

Next Building Generations

Future | Value | + Innovate

회사 및 서비스 소개

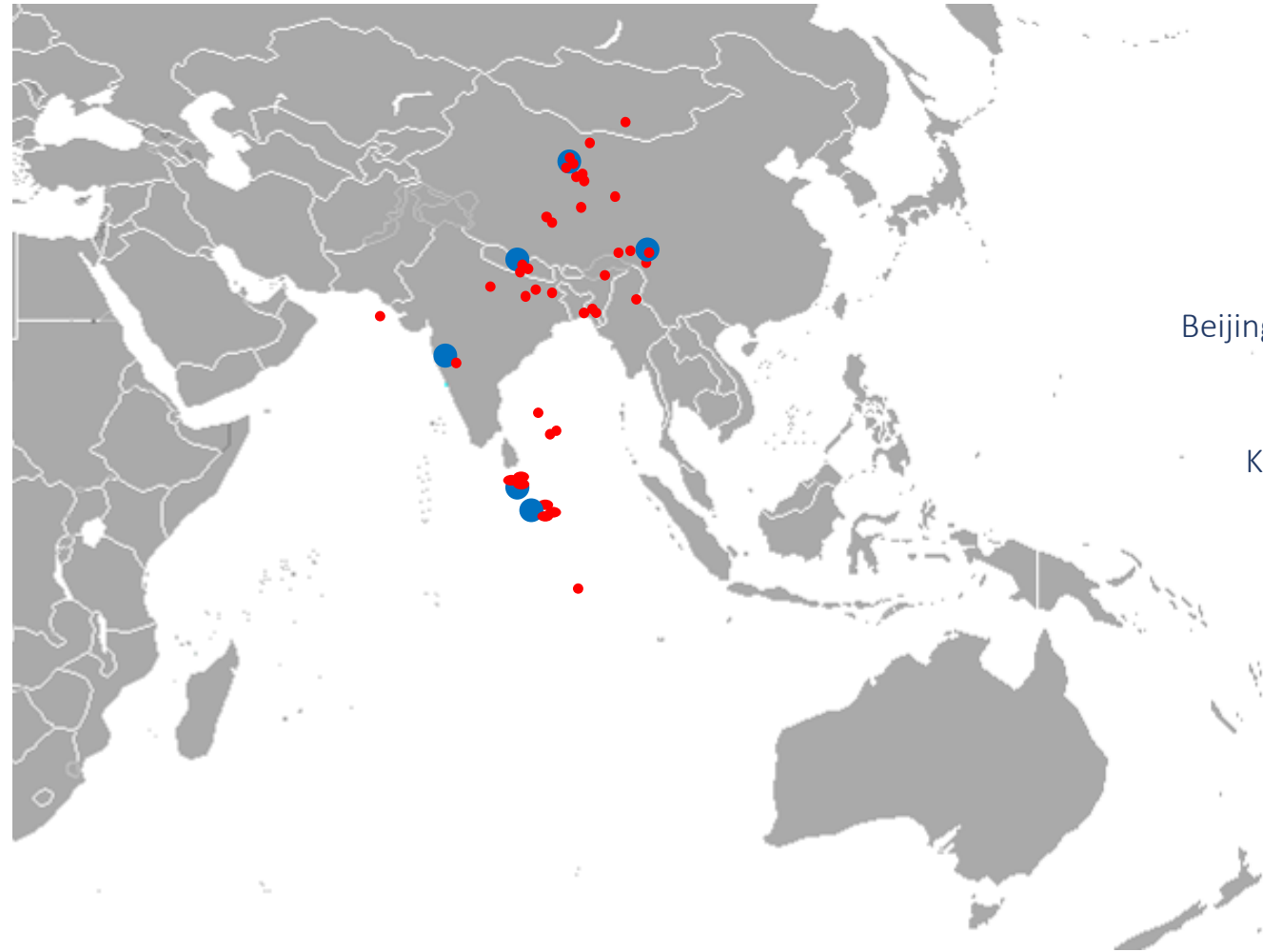
Building System & Diagnostics



1.1 설립 배경

1. Founded in 2021 in Korea
2. Environmentally Sustainable Design Consultancy & Technology Transfer
3. Local office of **Building System and Diagnostics Pte Ltd(BSD)** in Singapore, which is a regional consultancy firm in Southeast Asia.
 - Founded in 2003 in Singapore
 - Spin-off from a research project between **NUS** and **BCA**
 - Presence in China, Singapore, Malaysia, Myanmar, and Korea
 - Over 800 projects -- meeting energy and environmental footprint targets.
 - Experienced team. Over 80 international & local professional engineers regionally
 - Independent energy and environmentally efficient design consultancy services + Building physics and engineering company
 - **SGBC accredited** – Environmentally Sustainable Design

