ALCOPANEL
Aluminium Composite Panel

▶ Hilton San Diego Bayfront, U.S.A

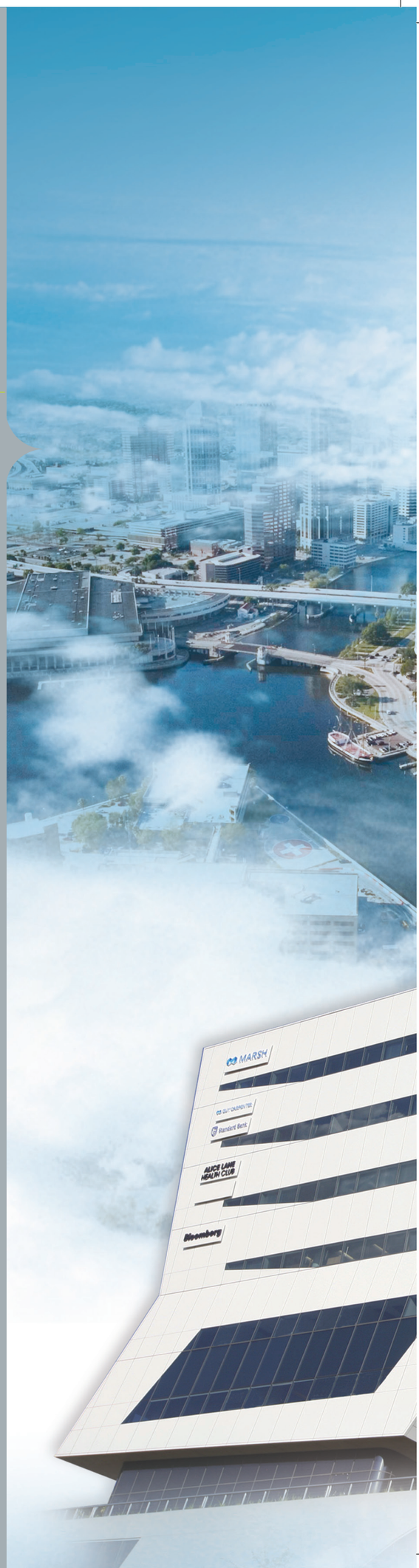
KOREAN STANDARDS

ISO 9001

ISO 14001

HISTORY SINCE_1990

Apr.	1990	Dae-A Industrial Co., Ltd was established
Oct.	1990	Completion of factory
Oct.	1990	Started the first production of ALCOPANEL with 1 set of multi-processor (annual production capacity : 500,000㎡)
Mar.	1993	Commenced the first export of ALCOPANEL to South east Asia
Oct.	1993	Commenced the first export of ALCOPANEL to China
Oct.	1995	Expanded annual production capacity to 800,000㎡ by upgrading production facilities
July.	1998	Selected as a promising manufacturer by KIST
Aug.	1998	Allowed to use Q mark by KOTRIC
Jan.	1999	Alcopanel being certified by the standard of ISO 9002
May.	1999	Selected as Advanced technology company by SMBA
Apr.	2000	Alcopanel being certified by the standard of ISO 9002
Aug.	2000	Allowed to use Certificate by the Ministry of China Construction
Sept.	2000	Alcopanel Fire Retardant Products being developed
Oct.	2000	Alcopanel being certified by CEBTP(France)
July.	2001	Allowed to use KS Mark(KS F 4737) by KSA
Dec.	2001	Alcopanel being certified by the standard of ISO 9002
Aug.	2002	Passed the fire of FR test at Southwest Research Institute in USA
Nov.	2002	Establish Sencond factory in the Eumsung of ChungCheong Buk-Do
Nov.	2002	The name of company, DAE-A Industrial C0.,LTD being changed to ALCOPANEL Co.,LTD
Nov.	2003	Alcopanel being certified by Ministry of Public Works, Kuwait
Dec.	2003	Alcopanel being certified by the standard of ISO 9001
Mar.	2004	Alcopanel being certified by the standard of ISO 14001:2000
Apr.	2006	Alcopanel being certified by the standard of ISO 14001:2004
Aug.	2006	Alcopanel being certified by the Technical & Test Institute for Construction, Czech Republic
Oct.	2006	Alcopanel FR being certified by Artiael 2-9 of Building Standard Law, Japan
Feb.	2007	Alcopanel FR being certified by 108-2 Building Standard Law, Japan
Oct.	2008	ALCOPANEL ZN(ZINC Composite Panel) being developed
Dec.	2008	ALCOPANEL SS(Stainaless Steel Composite Panal) being developed
Jul.	2009	ALCOPANEL being certified by DIN4102, Germany
Jan.	2013	Set up for Honeycomb Production Line
Jan.	2013	Development for Panel of Electronic Devices
Jun.	2013	Supply to SAMSUNG Electronics
Dec.	2013	Set up for No.3 Production Line
Jan.	2014	Passed the Fire Test of KS F4737 in FILK, Korea
Jul.	2014	Development for ALCOPANEL ANOD (Anodized Aluminium Composite Panel)
Sept.	2015	Acquisition of BS476 Part 6 & 7 from PSB Singapore
Feb.	2017	Achieved Saudi Arabia Riyadh Metro Line 4 and Line 6 Project (Total q'ty 340,000sq.m)
Apr.	2017	Set up for No.4 Production Line
Dec.	2017	Acqusition of EN 13501-1 B Class



ALCOPANEL
Aluminium Composite Panel

Moving Forward through

Quality & Technology

ALCOPANEL is highly recommended for external wall cladding for buildings and it has been used in marine and automobile industries.
In addition to the above, it is also ideal for interior finishing design requirements.

