



ATW's
Eco-Aviation™



Moving Forward

JUNE 23-25, 2010

CAPITAL HILTON ■ WASHINGTON, DC

Green Cabins

Jennifer Coutts Clay

Author, *Jetliner Cabins*

Green Cabins

PROGRAMS

MANUFACTURING, METHODS, MATERIALS

PRODUCT ADVANCES

Green Cabins

Programs



Welcome
to
The Green Scene

J. CLAY CONSULTING

Technical & Marketing Support for the Aviation Industry

JetlinerCabins.com

Design Is the Management of Change

The Crystal Cabin Award



The Crystal Cabin Award

Finalists in 'The Greener Cabin' Category



B&W Engineering



Lantal



**Norduyn &
LSG Sky Chefs**



Green Cabins

Programs

Eco-Initiatives

Eco-Initiatives

A Selection of Published Announcements

AF	Developing/flying 40% lighter economy-class seat
AS & QX	Eliminating paper ticket jackets
AA	Operating cashless cabins
NH	Collecting ticket stubs to be remanufactured as toilet paper
BA	Pioneering voluntary personal passenger carbon-offset programs
DL	Recycling in-flight soft-drink cans
JL	Serving wine from lightweight plastic bottles
KL	Using lightweight plastic trays for meal service
LA	Phasing out paper tickets
QF	Introducing aircraft seat with carbon-fiber-reinforced components
MT	Changing from metal to composite-material oxygen containers
UA	Offering newly designed snack boxes printed on 100% recycled fiber