1.1 설립 배경



Offices

Singapore
(2003)

Beijing/ Shanghai
(2011)

Kuala Lumpur
(2010)

Yangon
(2017)

Vietnam
(2019)

KOREA
(2021)

6 Countries

Over projects **600**

1.3 BSD's SERVICES

ESD Consultancy
Smart & Sustainable
Master Planning
Building Physics
Carbon Consultancy
Applied Research
and
Development(R&D)
Green Building
Workshop

- ◆ Energy and environmental design advisory
- ◆ Energy management
- ◆ MEP Design Optimization
- ◆ Building performance modeling
- ◆ Green Building certification
- ◆ Commissioning and POE survey



BCA-IDA GREEN MARK



EARTHCHECK



2.1 Our Service (국내외 건축 인증제도)

1 국내 건축물 인증 컨설팅

(1) 비주거 & 주요 인증기준

- 건축물의 에너지절약설계기준
- 건축물에너지효율등급 인증
- 제로에너지건축물 인증
- 녹색건축인증(G-SEED)
- 장애물 없는 생활환경(BF) 인증

(2) 주거건축물 인증기준

- 에너지절약형 친환경주택의 건설기준
- 건강친화형 주택 건설기준
- 장수명 주택 건설·인증기준
- 공동주택 결로 방지를 위한 설계기준
- 범죄예방(CPTED) 건축기준

2 국외 건축물 인증 컨설팅

(1) 미국그린빌딩인증(LEED)

- 미국 녹색건축위원회(USGBC)의 국제 녹색건축인증제도

(2) 싱가포르그린빌딩인증(GREENMARK)

- 싱가포르 녹색건축위원회(SGBC)의 국제 녹색건축인증제도



LEED
CERTIFIED

40 - 49



LEED
SILVER

50-59



LEED
GOLD

60-79



LEED
PLATINUM

80+

2.1 Our Service (건축환경성능분석)

3 건축환경성능분석

(1) 열환경 분석

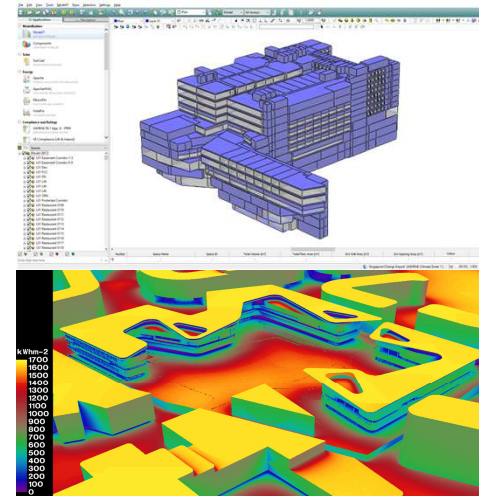
- 건물부하 및 에너지소비량 / 에너지자립률 분석

(2) 빛환경 분석

- 일조 / 자연채광 분석
- 조명설계 시뮬레이션

(3) 기류 분석

- CFD프로그램을 활용한 기류환경 분석



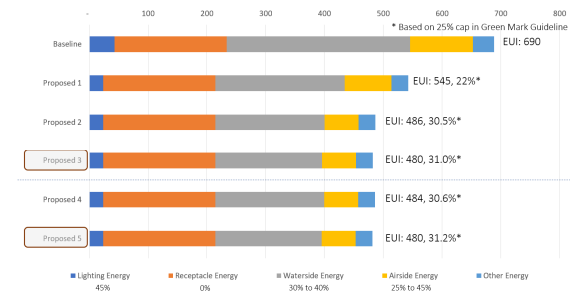
4 Special Consultancy

(1) 친환경건축 · 빌딩에너지 컨설팅

- 친환경계획 및 에너지계획 등 친환경설계 통합솔루션 제안

(2) R&D 연구과제

- 공공정책 및 기술 제안 연구과제 및 용역 수행



2.1 Our Service (연구개발)

5 연구개발(R&D)