▶ Alice Lane, South Africa

▶ Mortgage Bank of Uruguay, Uruguay

FOR BEAUTIFUL ENVIRONMENT

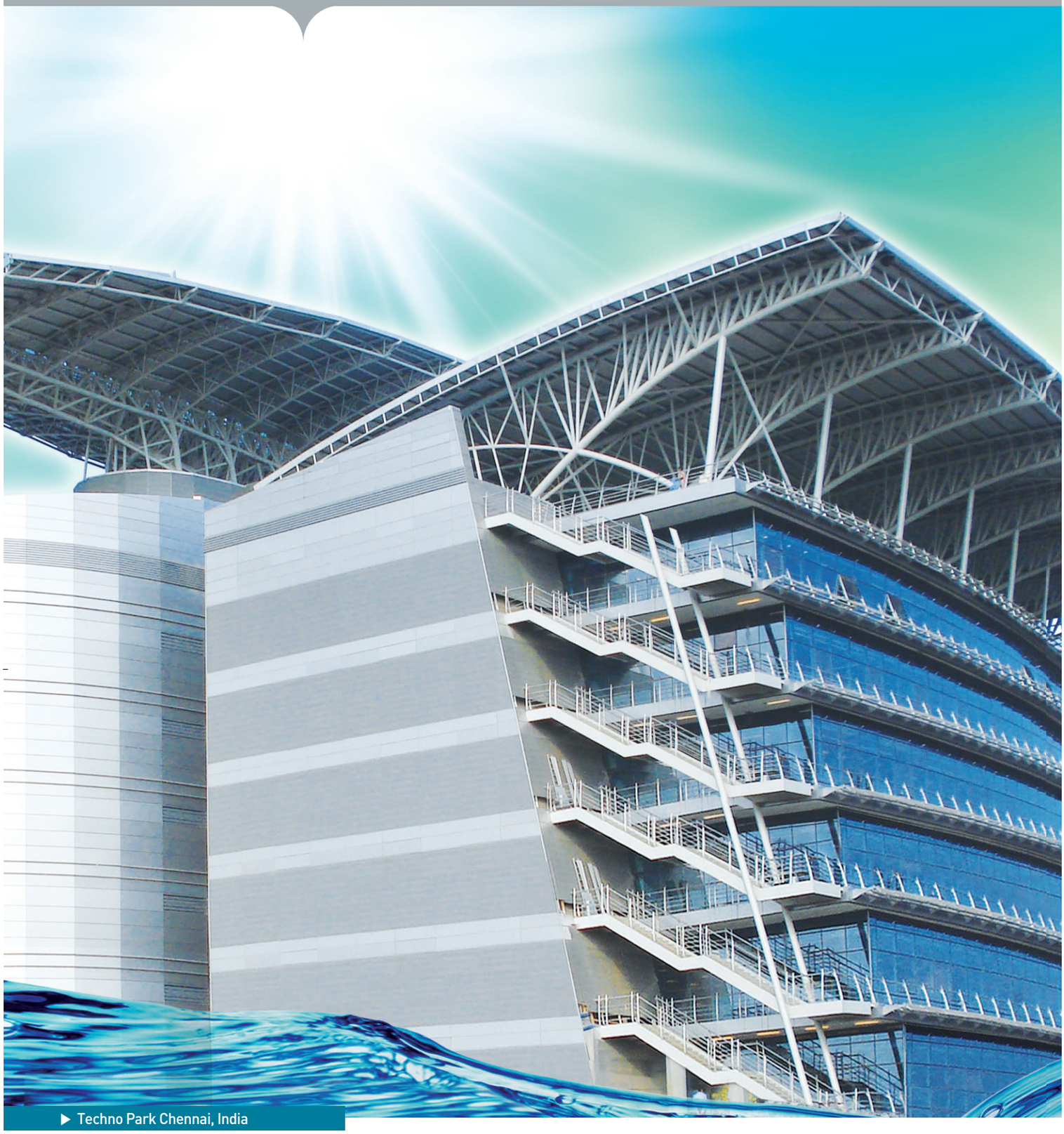
Two things,
inspiration and innovation are bases of successful products.
When these two intangible elements are combined with
good design and manufacturing excellence,
the result can be a product which is revolutionary.

ALCOPANEL
Aluminium Composite Panel

ALCOPANEL is making strong efforts to maintain its leading position in the international market.

> Bank of Indonesia (BIDAKARA), Indonesia

> Qaulcomm Head Office, U.S.A



▶ Techno Park Chennai, India

THE BEAUTY OF BUILDING

ALCOPANEL combined with designers'
imagination makes impossible work possible.

