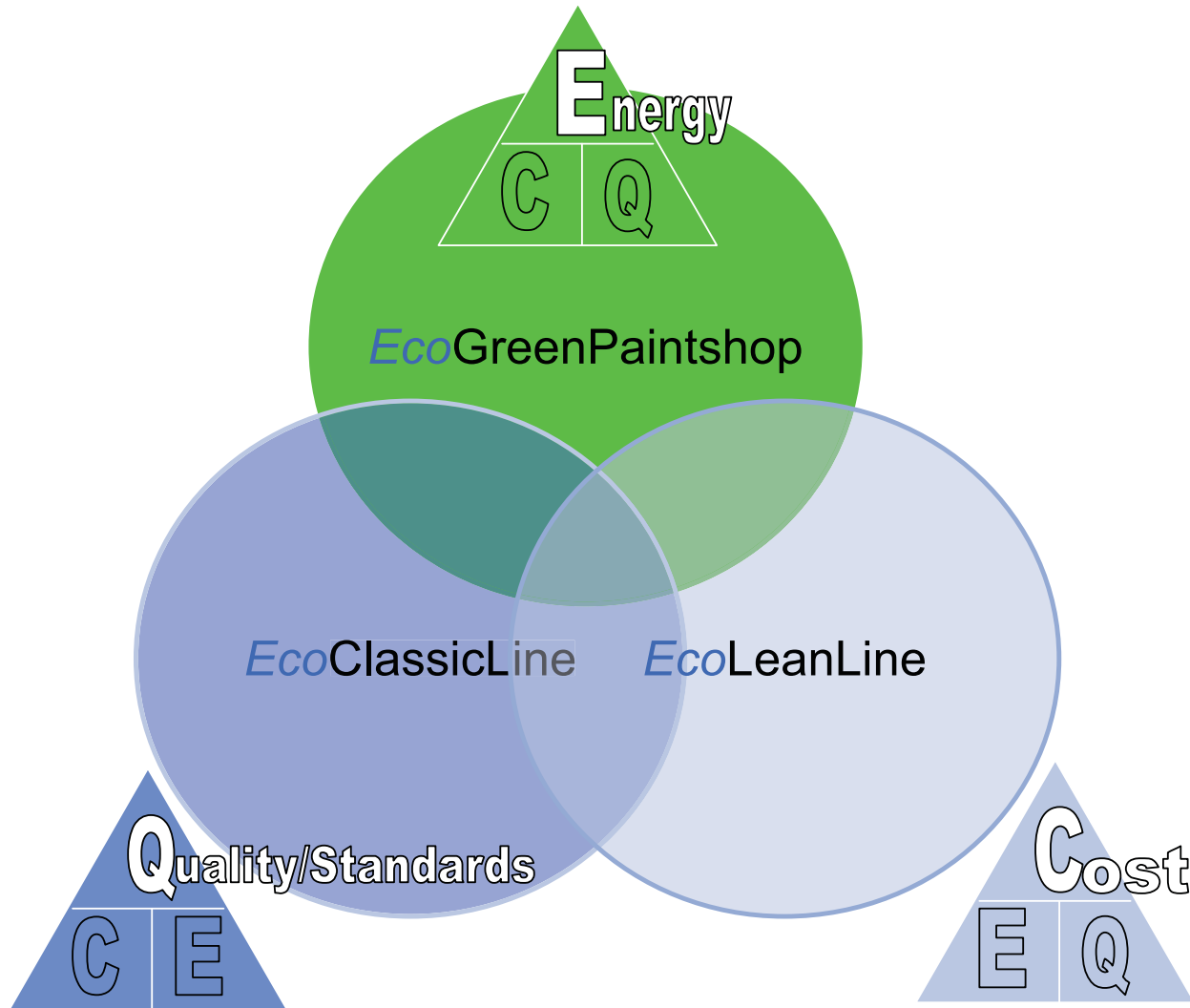
**Green Paintshop
the new member of the
Dürr *Ecopaint*-Family**

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General Manager – Sales
Dürr India Pvt. Ltd.
AMS India 2009**





Dürr *Ecopaint*-Family





Premises for Dürr's *Ecopaint*-Family

Energy & CO₂

- **Lowest consumption**
- **Lowest environmental influence**

Quality &
Processes

- **Most economic quality process**
- **Minimized process steps**
- **Optimized layouts**

Cost Per Unit
(CPU)

- **Lowest CPU**



Key Elements of Dürr *Ecopaint* Family

Process

Products

Plant
Layout

**Dürr Global Best Practice Solutions is based
on the combination of all three elements**



Key Elements of Dürr *Ecopaint* Family

Process

Products

Plant Layout



Survey Paint Processes (Passenger Car)

Solventborne Process



SB (Solventborn)

Waterborne Processes



WB (Waterborn)