(1) 공공 & 민간 연구과제

- 건물에너지 관련 공공 연구과제 수행
- 국내외 다수 연구과제 참여 및 제안



3. 프로젝트 이력

수행 연구과제

NO	수행 연구 과제	비고
1	공동주택 거주 특성별 건물에너지 사용 특성 데이터 현장조사 (한국건설기술연구원, 2021.09 ~ 2021.11)	
2	건축물에너지사용 행태분석을 위한 재실자수 예측방법론 개발기획 (한국건설기술연구원, 2022.05 ~ 2022.09)	
3	공동주택 건축물 대상 통계데이터 기반 에너지 사용량 행태 분석 방법론 개발(한국건설기술연구원, 2022.06 ~ 2022.11)	
4	동남아 지역 스마트온실, 수직농장 적용 냉방 패키지 성능 평가 단체표준(안) 작성을 위한 사례조사 (한국건설생활환경시험연구원, 2022.07 ~ 2022.10)	
5	녹색건축인증을 위한 국외 스마트팜 사례 및 설계 요소 도출 연구(한국건설기술연구원, 2023.08 ~ 2023.12)	
6	학교 공기환경 컨설팅 표준운영절차-고도화(한국건설생활환경시험연구원, 2023.10 ~ 2023.11)	

수행 프로젝트 (인증 관련- LEED)

NO	Project description	Country	LEED	Award	Scope	Year of Award
1	Tampines Grande office building (400,000 sqft)	SG	NC	GOLD	Energy modeling for LEED	2009
2	HSBC building in K.L. (200,000 sqft)	MY	C&S	GOLD	LEED Advisory	2010
3	AUTODESK office at Solaris	SG	CI	Platinum	LEED Advisory (Contractor)	2011
4	BHP Bilinton (210,000 sqft) office Marina Bay Financial Center	SG	CI	Gold	LEED Advisory (Contractor)	2011
5	Asia Square Tower 1 Grade A office building and retail podium (GFA~ 1 million sqft)	SG	C&S	Platinum	LEED Advisory	2012

4. 프로젝트 이력

수행 프로젝트 (인증 관련- LEED)

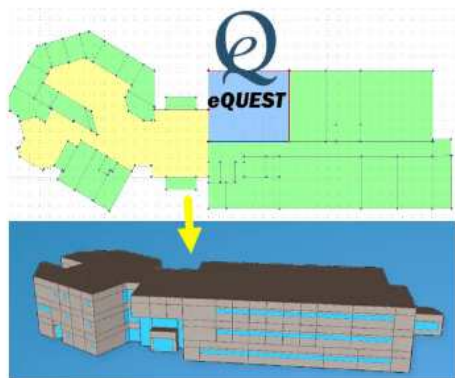
NO	Project description	Country	LEED	Award	Scope	Year of Award
6	Becton Dickinson office (223,000 sqft) at Icon building	SG	CI	Certified	LEED Advisory, LEED CxA	2012
7	P and G Singapore Innovation Center	SG	NC	Silver	LEED Advisory	2012
8	Shell U-village, Cyberjaya, K.L (323,000 sqft)	MY	CI	Platinum	LEED Advisory, LEED CxA	2012
9	Integra Office Tower (GFA: 777,000 sqft) K.L	MY	C&S	Platinum	LEED Advisory	2013
10	Google Office Level 29/ 30 (63,000 sqft) at Asia Square, Towers 1	SG	CI	Platinum	LEED Advisory	2013
11	Standard Chartered Bank (200,000 sqft) in Changi Business Park Singapore	SG	CI	Gold	LEED Advisory	2013
12	Standard Chartered Bank office (430,000 sqft) in Marina Business and Financial Centre, Singapore	SG	CI	Silver	LEED Advisory	2013
13	Bank of Amercia (183,000 sqft) at 50 Collyer Quay	SG	CI	Gold	LEED Advisory	2013
14	Bloomberg Office, Kuala Lumpur	MY	CI	Gold	LEED Advisory	2013
15	FacilityLink office (8300 sqft)	SG	CI	Platinum	LEED Advisory	2013
16	National Instruments plant with office block in Penang, Malaysia	MY	NC	Silver	LEED Advisory, LEED CxA	2014
17	Sunway Montana Sales Gallery in Malaysia (24,000 sqft)	MY	NC	Platinum	LEED Advisory	2014
18	CEVA Logistics Hub (GFA 42,000 sqft)	SG	NC	Platinum	LEED Advisory	2014
19	Cisco office (12,000 sqft)	SG	CI	Gold	LEED Advisory, LEED CxA	2014
20	Google Office Level 31 (31,000 sqft) at Asia Square, Towers 1	SG	CI	Platinum	LEED Advisory, LEED CxA	2014
21	T27 Keppel Data Center	SG	C&S	Gold	LEED Advisory	2014
22	Asia Square Tower 2 Grade A office and hotel building with retail podium (GFA~ 900,000 sqft)	SG	C&S	Platinum	LEED Advisory	2015
23	Shell New Data Center and Head Office Extension, Brunei	Brunei	NC	Gold	LEED Advisory, LEED CxA	2015
24	Ken TTDI Office building in Malaysia	MY	C&S	Platinum	LEED Advisory	2018
25	Damansara City Office Tower B, K.L	MY	C&S	Gold	LEED Advisory	2016