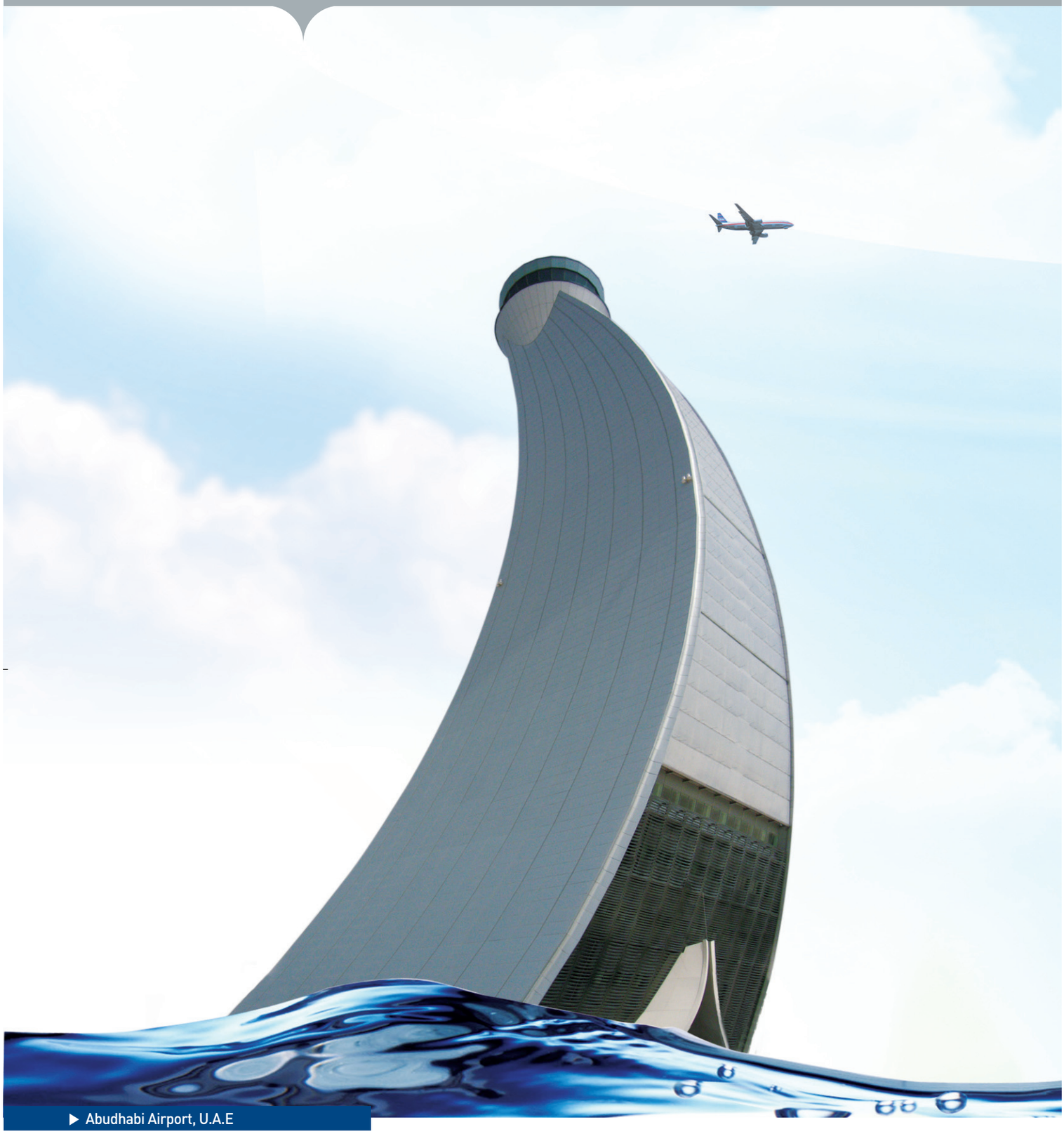
ALCOPANEL
Aluminium Composite Panel

ALCOPANEL's specific functions and designs

promise to enhance dignities of buildings.

> HIVEC, Japan


> Saha Sports Club, Qatar



▶ Abudhabi Airport, U.A.E

FOR ARCHITECTURAL DESIGN

ALCOPANEL is available in a range of standard coil coated colours in PVDF finishes.

These full strength and high performance coatings have been especially selected for architectural cladding applications.

ALCOPANEL
Aluminium Composite Panel

Easy ALCOPANEL fabrication enhances the beauty of building.


> Park Royal Tower, Iran

> Green Power, Vietnam

Iran
U.A.E
Vietnam

www.alcopanel.com

Feel the Changes being made by ALCOPANEL

Creating a better tomorrow with advanced technology and spirit of creativity and challenge.

ALCOPANEL
Aluminium Composite Panel

Features

Excellent Color Uniformity
Roll coating system which is applied to ALCOPANEL provides the best quality of color uniformity by high technology.

Lightness and Rigidity
Weight of ALCOPANEL with a specific gravity of 1.2 to 1.5 is a half of that of solid aluminium sheet with equivalent rigidity.

Superior Flatness
ALCOPANEL provides the greatest flatness of the panel free from distortion and deflection.

Corrosion Resistance and Weatherability
Superior corrosion resistance is provided by the best surface treatment and not affected by temperature condition from -50℃ to + 80℃.

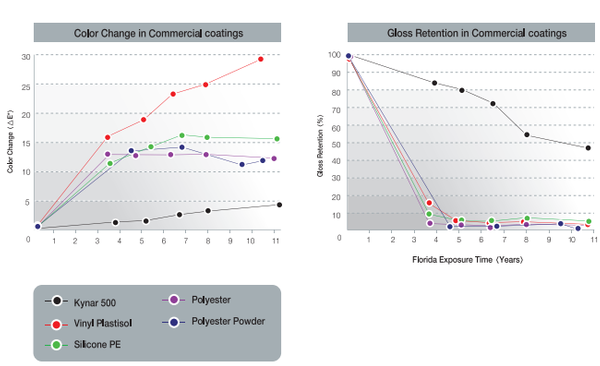
Superior Fabrication
Fabrication works, cutting, bending, curving, grooving, routing and other process, are easily accomplished with aluminium and wooden working machines.

Maintenance
Kynar 500®-based PVDF coating system provides a strong chemical proofness. By wiping pollutant such as smoke, exhaust gas and dust with a synthetic detergent sponge, the surface of ALCOPANEL can be maintained with unique color.

