





BillionGroup Technologies Ltd.
兆豐科技設備有限公司

Your Professional Energy Consultant

OUR VISION & MISSION

“We shape Energy for a better World”

Since 1991

*“To foster technology innovation with the express
Provision of happiness for all people around the world”*

BILLIONGROUP

CONSULTANT SERVICES



Waste Management,
Waste Recycling,
Waste to Energy



Energy &
Environmental



Green
Transportation

BillionGroup Consultant Services

Energy and Environmental

ENERGY EFFICIENCY IMPROVEMENT FIELDS

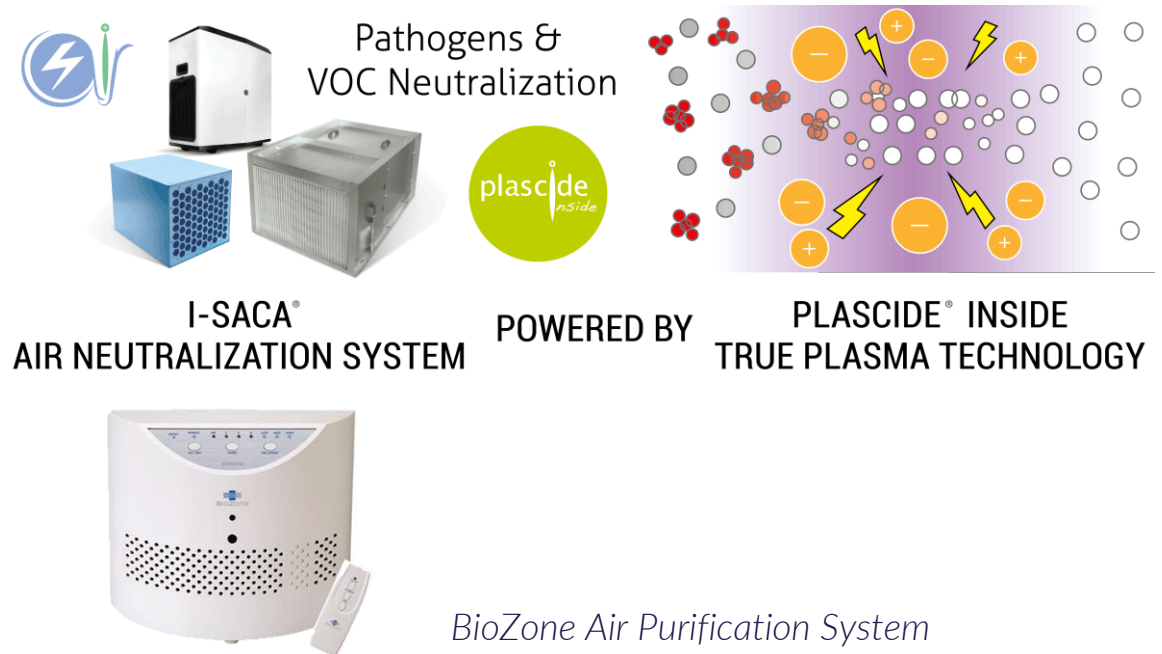
- ✓ Cities
- ✓ Buildings
- ✓ Manufacturing
- ✓ Airport & Transportation
- ✓ Electrical
- ✓ Air-conditioning
- ✓ Lighting
- ✓ All energy systems

SERVICES INCLUDED BUT NOT LIMIT TO :

1. Air Neutralization & Purification
2. Water Purification
3. Energy, Carbon & Environmental Management
4. Lighting
5. Air-Conditioning System
6. Thermal Management Product
7. Renewable Energy
8. Others

AIR NEUTRALIZATION & PURIFICATION

- I-SACA Air Neutralization System powered by Plascide Plasma Technology
- Air Purification System by Photoplasma Technology
- Reaction rate for treating airborne microorganisms
 - ✓ 180 times faster than UV alone
 - ✓ 2000 times faster than Ozone alone



WATER PURIFICATION



- JTop Water Purification System



- VSEP Vibratory Shear Enhanced Processing



- OFS Online Process Water Monitoring and Treatment System (No Chemical Substance)

ENERGY, CARBON & ENVIRONMENTAL MANAGEMENT



- ✓ ISO 50001 Energy Management System
- ✓ ISO 14001 Environmental Management System
- ✓ Education Programmes and Projects
- ✓ Seminars and Forums

Energy Efficiency & Environmental Friendly



ADVANCED DIGITAL LIGHTING SYSTEM

Key to Solution:

Provide INTEGRATION OF INTELLIGENCE — Sensing, Controls and Wireless Networking Into well-designed high bay luminaries.

Regularly **saving** customers up to **90%** on their lighting energy costs.



ADVANTAGES FROM ADVANCED DIGITAL LIGHTING SYSTEM



ENERGY SAVINGS

Energy Efficiency Enhancement
Maximize and validate energy savings.



PRODUCTIVITY

Operational Efficiency Improvement
Increase productivity with operational insight.
Further energy saving.