4. 프로젝트 이력

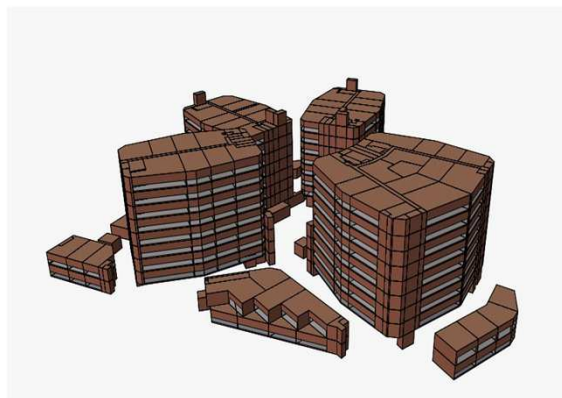
수행 프로젝트 (인증 관련- LEED)

NO	Project description	Country	LEED	Award	Scope	Year of Award
26	Damansara City Office Tower A, K.L	MY	C&S	Gold	LEED Advisory	2016
27	7-Storey Data Centre Facility, Singapore (GFA: 384,324 sqft)	SG	NC	Gold	LEED Advisory	2016
28	Horizon Lakeview in Guangzhou Knowledge City (total 2600 units)	China	NC	Gold	LEED Advisory	2016
29	Horizon Lakeview Sales Gallery	China	NC	Gold	LEED Advisory	2016
30	Jewel Changi Airport	SG	C&S	Gap analysis	LEED Advisory	2017
31	Tech-link Logistics Hub, GFA~ 93,425 sqm	SG	NC	Gold	LEED Advisory	2017
32	Mapletree Business City 2 (GFA 124,884 sqm)	SG	C&S	Gold	LEED Advisory	2017
33	Toll City Logistics Warehouse (GFA~ 100,000 sqm)	SG	NC	Gold	LEED Advisory	2018
34	Boston Scientific Plant GFA~30,000 sqm	MY	NC	Gold	LEED Advisory	2018
35	Hewlett Packard Office Fitout (140,000sf)	SG	CI	Gold	LEED Advisory	2017
36	PJ Icon City	MY	NC	Gold	LEED Advisory	On-going
37	PJ Icon City-Phase 1B, K.L	MY	ND	Precert Gold	LEED Advisory	On-going
38	Boutique Office Tower 5 in PJ Icon City, K.L	MY	C&S	Precert Gold	LEED Advisory	On-going
39	U.A.B Building, Penang	MY	NC	Certified	LEED Advisory	2018
40	Project Optimus Data Center	SG	NC	Gold	LEED Advisory	2019
41	NUS Yale Campus, Singapore	SG	EBOM	Gap analysis	LEED Advisory	2020
42	DB Schenker warehouse, Singapore 7 sty warehouse (GFA~ 51,470sqm)	SG	NC	Gold	LEED Advisory LEED CxA	2020
43	Google Jakarta	SG	CI	Silver	LEED Advisory	2019
44	Afro Asia Green Office tower (GFA~17,000 sqm, 19 sty)	SG	NC	Gold	LEED Advisory LEED CxA	2021
45	Residential tower at TRX, KL (GFA~775,000 sqft)	MY	NC	Certified	LEED Advisory LEED CxA	On-going