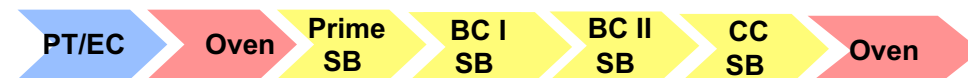


WB (Prime SB)



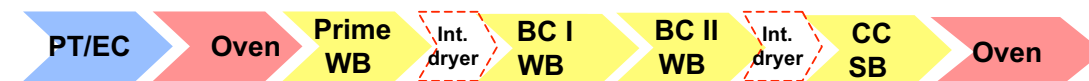
WB (Prime powder)

3-Wet Solventborne Process



SB 3-Wet

3-Wet Waterborne Process



WB 3-Wet

(Various Types of Intermediate dryer possible)

Primerless Processes



WB Primerless

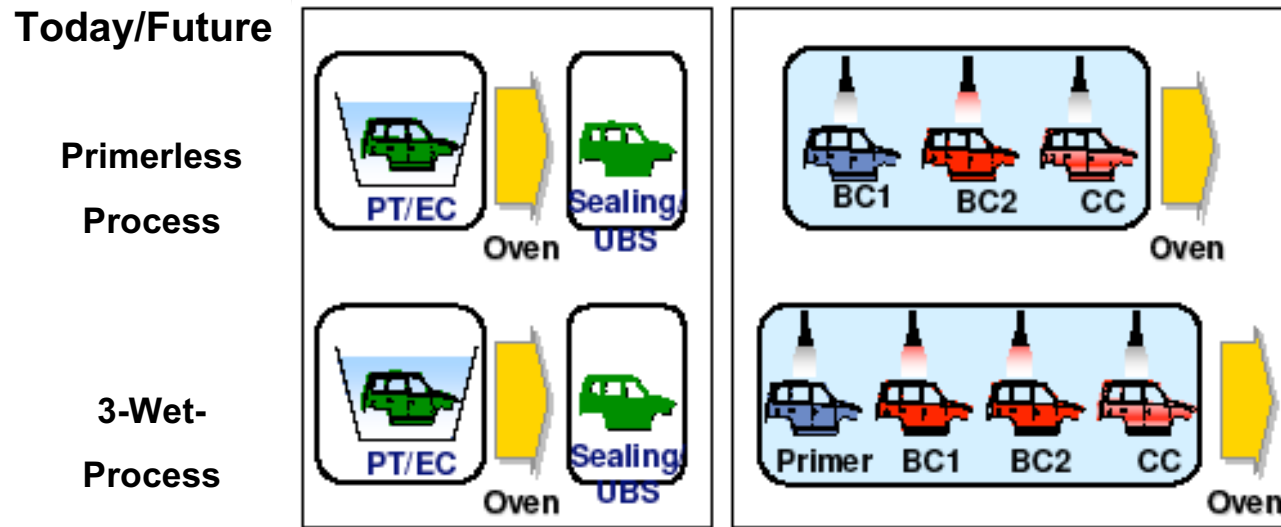
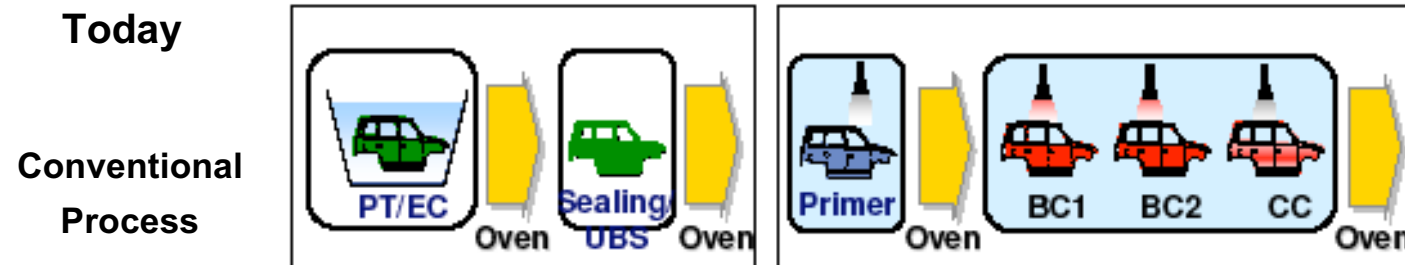


WB IP (MB Rastatt)

CC: 1K; 2K; (or Powder, WB, Slurry)