Specification

Surface Treatment
ALCOPANEL is available with Kynar 500®-based PVDF coating, including standard colors and custom colors upon request. (Refer to color charts.)
Note : Custom colors are required minimum quantity.
Polyester paint finish is also available.

Color Change and Gloss Retention of Kynar 500®



Product Tolerance

Width	: - 0 / + 2㎜
Length	: - 0 / + 4㎜
Thickness	: ± 0.2㎜ for 3㎜ 4㎜, ± 0.3㎜ for 6㎜
Bow	: Maximum 0.5% of the length and / or width
Squareness	: Maximum 5㎜
Surface Defect	: The surface shall not have any irregularities such as roughness, buckling and other imperfections with our specification of visual inspection result.

ALCOPANEL is usually supplied with protective film on panel surface.

Characteristic

Mechanical Properties of Cover sheet
(0.5mm Aluminium / A3003-H16)

Density	2.72kg/㎤
Tensile Strength	Rm ≥ 140N/㎟
0.2% Proof Stress	Rp0.2 ≥ 100N/㎟
Elongation(50mm)	A50 ≥ 1%

Properties of Painted Finish
ALCOPANEL is available with Kynar 500®-based fluorocarbon coating to meet following criteria :

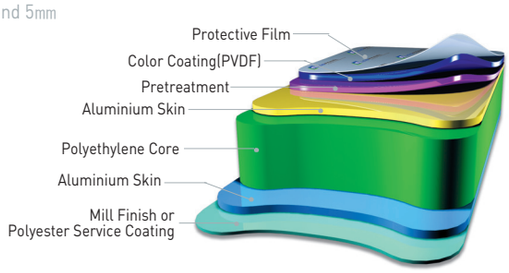
Film Property	Test Method	Comments
Color Retention	ASTM D-2244-93	△E5 Less
Gloss Retention	ASTM D-523-89	
Chalking	ASTM D-4214-89	8unit
60° Gloss	ASTM D-523-89	20~30
Pencil Hardness	ASTM D-3363-92a	H-F
Formability(T-bend)	ASTM D-1737-62	1T No crack
Adhesion: Dry Wet Boiling Water	 ASTM D-3359,Method 8 37.8℃, 24hrs 100℃,20min	 No change
ReverseImpact-Crosshatch	NCCA 11-5	No adhesion
Abrasion Resistance	ASTM D-968-93(Falling Sand)	No change
Salt Spray Resistance: 100% Salt Fog 35℃ 3,000hrs	ASTM B117-90	
Humidity Resistance: 100% RH 35℃ 3,000hrs	ASTM B2247-94	No adhesion
Chemical Resistance: HCL H_2SO_4 Mortar Detergent	 ASTM D-1308-87 ASTM D-1308-87 AAMA 605.2-90 ASTM D-2248-93	 No change

ALCOPANEL
Aluminium Composite Panel

Structure

ALCOPANEL is a aluminium composite panel consisting of two aluminium sheets(A3003-H16 or H14) and anti-toxic polyethylene.

Anti-toxic polyethylene
2㎜, 3㎜ and 5㎜



Standard Panel Size

Product Range	Specification	
ALCOPANEL	Thickness	3,4 and 6㎜
Anti-toxic polyethylene core	Width	1020㎜
		1250㎜
		1575㎜
	Length	Max. 8000㎜

Note : ALCOPANEL silver 107 is not available in 1575㎜ width.
Custom width also can be available between 900㎜ and 1575㎜, but Minimum quantity is required. Please contact to our office.

Airborne Sound Transmission (ASTM E-4130)

ALCOPANEL has a larger sound transmission loss comparing with other material of the same weight(steel, aluminium, plywood,etc).
The typical result of actual measurement is shown in Fig.1.

▶ Airborne Sound Transmission loss Curve
- Test Specimen : ALCOPANEL 4㎜
- Condition : Temperature 20℃, Humidity 70.0%RH
- Sound transmission Classification (STC Nos) : established by ASTM E-413

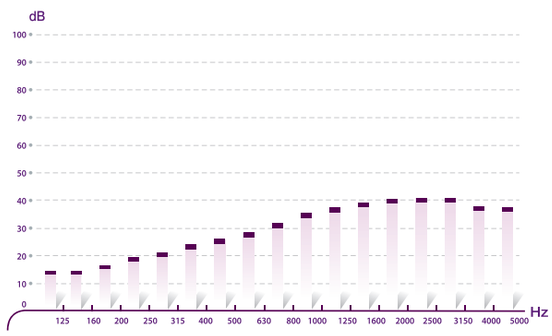


Fig.1. Sound Transmission Loss for 4mm ALCOPANEL

General Properties of ALCOPANEL

Item	ASTM	Unit	4mm
Unit Weight		kg/㎡	5.6
Tensile Strength	E8	kg/㎟	4.99
Yield Strength	E8	kg/㎟	3.91
Elongation	E8	%	7.3
Flexural Rigidity(20cm span)	C-393	kg/㎟	8.6
Flexural Elasticity		kg/㎟	3222
Thermal Expansion	D-696	10^{-5}/℃	25
Thermal Conductivity	D-976	Kcal/mhr℃	0.387
Deflection Temperature	D-648	℃	115℃
Bond Integrity			
Vertical Pull	C-297	N/㎟	12.37
Drum Peel	D-1781	㎜N/㎜	375.94
Flatwise Shear	D1002	N/㎟	8.55

