

Workshop for Dissemination and Promotion of ZEB (Zero Energy Building) and ZEB Family Concept

AGC products for ZEB family

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AGC Asia Pacific Pte Ltd (AGC Inc.)**

AGC Group (Net sales JPY 1,522.9 billion (FY2018))

Glass

Flat Glass

- Float Flat Glass
- Low-E glass
- Fabricated glass for architectural (Heat Insulating/shielding glass, Disaster-resistant/Security glass, Fire-resistant glass)
- Polished wired glass
- Interior / Decorative glass



Automotive Glass

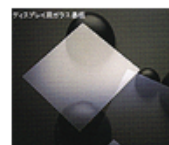
- Tempered glass
- Laminated glass



Electronics

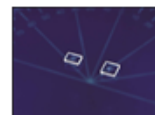
Display

- Glass substrate for display devices
- Specialty glass for display applications
- Glass for Solar Power System



Electronic Materials

- Semiconductor process materials
- Optoelectronics materials
- Lighting glass products
- Laboratory glass



Chemicals

Chlor-alkali & Urethane

- Raw materials for vinyl chloride polymer
- Caustic soda
- Urethane



Fluoro-chemicals & specialty chemicals

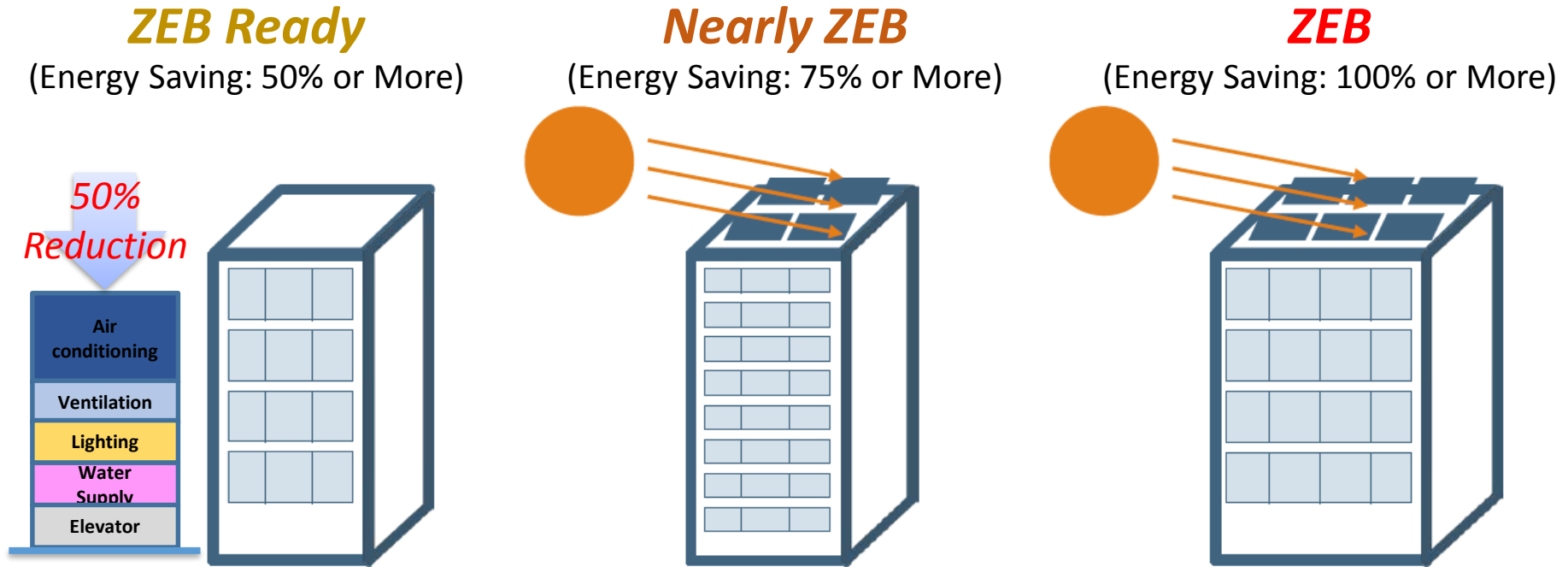
- Fluorinated resins
- Water and oil repellents
- Pharmaceutical and agrochemical intermediates
- Iodine-related materials