Painting Process

Shorter equipment



Status

VW – Spain, Mexico, USA, China
 PSA – France
 BMW – UK

Solventbased:
 Ford, Mazda, Toyota, Kia

Waterbased: GM, Toyota, Honda,
 Nissan, Mazda, Mitsubishi, Suzuki

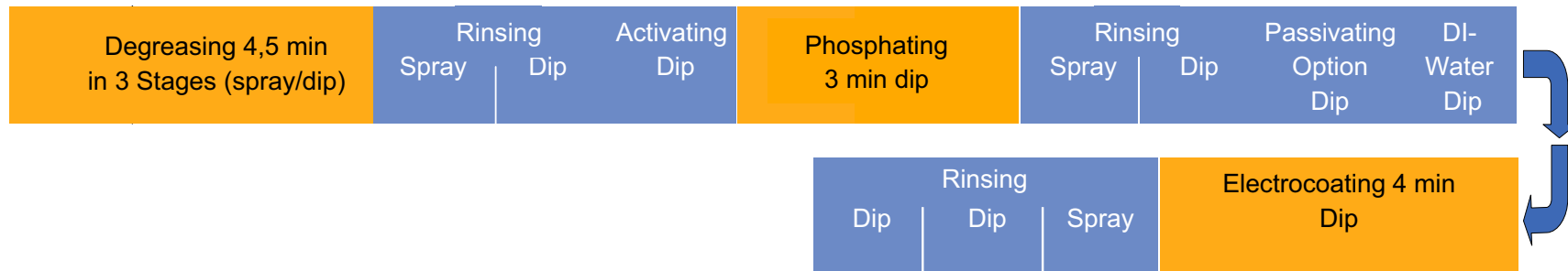
Corrosion process

Top coat process



Process – Pretreatment & Electrocoating

Example Classic Solution (Rotational Dipping)



Example Green Paintshop (Rotational Dipping)



Trend: Reduction of process-steps, - length, - times and from 2 to 1 loop



Process – Primer&Top Coat

Example Classic Solution



Example Green Paintshop



Trend: Reduction of process-steps, - length, - times and from 2 separate lines to 1 integrated line