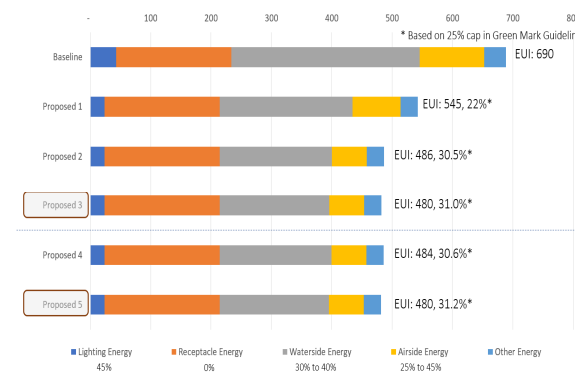
5. 주요 업무 (건축 환경 시뮬레이션분석) Building Performance Simulation



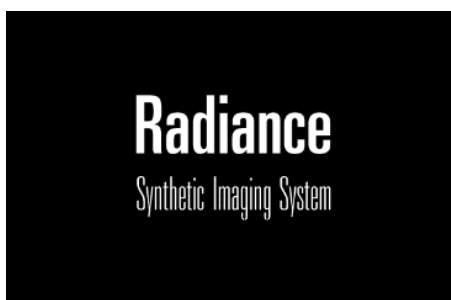
에너지분석 1



에너지분석 2



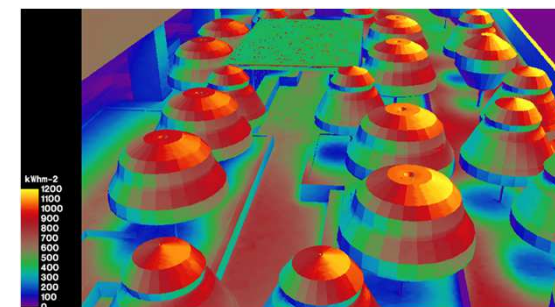
에너지분석 3



채광성능 분석 프로그램

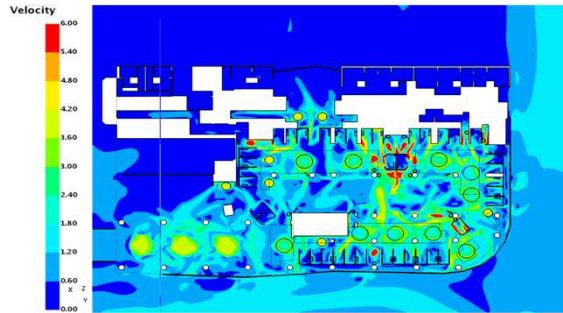
	Glass VLT 30%	
	DA: Daylighting Performance	Udle: Glare Performance
Simulation Result		
DA / Udle Percentage	47.0%	10.0%
DA / Udle Area	1,657	351
Daylit Area	1,306	

채광성능 분석

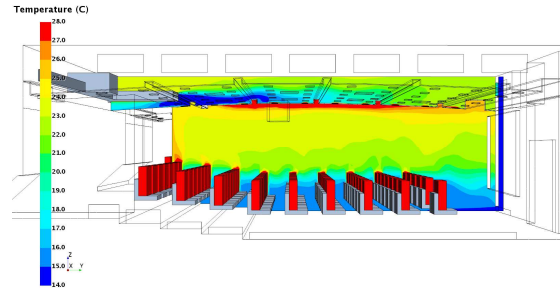


일조성능 분석

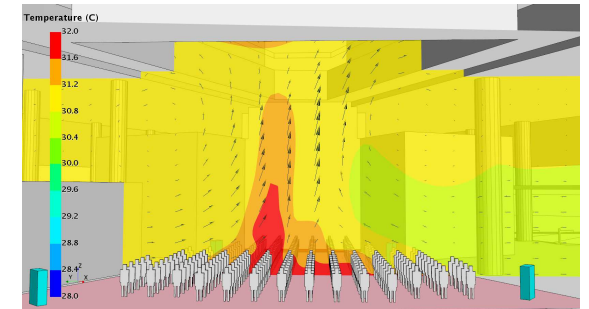
5. 주요 업무 (건축 환경 시뮬레이션분석) Building Performance Simulation