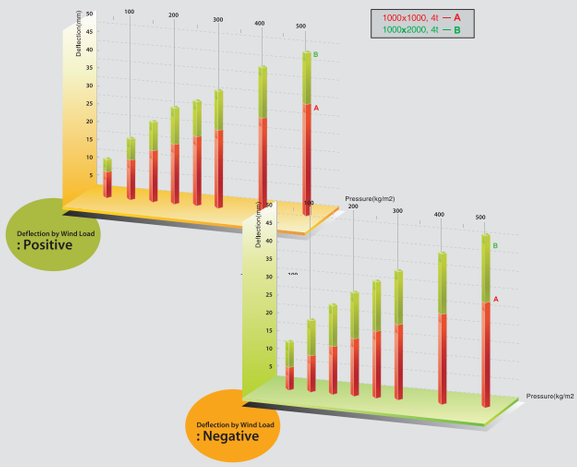
Fire Behaviour

ALCOPANEL			
Country	Test Standard	Result & Classification	
United Kingdom	BS 476 Part 6	Index 0	Class 0
	BS 476 Part 7	Class 1	

Panel Strength Deflection (ASTM E-330)

The flexural strength of the panel is absolutely dependent on the aluminium skins. For this evaluation, the strength of aluminium skin(A3003-H16) is 17.0kg/㎟.

▶ Deflection Graph by Wind Load
- Test Specimen : ALCOPANEL 4㎜
- Design load : 0~500kgf/m², Positive & Negative pressure
- To inspect the structural performance, established by ASTM E-330



Please contact us for specific structural wind load data according to precise design requriements.

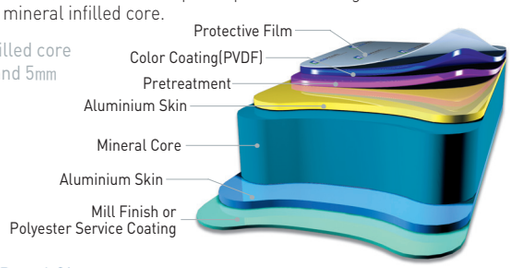
Features

ALCOPANEL$_{FR}$ compounds are based on polyolefin and flame retardant which do not generate toxic gases, especially halogen gases, and have excellent low smoke properties. ALCOPANEL$_{FR}$ compounds offer an optimized balance between mechanical and flame retardant properties.

Structure

ALCOPANEL$_{FR}$ is a aluminum composite panel consisting of two aluminium sheets and mineral infilled core.

Mineral infilled core
2㎜, 3㎜ and 5㎜



Standard Panel Size

Product Range	Specification	
ALCOPANEL$_{FR}$ Mineral infilled core	Thickness	3,4 and 6㎜
	Width	1020㎜
		1250㎜
		1575㎜
	Length	Max. 8000㎜

Note : ALCOPANEL$_{FR}$ silver 107 is not available in 1575㎜ width.
Custom width also can be available between 900㎜ and 1575㎜, but Minimum quantity is required. Please contact to our office.

General Properties of ALCOPANEL $_{FR}$

Item	ASTM	Unit	4mm
Unit Weight		kg/㎡	7.3
Tensile Strength	E8	Mpa kg/㎟	55 5.6
Yield Strength	E8	Mpa kg/㎟	50 5.1
Elongation	E8	%	2.45
Flexural Rigidity(20cm span)	C-393	Gpa	28
Flexural Elasticity		kg/㎟	3666
Thermal Expansion	D-696	10^{-5}/℃	25
Thermal Conductivity	D-976	Kcal/mhr℃	0.387
Deflection Temperature	D-648	℃	115℃
Bond Integrity			
Vertical Pull	C-297	N/㎟	5.9
Drum Peel	D-1781	㎜N/㎜	368.7
Flatwise Shear	D1002	N/㎟	6.84

Fire Behaviour

ALCOPANEL$_{FR}$

Country	Test Standard	Result & Classification	
USA	UBC 26-9, ASTM E119 ASTM E84	Pass Smoke Donsity 0 Flame spread 0	
United Kingdom	BS 476 Part 6 BS 476 Part 7	index 0 Class 1	Class 0
Korea(south)	KS F 2271-1998 ASTM E 119 : 2005(2 Hours)	Pass Pass	
JAPAN	108-2 of the Building Standards Law	Pass (Fire retardant test of non-combustible material related to approvals Under Article 2-9 of the Building Standard Law)	
German	EN 13501-1 B Class	Pass	

Airborne Sound Transmission (ASTM E-413)

As shown in the Fig.1, ALCOPANEL$_{FR}$ has the better sound-insulating ability than others (Metal, pure Aluminum, Plywood, etc.) in the same weight and so is suitable for an interior & exterior material.

▶ Airborne Sound Transmission loss Curve
- Test Specimen : ALCOPANEL$_{FR}$ 4㎜
- Condition : Temperature 19.8°C, Humidity 58.2%RH
- Sound transmission Classification (STC Nos) : established by ASTM E-413

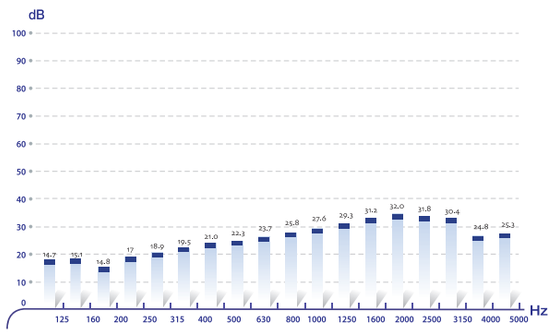


Fig.1, Sound Transmission Loss for 4mm ALCOPANEL$_{FR}$

Panel Strength Deflection (ASTM E-330)

As shown in the Fig. 2, ALCOPANEL$_{FR}$ has the better sound-insulating ability than others (Metal, pure Aluminum, Plywood, etc.) in the same weight and so is suitable for an interior & exterior material.