Green Cabins

Programs

Commodity-Based Cycles

Green Cabins

Programs

Green Teams Fly Into Action

Commodity-Based Cycles

Seat Belts



Pan Am

New option 25% lighter in weight

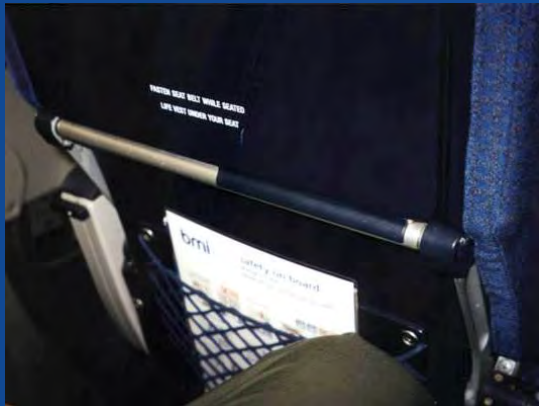


Courtesy of AmSafe

Commodity-Based Cycles

Seat-Back Literature Pockets

Bungee-style



Fabric-style

© J Clay Consulting

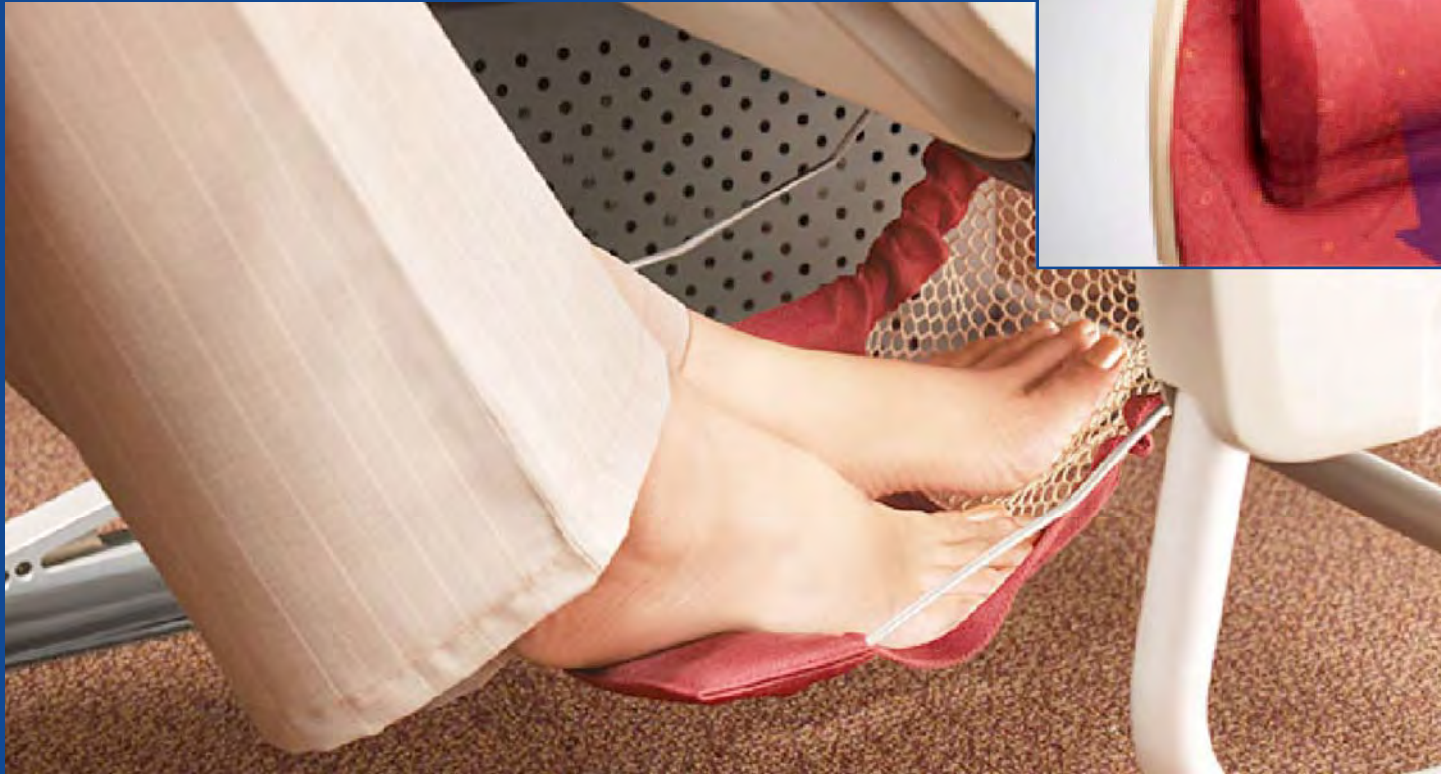
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Jet Airways Boeing B777

International Economy • Comfort Features

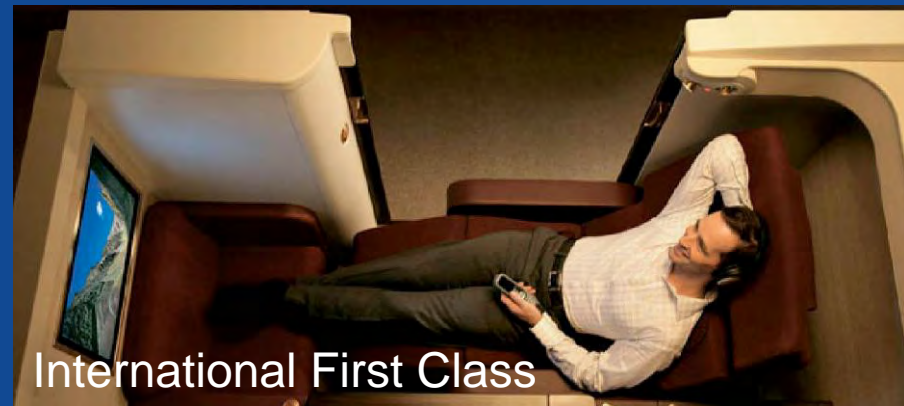
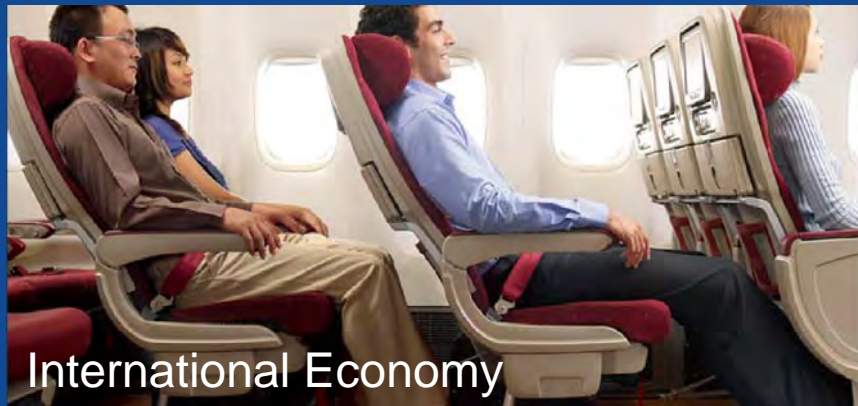