Ceramics/Other

- Ceramic products
- Furnace Engineering

Definition of ZEB (Zero Energy Building)



Achievement of ZEB ready by Energy Saving: 50% or More

Energy generation by renewable energy source

Nearly ZEB, ZEB (Net Zero)

Energy Efficiency

Load reduction (Improvement of thermal insulation and solar shielding)

Stopsol Sunergy
Stopray T-Sunlux

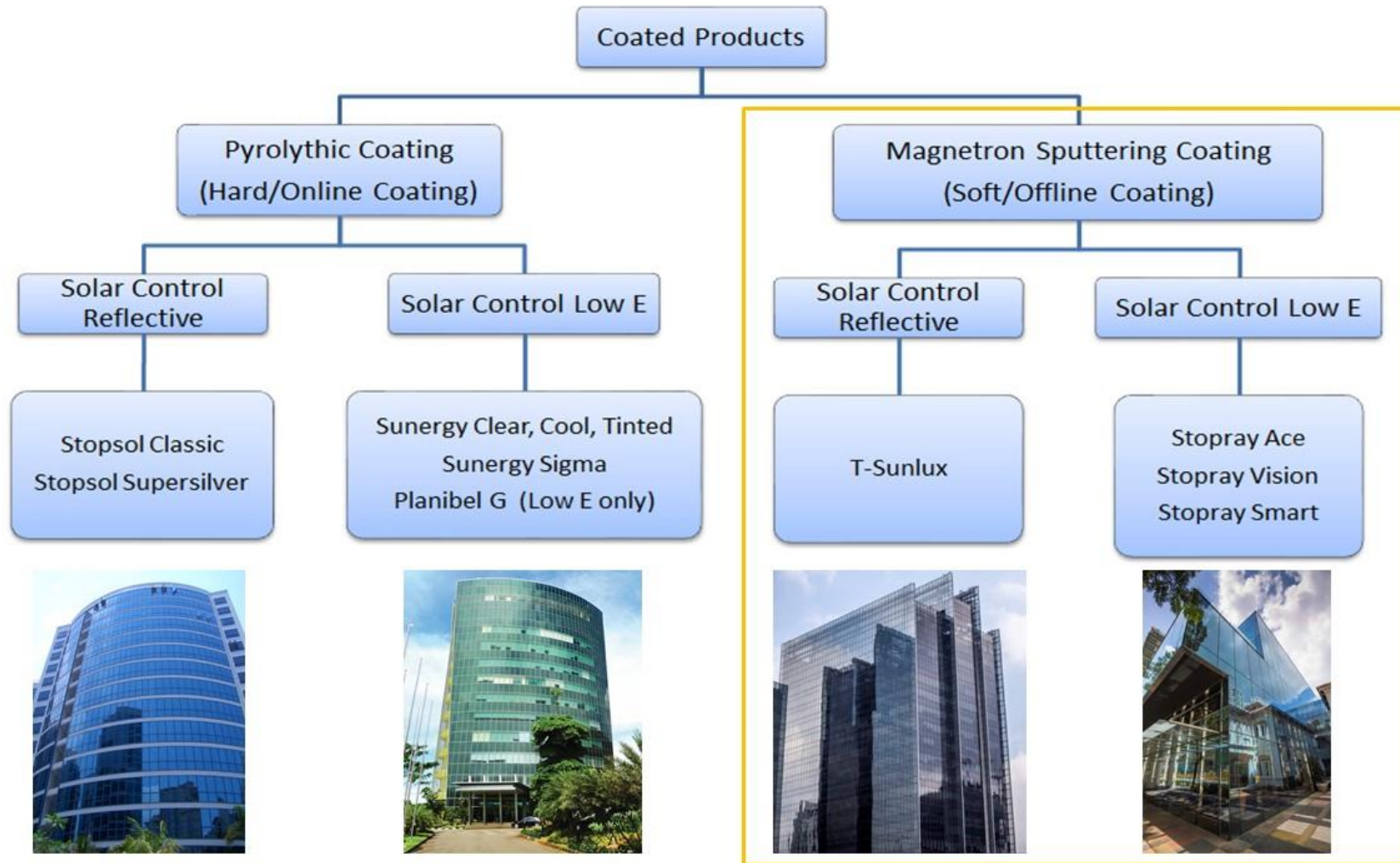
ATTOCHTM

HALIOTM

Energy Generation

Renewable energy

SUNJOULE
Glass Integrated PV Solution

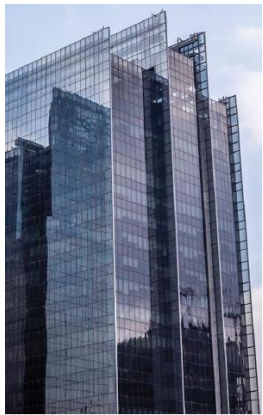


Solar Control – Reflective Coating

Coated on Clear Float Glass