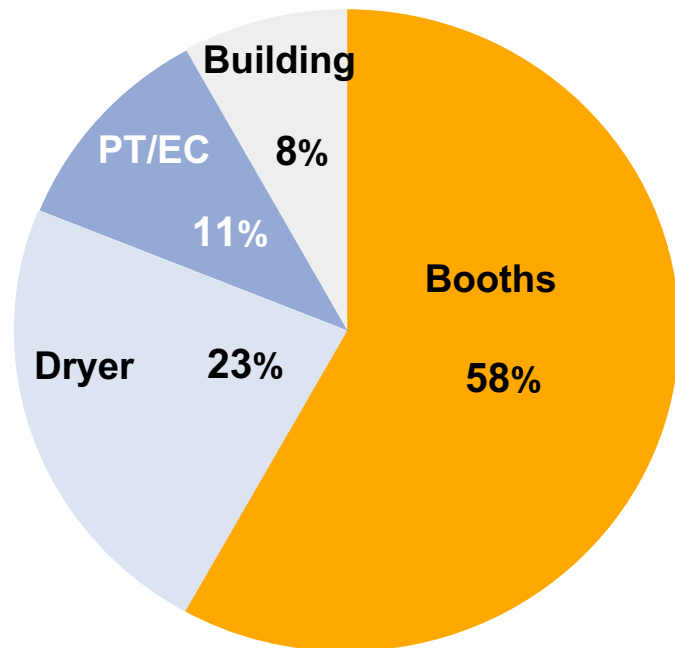
Key Elements of Dürr *Ecopaint* Family





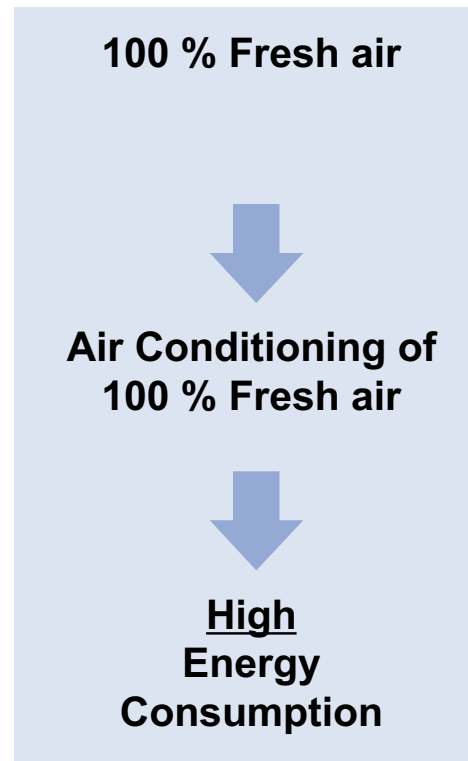
EcoDryScrubber – The **Green** Solution

Highest energy consumption in booths

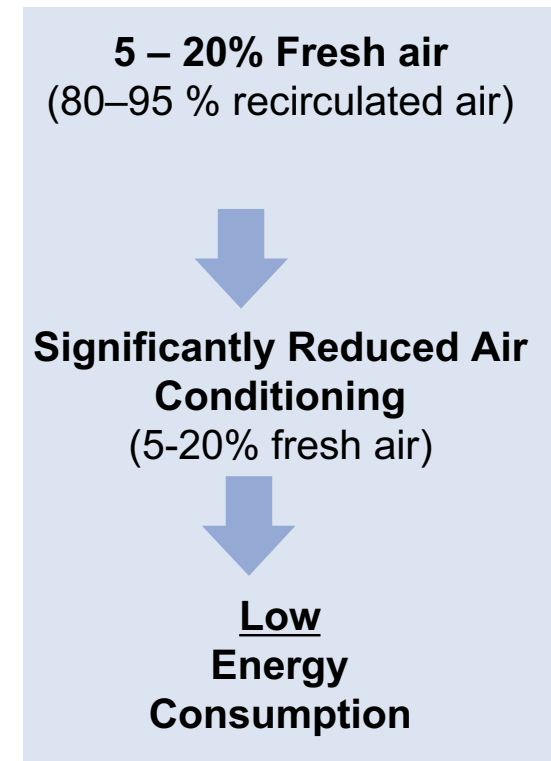


Energy consumption in a paint shop

Wet separation

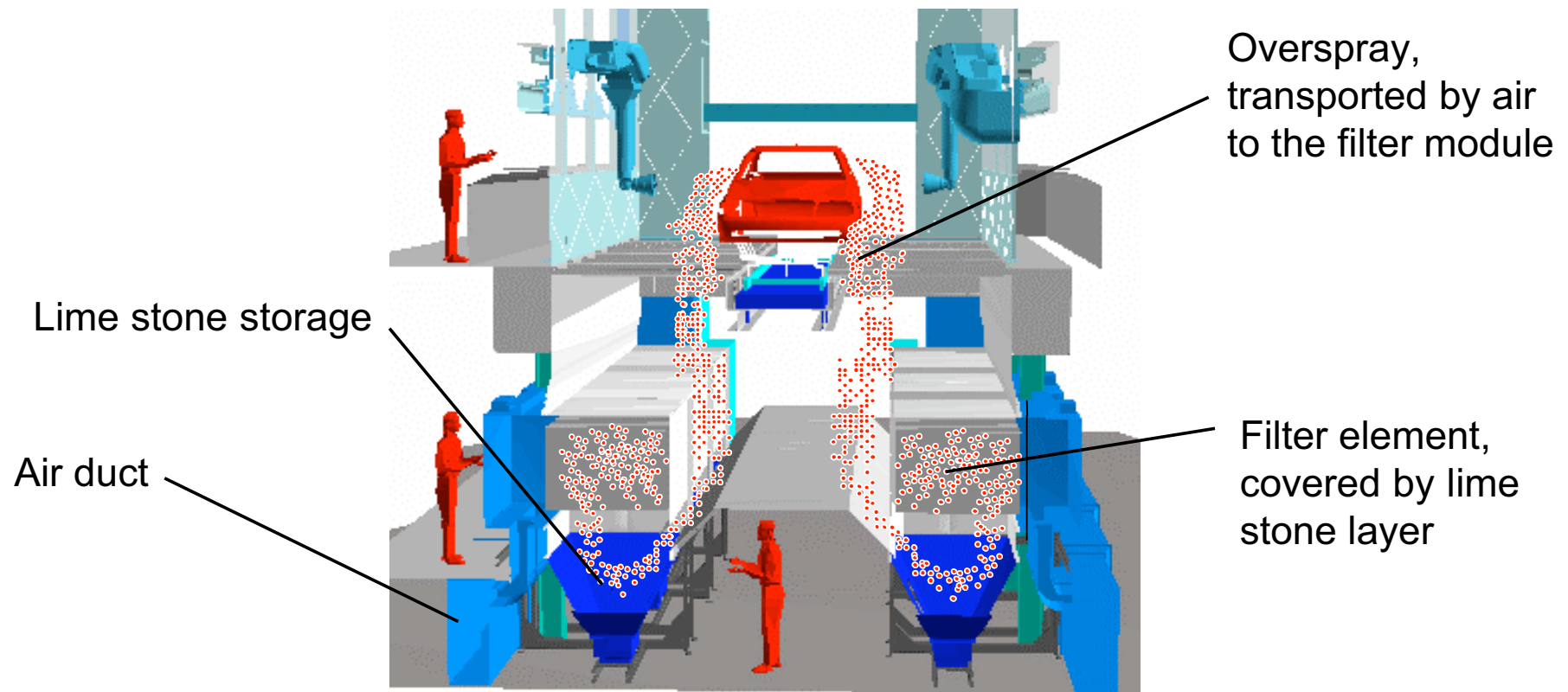


EcoDryScrubber



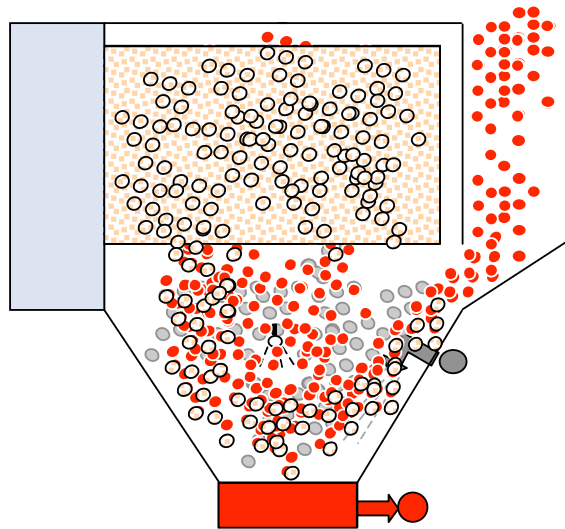
EcoDryScrubber Technology

How does it work ?



EcoDryScrubber Technology

How does it work ?



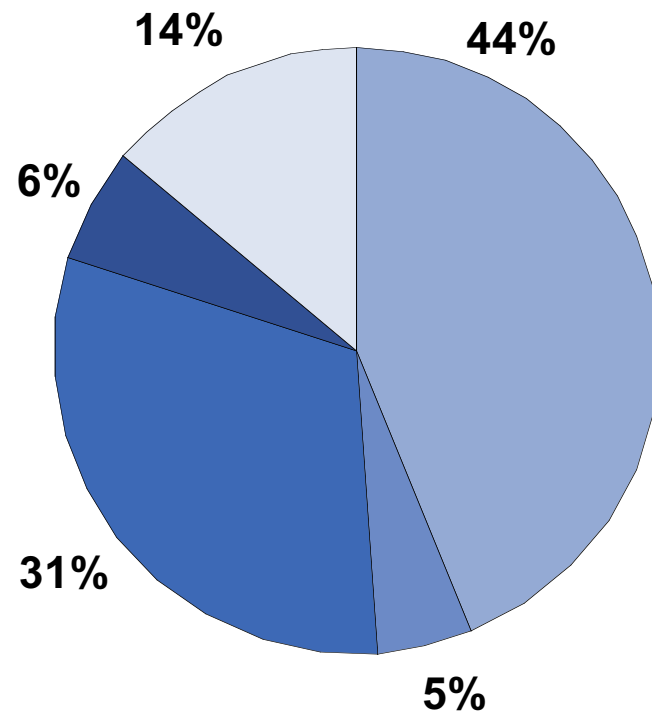