Courtesy of Jet Airways

JetlinerCabins.com

Jet Airways Boeing B777

Cabin Environment

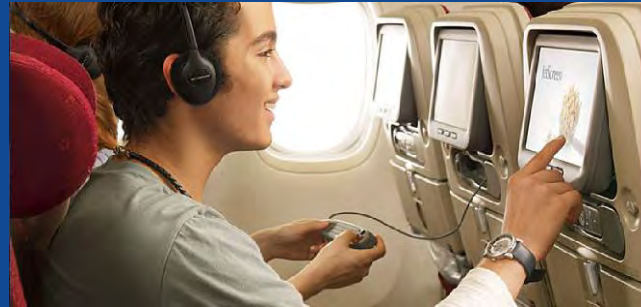


Courtesy of Jet Airways

JetlinerCabins.com

Jet Airways Boeing B777

International Economy Class



Courtesy of Jet Airways

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Eco-Policies

OTHER AIRLINES ARE GREEN... WITH ENVY.

Our newest jet fleet makes us more fuel-efficient and greener than ever.

Continental Airlines has the newest jet fleet among global airlines based in the U.S.

continental.com

eco-skies
COMMITTED TO THE ENVIRONMENT

Continental Airlines

A STAR ALLIANCE MEMBER 

**Work Hard.
Fly Right.**



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Eco-Drapes



Mesh-type
ultra-lightweight
fabric to comply
with TSA
mandate

Courtesy of Lantal

Traditional Heavy Drapes



Braniff

Approximately twice as heavy
as new-style lightweight drapes



Pan Am

Green-Style Lightweight Drapes



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Southwest Airlines • Green Plane Program

E-LEATHER®



Interface FLOR™



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Green Cabins

Manufacturing Methods Materials

Green Cabins

Manufacturing, Methods, Materials

Green Cabin Completions

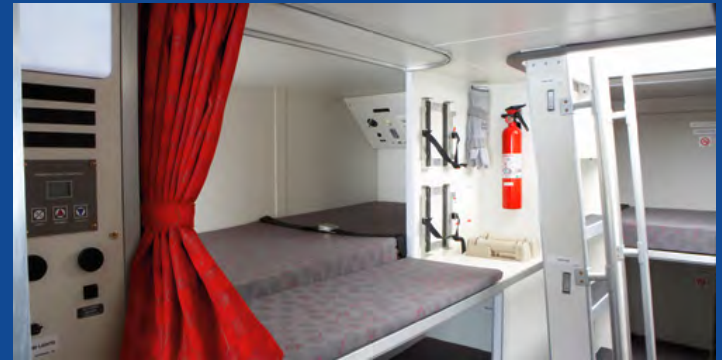
Green Engineering

Old – Pencil, paper and modeling

- Slow, trial and error process
- Need for multiple models

New – Finite Element Modeling (FEM)

- Design in a sophisticated graphic application
- Build a virtual model
- Test in a virtual cabin environment
- Modify and enhance before real testing and certification



FeatherWeight™

Courtesy of TIMCO Aerosystems

Green Design

Old – Design work just a step

- Some innovation
- Putting details to an idea for subsequent modeling and testing



New – Engineering design now the means to the end

- Testing
- Innovation
- Finding greener solutions



FeatherWeight™
Courtesy of TIMCO Aerosystems

Green Manufacturing Process

Example: Cutting and assembly

Old – Manual, using metal forms

- Lack of precision
- Wasteful
- Unnecessary weight (strength needed at corners, but entire panel cut from heavy material)

