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The reliable protection

Verseidag-Indutex GmbH
business segment duraskin®

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Verseidag Coating & Composite
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VERSEIDAG
COATING AND COMPOSITE



business segment seemee®



business segment ptfe solutions



business segment duraskin®

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Coverings and shelters



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Public places



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High variety of applications ...






Sport facilities



Office Building „Westraven“
second skin facade made of duraskin® PTFE coated Fiberglass




1. Introduction




introduction

**Westraven
Rijkswaterstraat's Office Building**

Involved parties:

Client:	Rijkswaterstraat (Department of Transport, Public Works and Water Management)
Architect:	CePeZed, Netherlands
Façade Contractor:	PolyNed & Oskomera, Netherlands
Membrane Engineer:	Tentech, Netherlands
Fabric supplier:	Verseidag-Indutex GmbH, Germany

introduction



Westraven Building in Utrecht, Netherlands



introduction



Westraven Building in Utrecht, Netherlands



introduction

Westraven building was initially built in 1969 to so called "bottom-approach" architecture.

The task was to renovate the old office tower to accommodate the department of transport, public work and water management (Rijkswaterstraat).



2. Design Concept



design concept



New design by CePeZed architects.

The Concept includes a new façade technology and an extension of the office space by building the so called "finger buildings".

design concept



- Important are new created voids that bring light into the building
- East side 2 voids, west side 3 voids
- Connecting tower and finger buildings by courtyard

design concept



floor height = weft direction = 210cm

floor width = warp direction = 53 m

design concept

Innovative double-layer façade system:

- sunscreening and windbreaking
- highly innovative appearance of the building
- intermediate climate between façade layers provides air-chamber to ensure energy saving
- opening of windows possible



design concept 

PTFE coated Fiberglass (mesh)

- coloured in black to prevent reflection from inside out
- non-combustible (DIN 4102 A2)
- less wind loads on fabric due to open area
- pre-tested with mock-up on the façade in planning phase in 2003

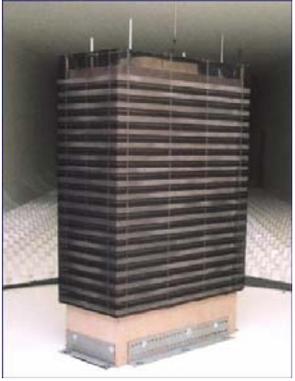


design concept 

Windtunnel Test

*Peutz Associates, Netherlands
building scale 1:80 (approx. 1m height)
fabric scale 1:1; 38 measuring points*

- new wind load due to resize of outer façade has to be determined
- any additional load on balconies has to be investigated
- tension forces of outer layer have to be described



design concept 

Load assumptions tested on mock-up via DC6 aircraft engine to animate different scenarios



- dynamical testings with wind velocity up to 180 km/h
- also tested on wind & rain (rain slightly increased wind load!)

3. Second Skin Facade



second skin facade 

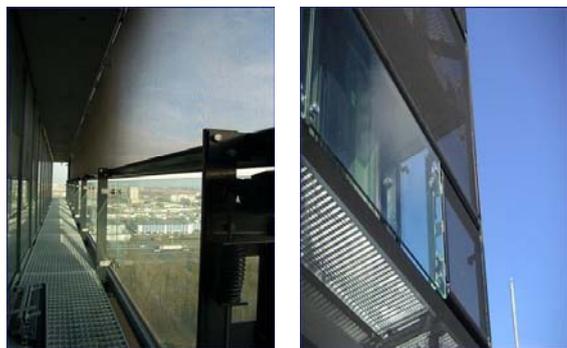


Warp direction (width of floor) fixed rigid with kedar system.

Weft direction (height of floor) connected with moveable tube system to enable pretension by turning tubes in opposite direction.

Applied prestress approx. 3,5 KN/m.

second skin facade 



inside **outside**

second skin facade

Why to introduce textile as double-layer façade system:

- low self-weight (less costs for transport & installation)
- formability (freedom in design)
- safety (non-combustible according to DIN 4102 A2)
- durability (PTFE coated Fiberglass >25 years)



4. Result



result



result



result



result



result duraskin®
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result duraskin®
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Daylight Award 2008



result duraskin®
The reliable protection

Dutch Construction Award 2009
Perfect equilibrium between energy consumption and working climate



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Thank you very much