- Raise up of lime stone powder, every 30 s
- Overspray is covered by lime stone powder
- Lime stone and paint are raised and build a new layer for filter protection
- Saturated lime stone layer is removed through back pulsing from the filter to the storage, every 25 min automatically.



EcoDryScrubber - Reference Rehau

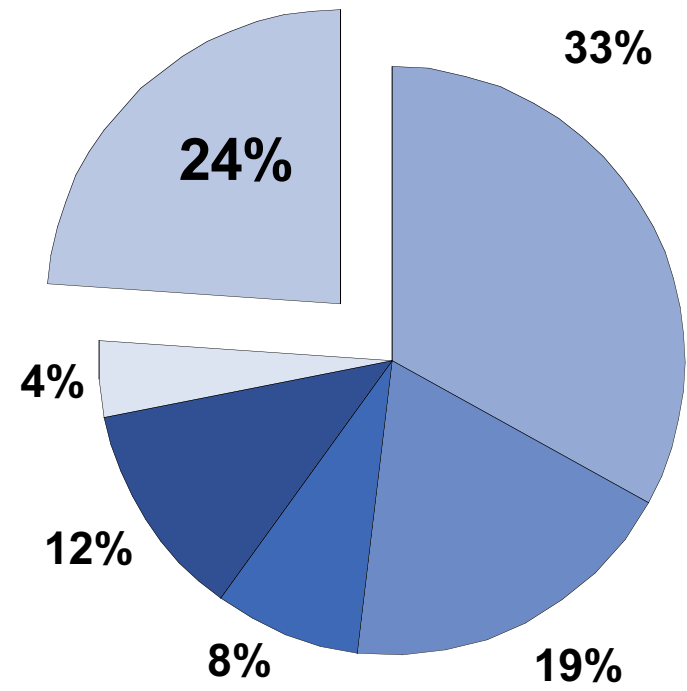
Comparison recirculated wet vs. recirculated dry

- Energy and Media
- Maintenance booth/air units (filterelements)
- Utilities (bag filter air units)
- Cleaning booth/air units
- Disposal