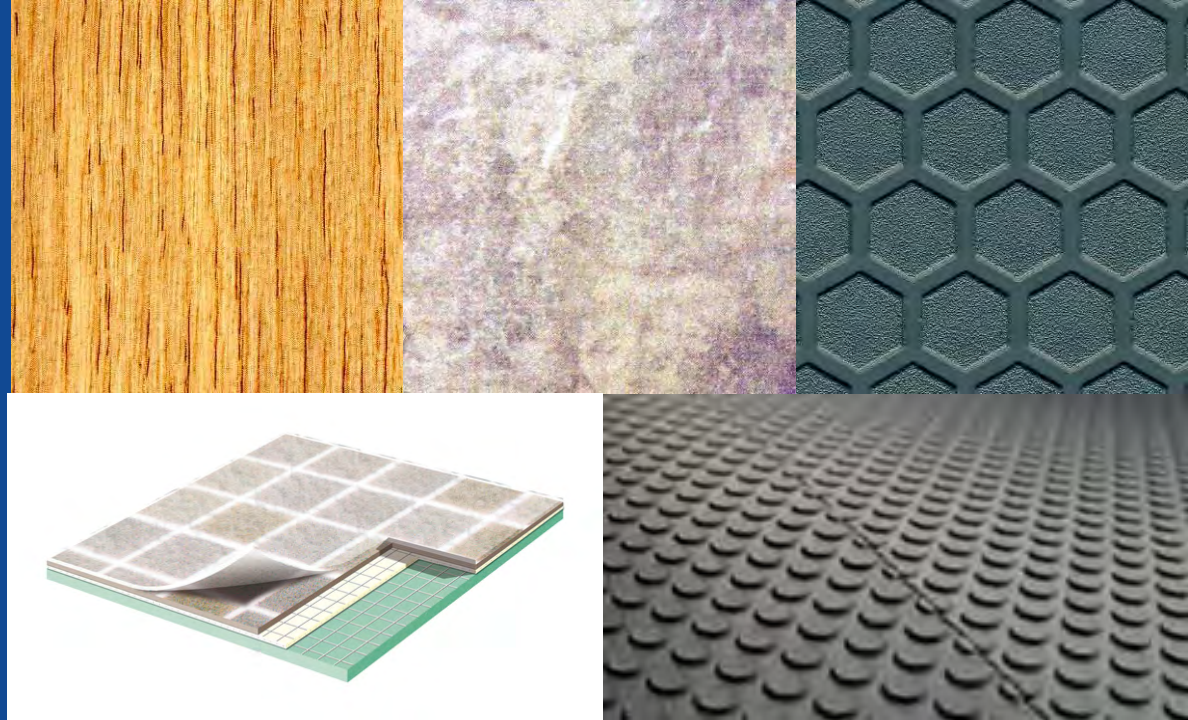
New – CNC (Computer Numerical Controlled) cut; strategic foam filling

- Highly precise
- Little waste
- Much lighter end product
- Strength where needed



FeatherWeight™
Courtesy of TIMCO Aerosystems

Non-Textile Floor Coverings (NTF)



Courtesy of Gerflor

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Product Advances

Emirates Airbus A380 Economy Class



Courtesy of Emirates

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Emirates Airbus A380 Business Class