▶ Deflection Graph by Wind Load
- Test Specimen : ALCOPANEL$_{FR}$ 4㎜
- Design load : 0~500kgf/㎡, Positive & Negative pressure
- To inspect the structural performance, established by ASTM E-330

Test Result - No Visible damage was observed.

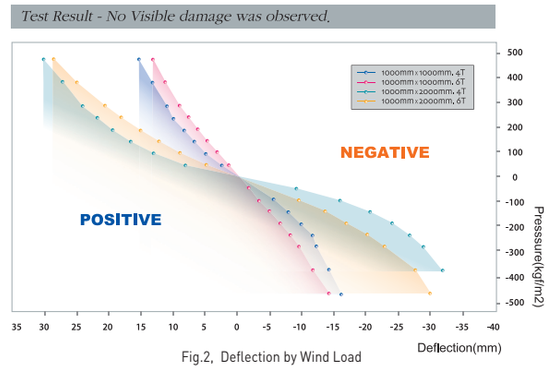


Fig.2, Deflection by Wind Load

ALCOPANELZN

Features

ALCOPANEL ZN - *Zinc Composite Panel*

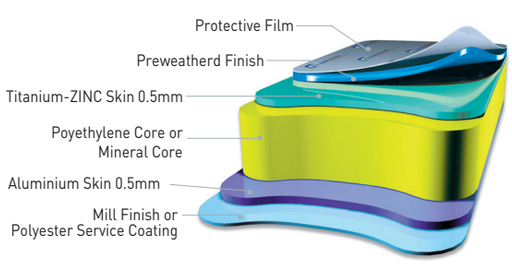
ALCOPANELZN is the best interior/exterior item for next generation consisting of two sheets of Titanium-ZINC (0.5㎜) and aluminum sheet (0.5㎜)with non-toxic polyethylene core or fire retardation mineral core.

Alcopanel ZN has Titanium-ZINC surface and it is newly developed and quite different grade than other composite panels.

Alcopanel ZN combines beautifully with other materials, whether it is used in renovation or new construction, traditional or avant-garde designers, Alcopanel ZN is an elegant partner for many building envelope materials, blending with wood, glass, stone and other materials in complete harmony.

The natural light grey zinc has a textured, luminous quality that evokes the world of minerals. It enhances the appearance of the building from the very first day and for years to come.
Alcopanel ZN has excellent durability surface more than 100 years and no discoloration can be found due to natural oxidation.

Structure



Specification of Alcopanel ZN

1) Surface : 0.5㎜ Titanium-ZINC pre-weathered finish, Blue-grey color
2) Core : Non-toxic polyethylene core or Fire retardation Mineral Core
3) Base : 0.5㎜ Aluminum Mill Finish or Polyster Service Coating

Standard Measurement of Alcopanel ZN

1) Thickness : 4㎜
2) Standard Width : 1,000㎜
3) Length : Max. 4,000㎜ (In case of above 4,000㎜, special discussion is required)

Physical characteristics of Titanium-ZINC

Density	7.2 kg/dm³
Thermal expansion coefficient (parallel to the rolling direction)	0.022 mm/m/℃
Melting point	420℃
Recrystallization point	300℃
Heat conductivity	110 W/(m.K)
Electrical conductivity	17 MS/m
Danger of sparking	Non-sparking
Magnetic properties	Diamagnetic

ALCOPANELSS

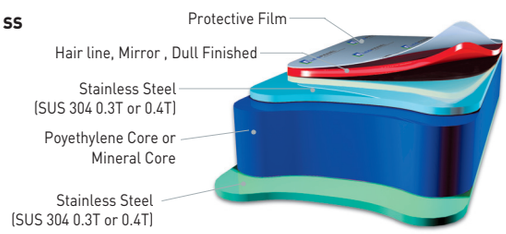
Features

ALCOPANEL SS - *Stainless Steel Composite Panel*

Alcopanel ss, is high-performance product from Alcopanel Co Ltd. consisting of two sheets of 0.3㎜ or 0.4㎜ anti-corrosion Stainless steel permanently bonded to each side of an extruded anti toxic PE core material or Fire Retardation Core.
Alcopanel ss has highly durability Stainless steel surface and it is newly developed and quite different grade than other composite panels.

Structure

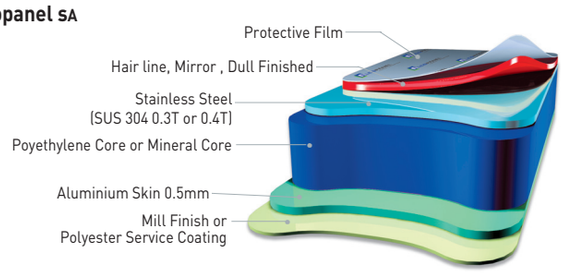
Alcopanel ss



Specification of Alcopanel ss

1)Surface : 0.3㎜ or 0.4㎜ SUS304 Stainless Steel
2)Surface Finish : Hairline/Mirror/Dull Finished
3)Core : Non-Toxic Polyethylene core or Fire Retardant Mineral Core
4)Base : 0.3㎜ or 0.4㎜ SUS304 Stainless Steel

Alcopanel SA



Specification of Alcopanel SA

1)Surface : 0.3㎜ or 0.4㎜ SUS304 Stainless Steel
2)Surface Finish : Hairline/Mirror/Dull Finished
3)Core : Non-Toxic Polyethylene core or Fire Retardant Mineral Core
4)Base : Mill Finish or Polyester Service Coating