Wet Scrubber 80% recirc air

Savings



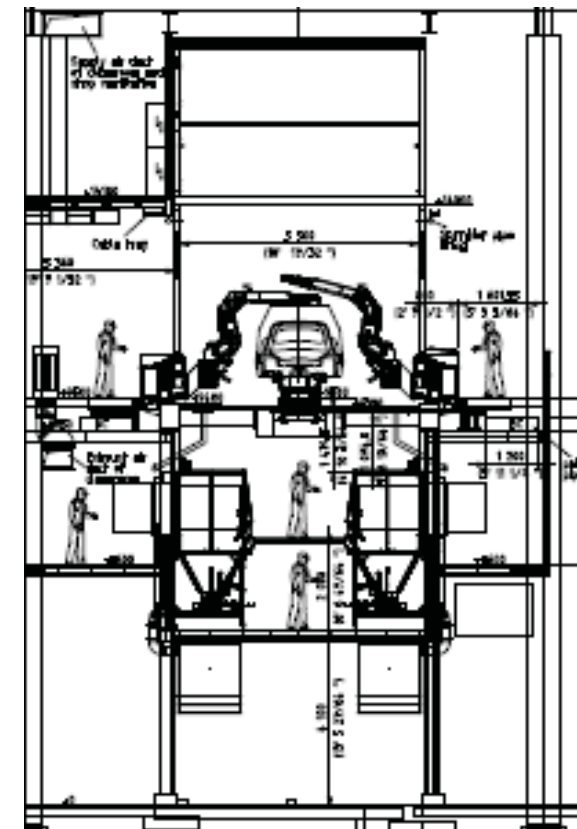
EcoDryScrubber 80% recirc air

EcoDryScrubber - Reference VW Chattanooga



New Midsize Sedan

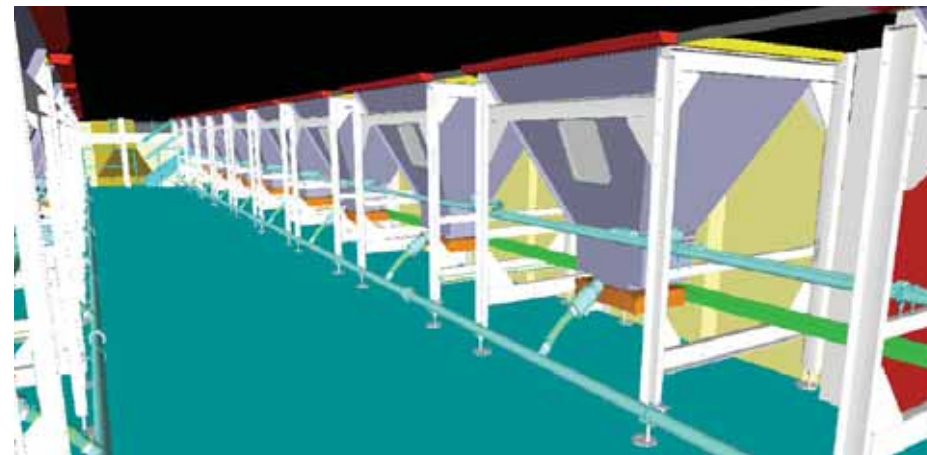
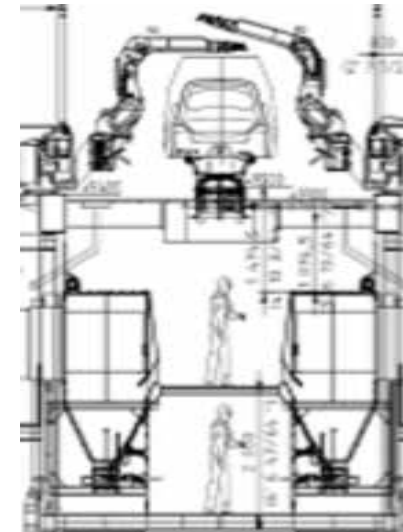
- Type of plant: Full size production
- Annual capacity: 115.000 units
- SOP: 4/2011
- Paint process: Primerless
- Application technology: Automatic painting exterior/interior
- Project status: Design phase



EcoDryScrubber - Reference FAW Chengdu

Extension of production capacity

- Type of plant: Full size production
- Annual capacity: 230.000 units
- SOP: 10/2011
- Paint process: Primerless
- Application technology: Automatic painting exterior/interior
- Project status: Design phase