on Ocean GREEN

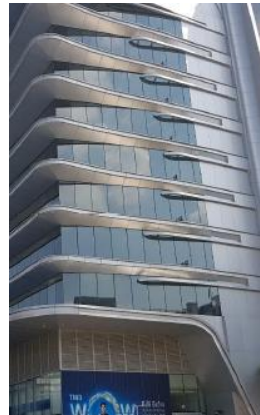
on Sky BLUE



The Ninth
CS120



SET
CS130



COSMO
CS130



Emquartier
CS120



K-BANK
CS214



UTCC
CS530

Light Reflective Glass with Neutral Grey getting more popular to keep building looks brighter but continued energy efficiency with proper SHGC

→ GREEN & BLUE tone, still good choices for Corporate Images/Preference



Q-Condo (Clear Vision + SMART51)

13.52#4+A12+6

VLT 51%
SHGC 0.30
U-value 1.7 w/m2



ICONSIAM (SMART51)

13.52#4+A12+6

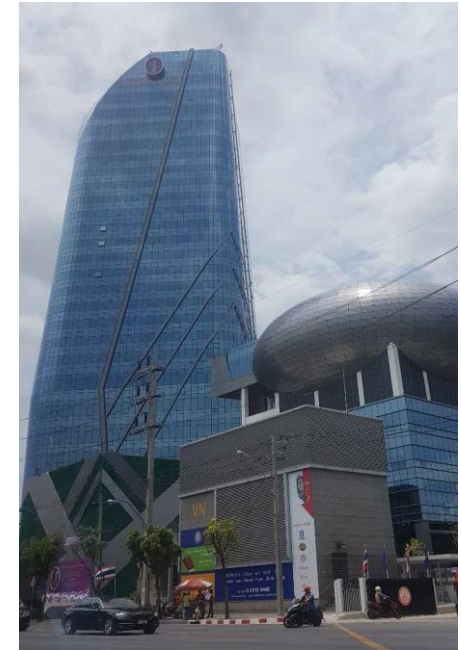
VLT 49%
SHGC 0.28
U-value 1.7 w/m2



MS Siam Tower (Vision50)