Standard Measurement of Alcopanel ss

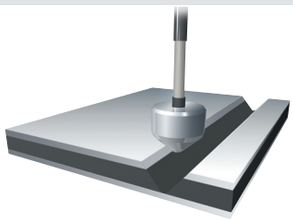
1) Thickness : 4㎜
2) Standard Width : 1,000㎜
3) Length : Max. 4,000㎜ (In case of above 4,000㎜, special discussion is required)

General Properties of Alcopanel ss

Density	8.16 kg/㎡
Flexural Strength	≥ 130 MPa
Flexural Modulus	≥ 3.5 10³ MPa
Thermal Expansion	≤ 1.8X10⁻⁵/℃
Shear Strength	≤ 68 MPa
Penetrating Resistance	≥ 20 kN
Same Rigidity as Stainless Steel	2.4㎜

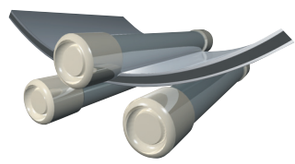
Processing Method

Aluminium & wooden working machines can be used for fabrication of ALCOPANEL.

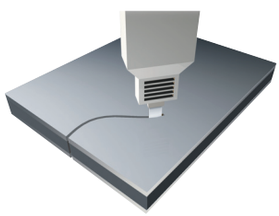


· Grooving

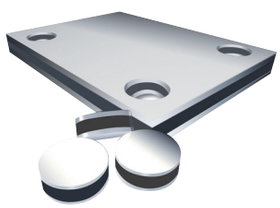
· Cutting



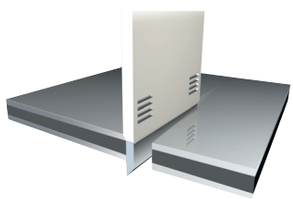
· Bending



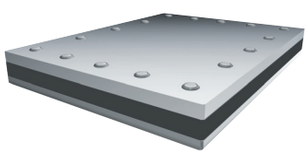
· Milling



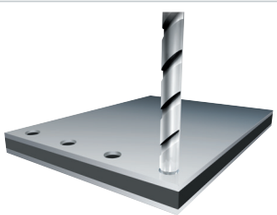
· Punching



· Shearing



· Joining



· Drilling

Running saw and panel saw for wood-working can cut ALCOPANEL easily.
The carbide tip blade made for aluminium and plastic is recommended.

Certificate of Alcopanel

· CEBTP (France) · PSB (Singapore) · ISO 9001 · ISO 14001 · BRANZ (New Zealand) · SGS (United States) · KS (Korea)

· BS 476, PART 6 (United Kingdom) · BS 476, PART 7 (United Kingdom) · UBC 26-9 (United States) · ASTM E 84-01 (United States) · ASTM E 119 : 2005 (2Hours) · Enforcement Ordinance 108-2 of the Building Standards Law (Japan) · Alcopanel SS 4T FR Test Report (Korea) · Alcopanel ZN 4T FR Test Report (Korea)

ALCOPANEL is highly recommended for external wall cladding for buildings and it has been used in marine and automobile industries. In addition to the above, it is also ideal for interior finishing design requirements.

ALCOPANEL with its non-gimmick approach offers excellent value for money to customers.