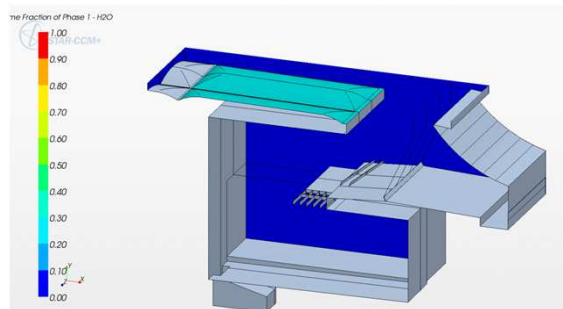
열적쾌적성 분석 1
(NV/Fan/Heat)



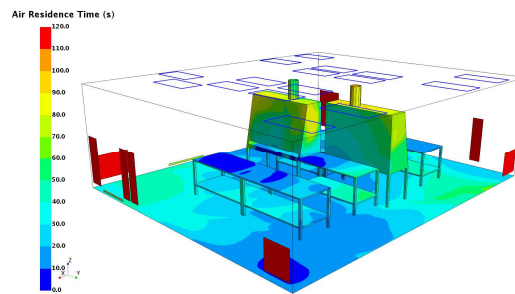
열적쾌적성 분석 2
(기계환기)



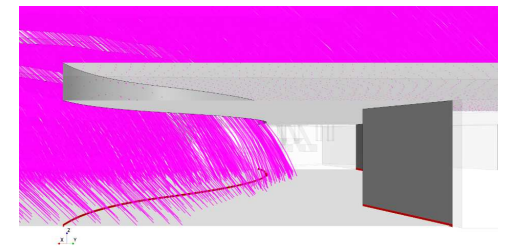
열적쾌적성 분석 3
(보조환기)



빛물흐름 설계

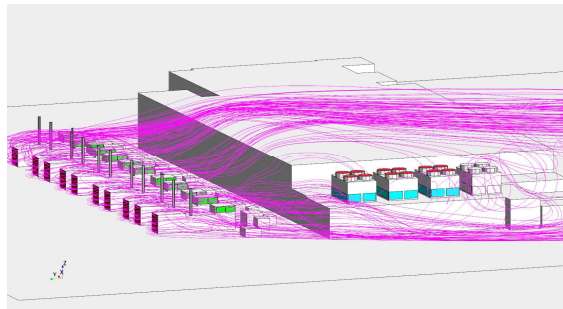


외부, 내부 환기 분석
(공기 교체/신선도 등)

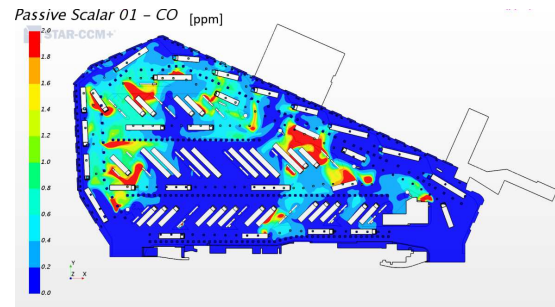


비바람 시뮬레이션분석

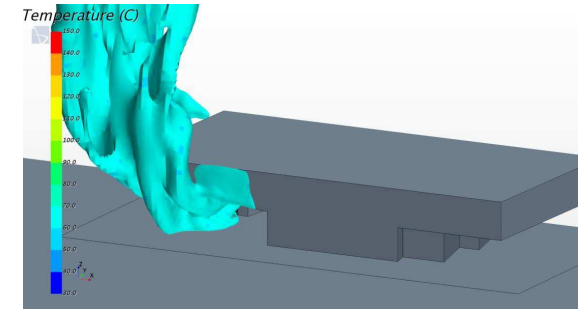
5. 주요 업무 (건축 환경 시뮬레이션분석) Building Performance Simulation