13.52#4+A12+6

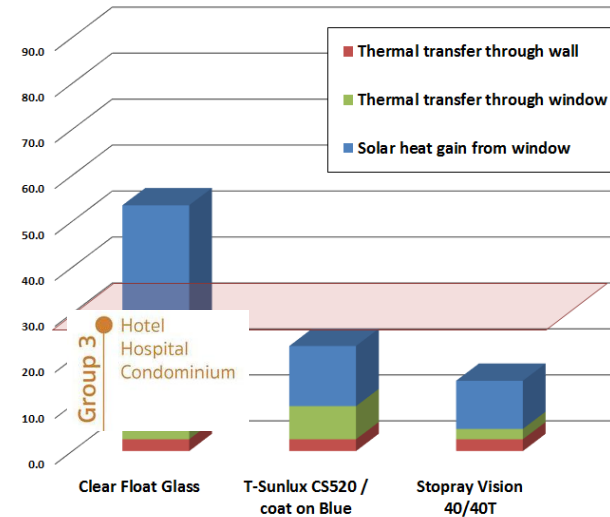
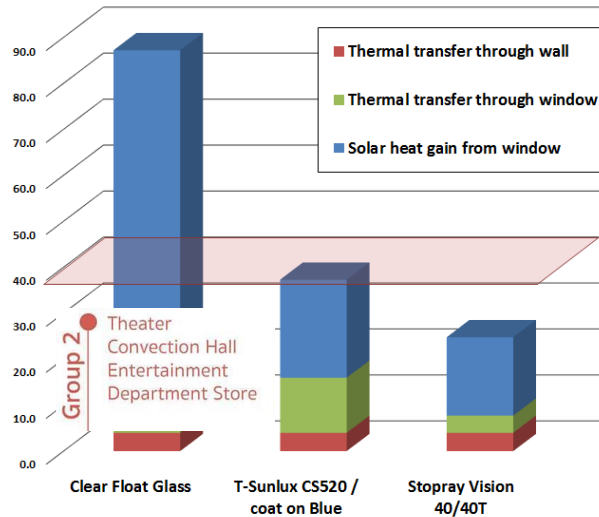
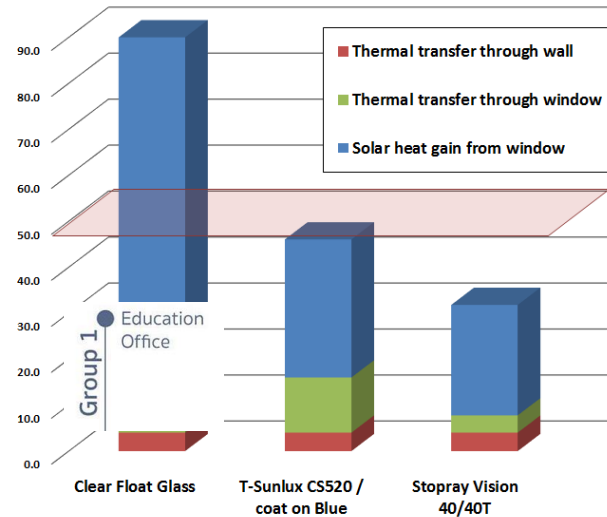
VLT 45%
SHGC 0.25
U-value 1.6 w/m2



MEA (ACE42T)

13.52#2,#4+A12+6

VLT 40%
SHGC 0.23
U-value 1.6 w/m2



OFFICE	50	W/m2				
Item	U	SHGC	Thermal transfer through wall	Thermal transfer through window	Solar heat gain from window	OTTV
Clear Float Glass	6.3	0.8265	4.0	15.8	95.1	114.8
T-Sunlux CS520 / coat on Blue	4.8	0.261	4.0	12.0	30.0	46.0
Stopray Vision 40/40T	1.5	0.2088	4.0	3.8	24.0	31.8
Super Store	40	W/m2				
Item	U	SHGC	Thermal transfer through wall	Thermal transfer through window	Solar heat gain from window	OTTV
Clear Float Glass	6.3	0.8265	4.0	15.8	67.5	87.2
T-Sunlux CS520 / coat on Blue	4.8	0.261	4.0	12.0	21.3	37.3
Stopray Vision 40/40T	1.5	0.2088	4.0	3.8	17.0	24.8
HOTEL	30	W/m2				
Item	U	SHGC	Thermal transfer through wall	Thermal transfer through window	Solar heat gain from window	OTTV
Clear Float Glass	6.3	0.8265	2.6	9.5	41.5	53.5
T-Sunlux CS520 / coat on Blue	4.8	0.261	2.6	7.2	13.1	22.9
Stopray Vision 40/40T	1.5	0.2088	2.6	2.3	10.5	15.3

Wall type: Autoclave Aerated Concrete

Glazing type: 3 types

- Clear Float Glass
- T-Sunlux CS520 / coat on Blue
- Stopray Vision 40/40T

$$WWR \text{ (Window to Wall Ratio)} = \frac{\text{Area(window)}}{\text{Area(window + wall)}} = 0.5$$