Ecopaint Products - Economical Solutions

Ecopaint RoDip –
Dip coating
rotation

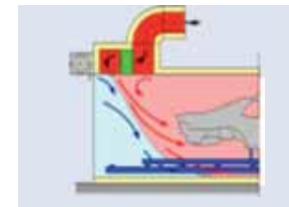
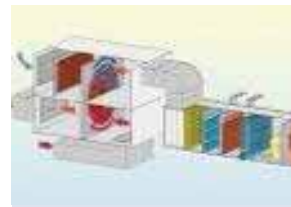
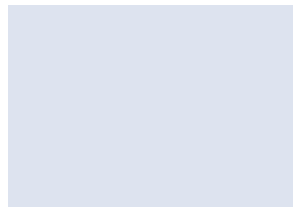
by

EcoDryScrubber
Dry separation

Heat recovery
with heat wheels

Straight-through
oven instead of
A-Oven

Optimization of
exhaust air cleaning
– modernized TAR



- Less space required in length and width
- Less energy consumption
- High quality

- Less space required
- Reduced air conditioning system
- Less energy consumption

- Low Investment
- Less energy consumption

- 10 m reduction of total length per oven
- Less loss of heat and energy
- Less energy consumption

- Less input of primary energy
- Reduced emissions
- Energy savings: 4,5% per unit

CPU savings:
ca. 4 %

CPU savings:
ca. 3 %

CPU savings:
ca. 0,3%

CPU savings:
ca. 1 %

CPU savings:
ca. 0,5 %

Ecopaint Products - Economical Solutions

Exterior painting with robot *EcoRP E*



- Reduced width of the booth
- Less energy and air circulation

CPU savings:
ca. 2 %

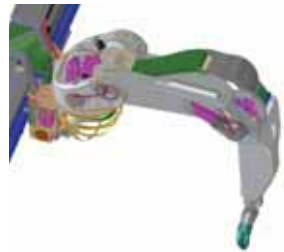
Interior painting with *EcoRP E/L* Dual Rail System



- Reduced length of the booth
- Less energy and air circulation
- Total degrade-funktionalität

CPU savings:
ca. 2 %

System modularity and less complexity



- Simplified maintenance
- High reliability

CPU savings:
ca. 3 %

Linear color changer *EcoLCC*



- Low loss of color in color changing
- Short color changing times
- For exterior and interior painting
- Simplified technology
- Color changer without main paint duct
- No paint carry over possible

CPU savings:
ca. 1 %

Atomizer with integrated CC *EcoBell2 ICC*



- Extremely low color changing loss (2 ml)
- Short color changing time (6 sec)

CPU savings:
ca. 3 %

Ecopaint Products - Economical Solutions

Bell/Bell-Application *EcoBell2 M*



- High increase of color application efficiency (on average 35 %)
- Reduction of cleaning effort

CPU savings:
ca. 2 %

Interior and bumper painting *EcoBell2 HD*



- High increase of color application efficiency (on average 15-25 %)
- Reduction of cleaning effort

CPU savings:
ca. 2 %

High speed rotating atomizer *EcoBell2 HX*



- For interior and exterior painting with one bell
- Totally degrade-funktionalität

CPU savings:
ca. 2 %

Automated flanged seam application



- Automated process reduces manually volumes
- Higher quality by automation

CPU savings:
ca. 1 %

Automated application of LASD



- Sprayable sound deadener material reduces material inventory
- Automated process reduces manually volumes
- Less production and storage area by lapse of deadener plates
- Reduced weight of the vehicle