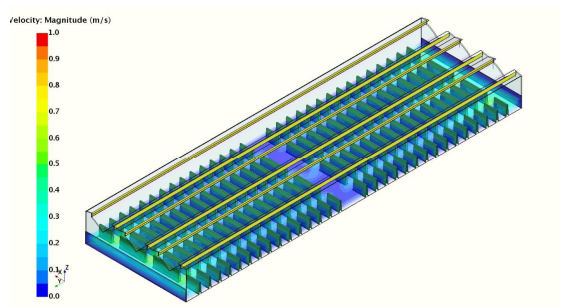
발전기 배기 분산 설계



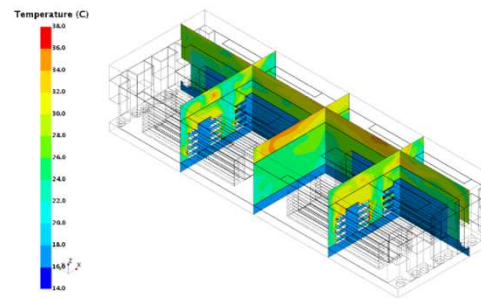
오염물질 분산 설계



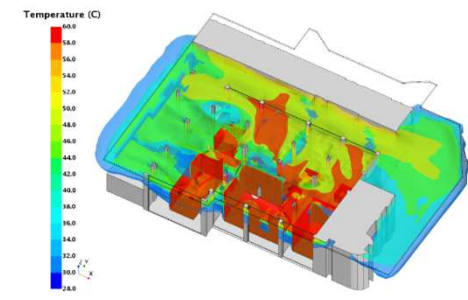
화재 및 연기 분산 설계



실내 농장 시스템 분석



방열 분산 설계 1
(데이터센터)



방열 분산 설계 2
(변전소)

Appendix

프로젝트 Reference

Design & Architect & Asia Networks



5 Relevant Project Reference

ASIA SQUARE TOWERS

LEED Platinum & Green Mark Platinum



Green Features :

1. Estimated energy savings: 5,840,460KWh/yr and 4,285,678KWh/yr and water savings: 40,982m³/yr and 29,634m³/yr.
2. Passive Low Energy design for building facade to achieve ETTV of 35.1W/m². Natural ventilated city room instead of by means of active system.
3. Enthalpy heat recovery wheel to recover cooled exhausted air for fresh air pre-cooling at PAHU.
4. Integrated heatpipes design for cooling coil at PAHU for efficient dehumidification and temperature control.
5. Photo detectors integrated with perimeter lighting control to turn off lighting when interior lux level exceeds design requirement.
6. Sunpipes to harvest daylighting into carpark podium and roof stairs.
7. Incorporated 192KWp/53Wp of Solar Photovaltaic panel to harvest solar energy for electricity production at roof.
8. Singapore's first On-site bio diesel plant to convert waste cooking oil for bio diesel production.

5 Relevant Project Reference

MARINA BAY SANDS INTEGRATED RESORT Green Mark Platinum

Green Features:

1. Extensive use of LED light.
2. SGLS certified products (Ceiling, door, drainage cell, paint, partition board raise floor pedestal, timber decking, water proofing and fire-related board for duct cladding).
3. Rainwater harvesting for toilet flushing.



5 Relevant Project Reference

CHANGI AIRPORT TERMINAL 4

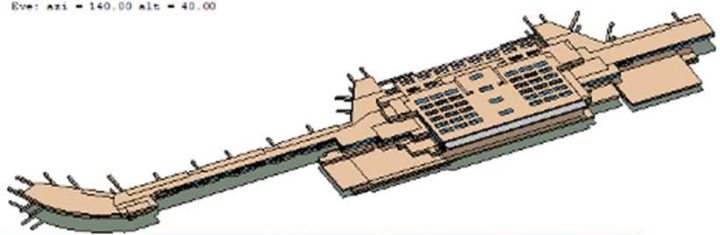
Green Mark Gold^{Plus}

Green Features:

1. High performance Double Glazing Unit for façade glass and skylight to reduce solar heat gain
2. Energy efficient air conditioning system - centralized water-cooled chiller water system with target efficiency of 0.60 kW/Rton
3. Extensive use of LED lighting for arrival & departure halls and corridors
4. State-of-the-Art Individual Carrier System (ICS) for Baggage Handling System to ensure both energy and process efficient of baggage handling.
5. Water-efficient water fittings that are complying to PUB WELS “Excellent” & “Very Good” rating



5 Relevant Project Reference



Changi Airport Terminal 3



Singapore Sports Hub



Gardens by the Bay



Mosque at DOHA international Airport

5 Relevant Project Reference

Afro Asia i-Mark

LEED BD+C v2009 Core & Shell

Platinum Non-Residential Building



Redlion Warehouse Singapore

LEED BD+C v4 Warehouse

Gold Non-Residential Building



5 Relevant Project Reference

Menara Ken TTDI

Menara Ken TTDI

LEED Platinum



STT Loyang China

LEED BD+C Data Center

LEED Gold