$$N:E:S:W = 2.5 : 1 : 2.5 : 1$$

HALIO SMART-TINTING GLASS SYSTEM: BREAKTHROUGH TECHNOLOGY

From Clear



Natural clear state allows over 66% light transmission

To Dark



Blocks up to 99.9% total transmitted light with a **dark neutral grey state**

And In-Between

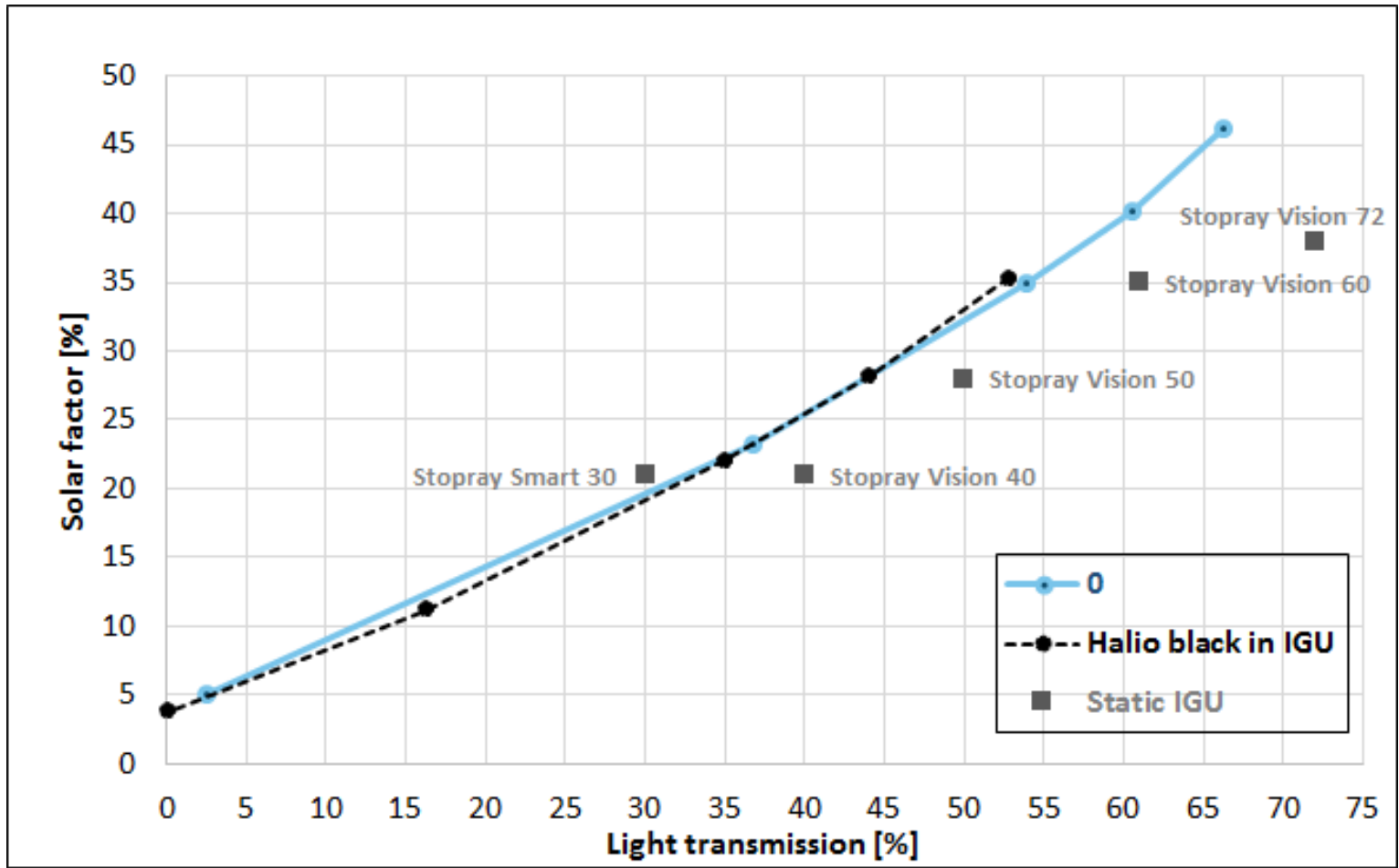


Uniform switching makes intermediate tints useable and offer a high **Color Rendering Index > 90**