Courtesy of Emirates

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Emirates Airbus A380

First Class

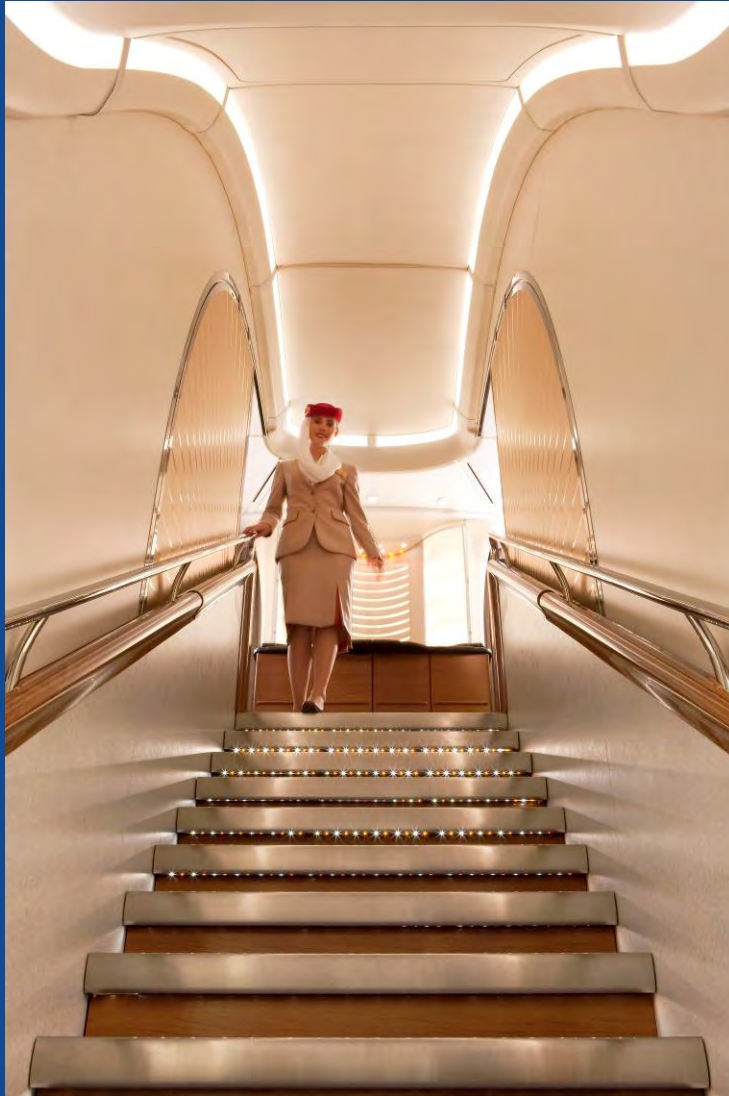


Courtesy of Emirates

JetlinerCabins.com

Emirates Airbus A380

Mood Lighting (LED)



Courtesy of Emirates

JetlinerCabins.com

Emirates Airbus A380

First Class • Shower Spa



Courtesy of Emirates

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Product Advances

Eco-Deco in the Air

Eco-Seat Covers



Wastage rate only 5 to 10%
These seat covers can save approximately half the weight of traditional leather seat covers



Courtesy of E-Leather

JetlinerCabins.com

Traditional Leather Seat Covers



Eastern



Pan Am



Braniff

Traditional Window Shades



© J Clay Consulting

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Electronic Window-Shading System



- Blocks up to 99.5% of light
- Blocks up to 99.9% of UV radiation
- No moving parts

Courtesy of Research Frontiers Inc.

Air-Filled Seat Cushions

The Pneumatic-Comfort System

Air-filled cushions can save approximately half the weight of traditional upholstered cushions

Swiss International Air Lines



Courtesy of Lantal

The Crystal Cabin Award

The Winner in 'The Greener Cabin' Category

The Norduyn Trolley

High impact & heat resistant thermo-plastic top

Precision-machined core with all screw inserts integrated

Carbon-reinforced single body shell
Excellent to absorb shocks

Ergonomic design all-around, no sharp edges

Lighter weight quiet roll casters

Integrated retractable handle and work table

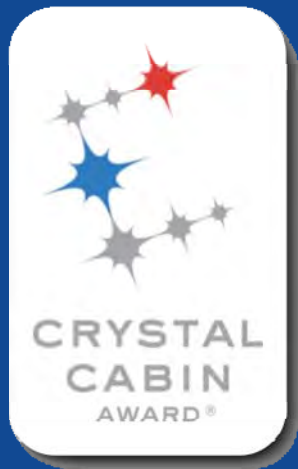
Label area easy to clean without sticky residue