CPU savings:
ca. 1 %



Key Elements of Dürr *Ecopaint* Family

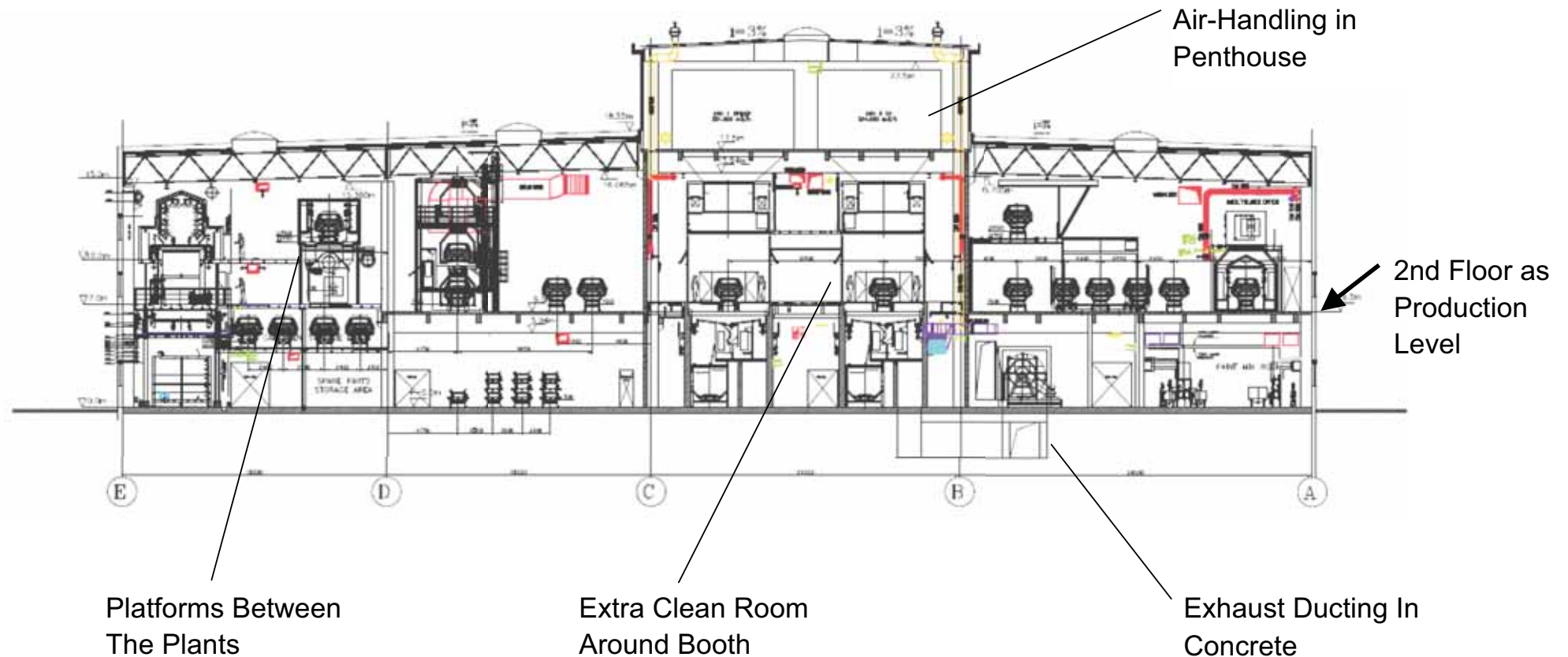
Process

Products

Plant Layout

Ecopaint LeanLine Layout

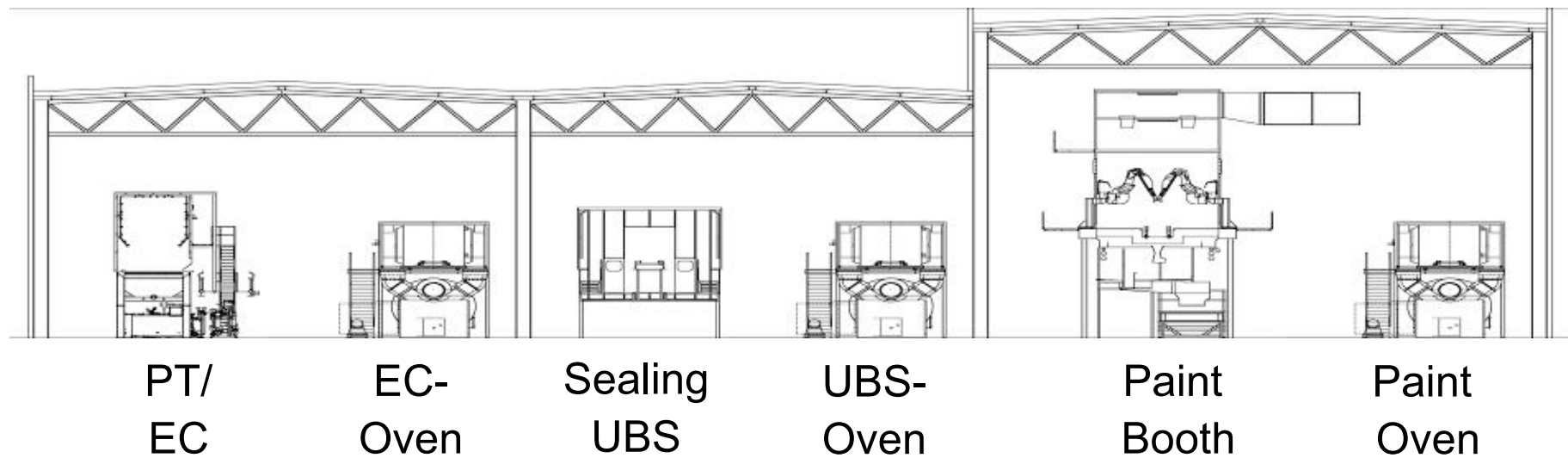
Example Classic Cross Section: Plant Equipment Integrated in Building



Ecopaint LeanLine Layout

Example Lean Cross Section

- Stand alone plants
- Simple building, everything on ground floor





Key Elements of Dürr *Ecopaint* Family

Process

Products

Plant
Layout

lowest investment
lowest energy consumption
lowest Cost Per Unit (CPU)



Paint and Final Assembly Systems

Green Paintshop
the new member of the
Dürr *Ecopaint*-Family

We are pleased to
be your partner!

AMS India 2009