Seamlessly



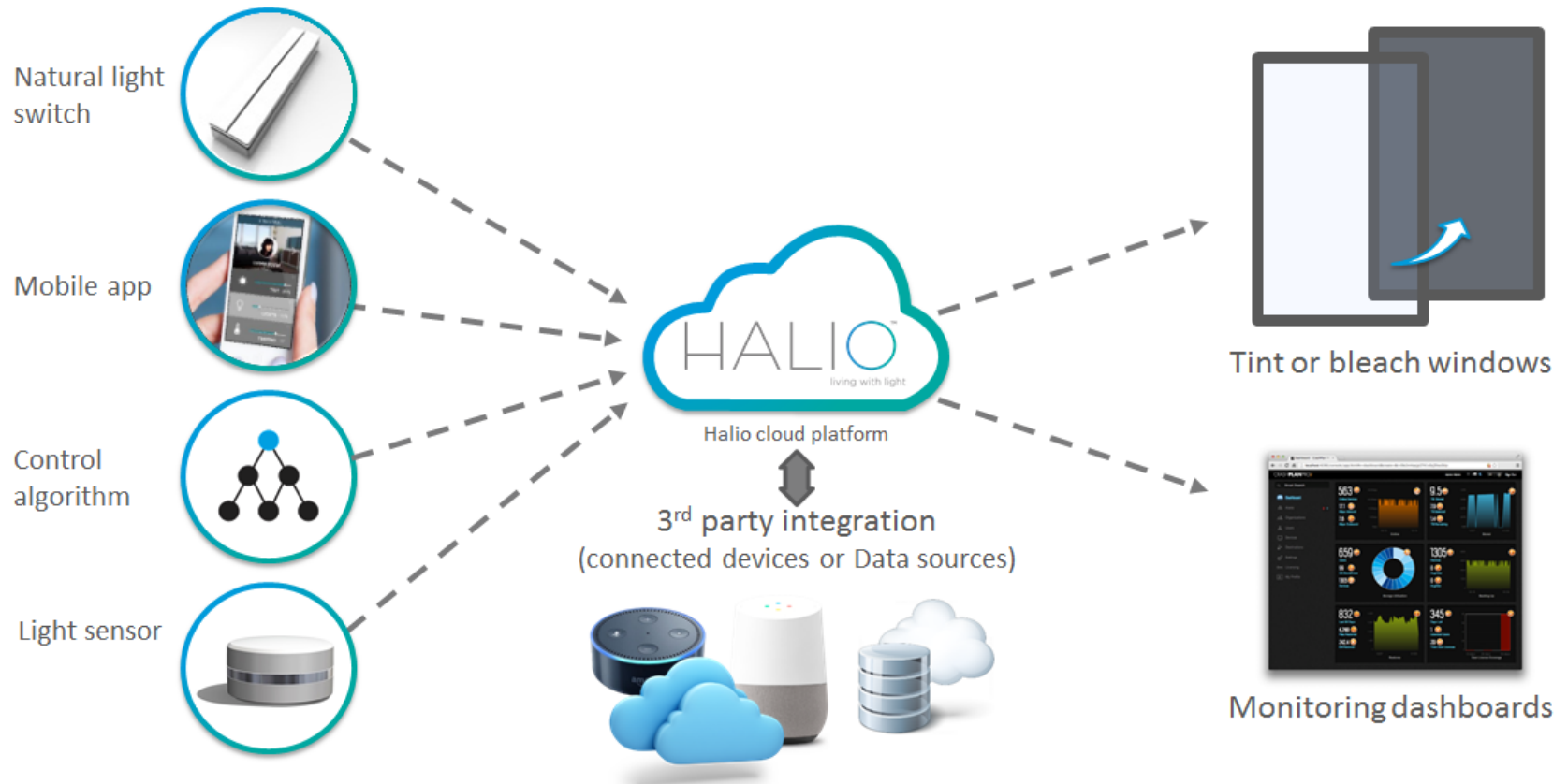
Full switching under 3 minutes provides energy efficiency and near-privacy. Visible transitioning **within 20 seconds**



Example:

Smart tinting glass laminated between two Clearvision 4mm Tempered – 15mm 90% Argon – Clearvision 4mm with Iplus Top 1.1

HALIO SYSTEM ENABLES TO CONTROL NATURAL LIGHT REMOTELY



Thank you very much for your attention.



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