▶ Honda Motor-Shop, Australia


▶ Mercure Hotel in Liverpool NSW, Australia

Oceania

▶ O'Riordan-Street, - Alexandria, Australia

▶ Westfield-Kotara-MBA-Hunter-St, Australia


▶ Kingstone - Foreshores, Australia


▶ Westfield-Kotara-MBA-Hunter-St, Australia

▶ Mercure Hotel in Liverpool NSW3, Australia

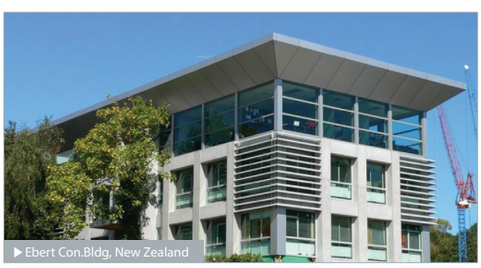

▶ Brindabella, Australia

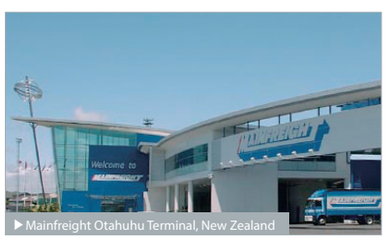
▶ GM Motor-Shop, Australia


▶ Benz Car shop, Australia


▶ Macathur Square Shopping Centre, Australia


▶ Macathur Square Shopping Centre, Australia


▶ Ebert Con.Bldg, New Zealand



▶ Mainfreight Otahuhu Terminal, New Zealand


▶ Rivier Hurst Apartment, New Zealand


▶ Firca, Fiji

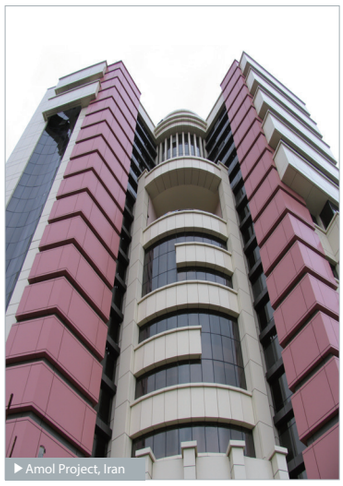
▶ Shreedhar Motors, Fiji

▶ Carpenters-Motos, Fiji

Mideast & Africa


▶ Azari Fuel Station, Iran

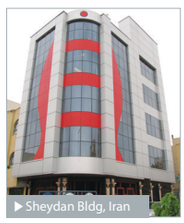

▶ Kish Island Project, Iran


▶ Amol Project, Iran


▶ Riyad Center, Kuwait


▶ Abadan kadoos, Iran


▶ Jordan Project, Iran


▶ Sheydan Bldg, Iran


▶ Triumpharma B/D, Jordan


▶ High Tech Bldg, Jordan


▶ Dubai Airport Free Zone Authority, U.A.E


▶ Dabbous, Kuwait


▶ Hasheminezhad-Hospital, Iran


▶ Iran Insurance Co, Iran


▶ Superpipe Bldg, Iran


▶ Mana Makaron, Iran


▶ Cleopatra, Egypt

▶ Honda Motor Shop, Egypt


▶ Islamic Bank, Egypt

▶ HSBC Bank, Egypt


▶ Riyadh Metro, Saudi Arabia


▶ Riyadh Metro Line 4, Saudi Arabia


▶ Blom Bank New Cairo, Egypt


▶ Office Building, Sudan


▶ Geshm Airline, Iran


▶ The Gate New Cairo, Egypt


▶ Al Arabi Stadium, Qatar


▶ Lagos Travel Inn, Nigeria


▶ Mayfair Plaza, Tanzania

Asia

▶ Higasikiwa1, Japan

▶ Sekisui1, Japan


▶ ACME Specialized Pharmaceuticals Limited, Bangladesh

▶ Trust Bank Ltd, Gulshan, Bangladesh

▶ Mimi Super Market_ctg, Bangladesh

▶ DPS STS School, Bangladesh

▶ Banglalink, Bangladesh


▶ Chennai Airtel, India

▶ Plaza Semanggi, Indonesia


▶ Batam Mall, Indonesia


▶ Con Son Airprot, Vietnam


▶ Cikarang Utama, Indonesia

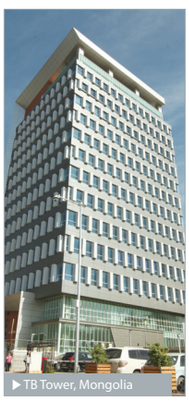

▶ Meghna Daudkhandi Toll Plaza, Bangladesh


▶ Agribank, Vietnam

▶ WTC Mangga Dua, Indonesia


▶ JayaAnchol, Indonesia

▶ BNS Center, Bangladesh


▶ TB Tower, Mongolia


▶ Linkway, Singapore

▶ Camau Airport, Vietnam

▶ MBK Center, Thailand

Exellent Color Uniformity / Lightness and Rigidity / Superior Flatness /
Corrosion Resistance and Weatherbility / Superior Fabrication / Maintenance

▶ Junction Square, Myanmar


▶ M Plaza, Mongolia


▶ Park 24 Condominium, Thailand


▶ UNITECH Info Space, India

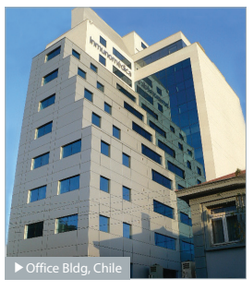
America

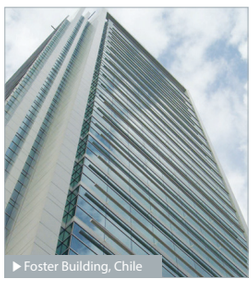
▶ Jack in the Box, U.S.A


▶ Hispenic Hospital, Uruguay


▶ Stanislause B/D, Trinidad n Tobacco


▶ Vida Tres, Chile


▶ Office Bldg, Chile


▶ Foster Building, Chile


▶ Obras Bldg, Chile

▶ Palm SquareCasino, U.S.A


▶ New International Airport B/D, Romania

▶ Seat Auto Drive, Italy


▶ Edificio Versalles, Honduras

Europe_ Russia

▶ Panorama Department Store, Russia

▶ Auto Market Usato Fidato, Italy


▶ National Cancer Hospital Khabarovsk, Russia


▶ Office Bldg, Russia


▶ EU Head Quater, Romania

Korea


▶ JeonBuk Univ, Korea


▶ Sherville officetel, Korea


▶ Winia Mando Office, Korea

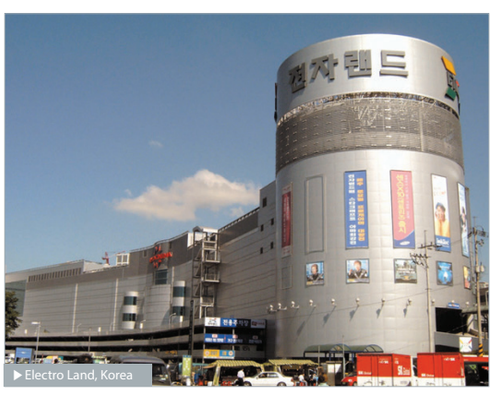

▶ Gyungnam Jinju Cancer Center, Korea


▶ Korea Cancer Center Hospital, Korea


▶ Seoul Techno Park, Korea


▶ Hansol Officetel, Korea

▶ Jaguar, Korea



▶ Electro Land, Korea

▶ World Cup Stadium, Korea


▶ Vervile, Korea


▶ SLC Co, Korea


▶ Dorasan Station, Korea


▶ Gangwon Provincial Police Agency, Korea


▶ Changwon Covention Center, Korea