Two security devices for lock and seal

Injected polymer runners ensure ideal gliding of drawers

Lightweight door is easy to close shut

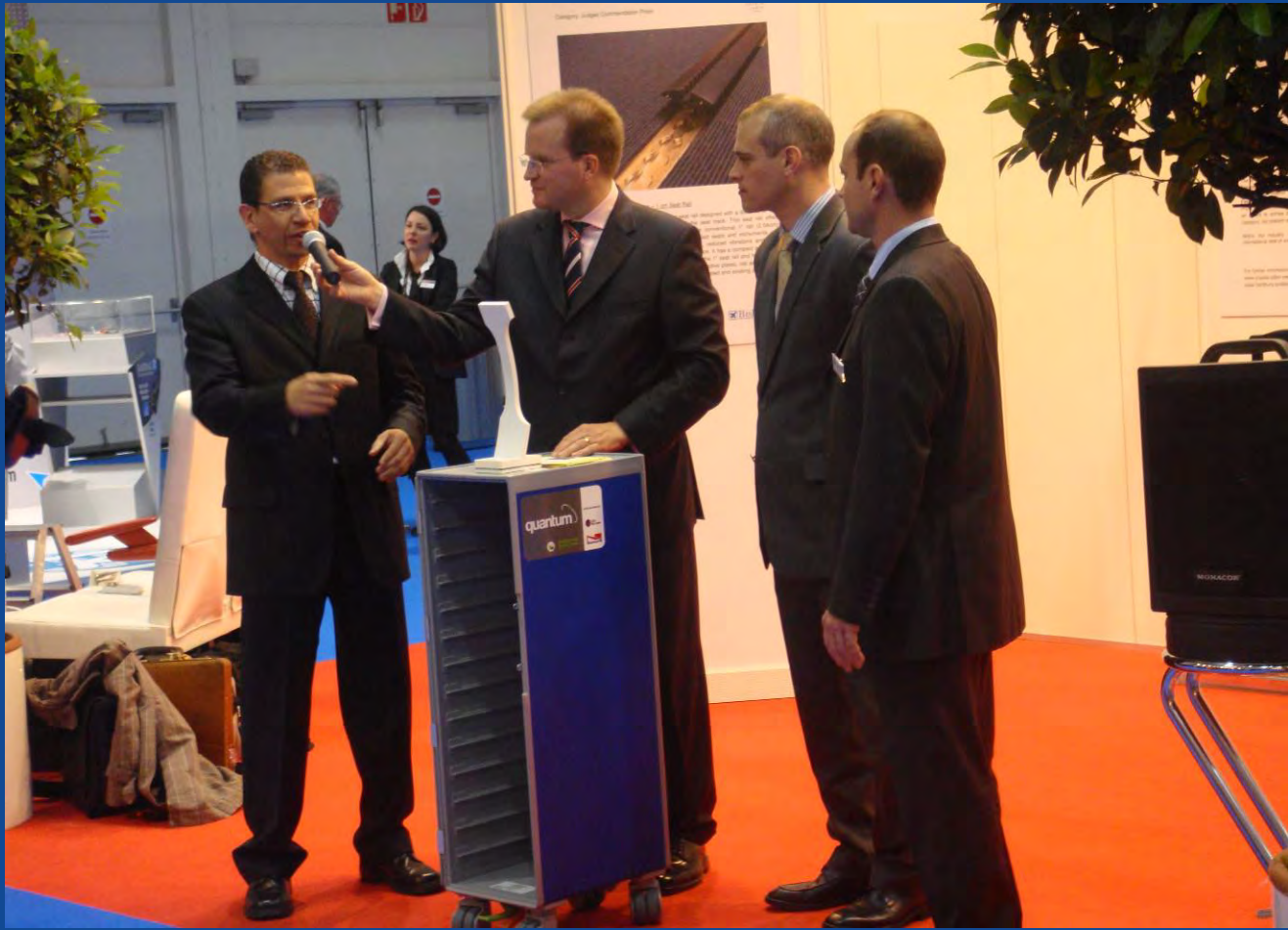
New low-maintenance braking mechanism with optional rear brake set at rear of half size



Courtesy of Norduyn & LSG Sky Chefs

The Crystal Cabin Award

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Websites of Supplier Companies & Organizations Listed Alphabetically – Valid June 2010

Aircraft Interiors Expo
aircraftinteriorexpo.com

AmSafe
amsafe.com

B & W Engineering
bw-forschung.de

Crystal Cabin Award
crystal-cabin-award.com

E-Leather
eleathergroup.com

GCE Group
gcegroup.com

Gerflor Transport Flooring
gerflor.com

InterfaceFLOR
interfaceflor.com

LSG Sky Chefs
lsgskychefs.com

Lantal
lantal.com

Norduyn
norduyn.com

Recaro
recaro-as.com

Research Frontiers Inc.
SmartGlass.com

Spectra Interior Products
spectra-ip.com

TIMCO Aerosystems
timcoaerosystems.com

Green Cabins: What Can We Do Now?

- What about our own Green DNA?
- What are we passing on to the next generation?
- What lessons have we learned from this conference?
- Does your company have a Green Guru or Eco-Czar?
- Does your company have a Green Department?
- Does your company have a Green Staff Suggestion and Recognition Scheme?

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Jennifer Coutts Clay
Author, Jetliner Cabins

Thank
You