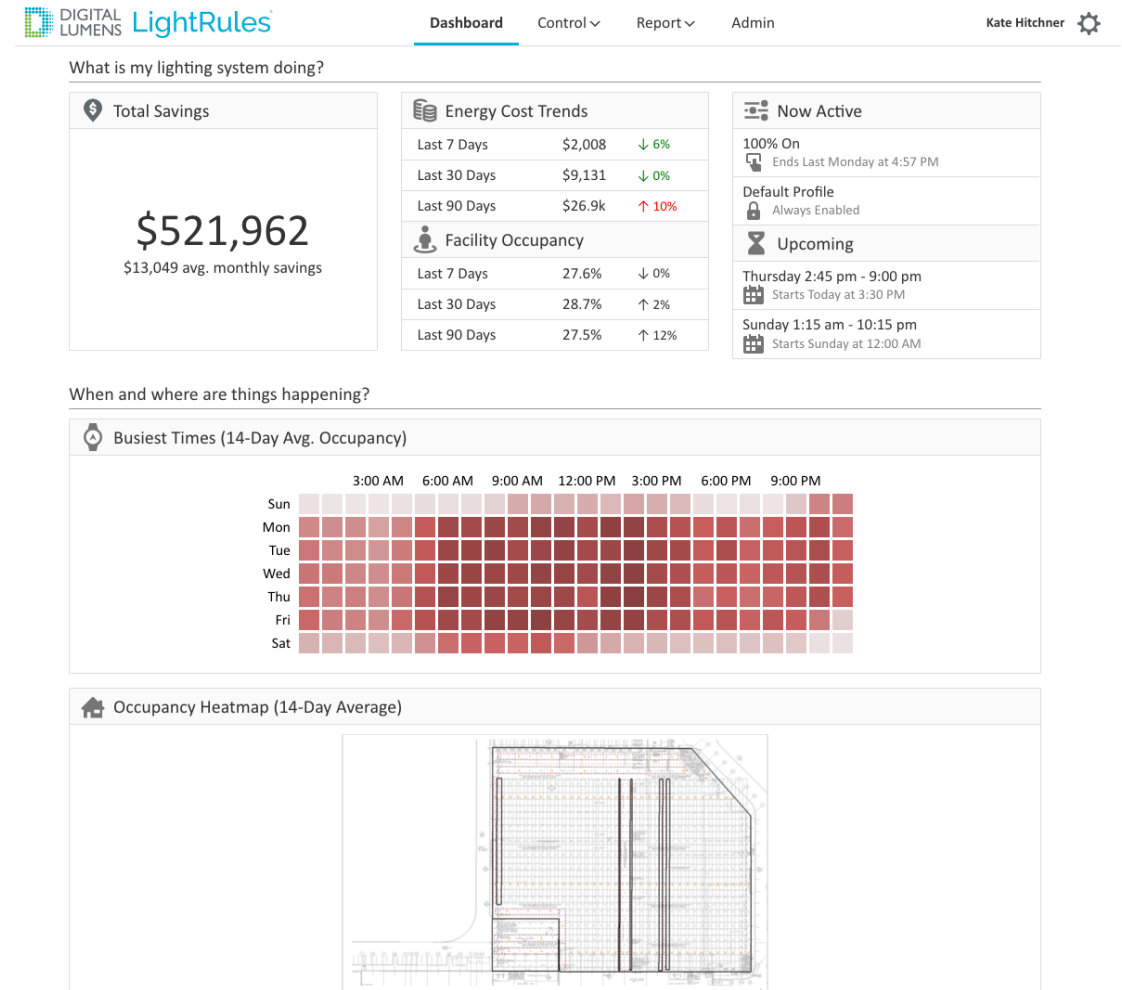


SAFETY

Security Advancement
Improve employee safety and comfort.

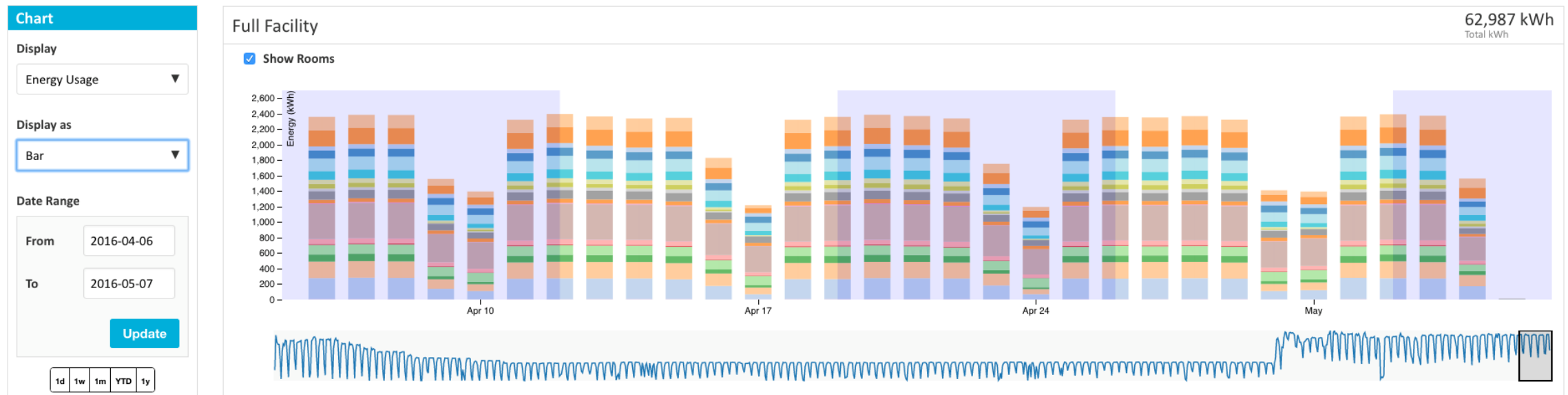
ADVANTAGES FROM ADVANCED DIGITAL LIGHTING SYSTEM: *LIGHTRULES*

- **Automatically** collects usage data
- Able to **Show & Control** on your Computer, IOS/Android Smart Phone
- ✓ Energy Reports
- ✓ Advanced charting engine
- ✓ Email reports & exports



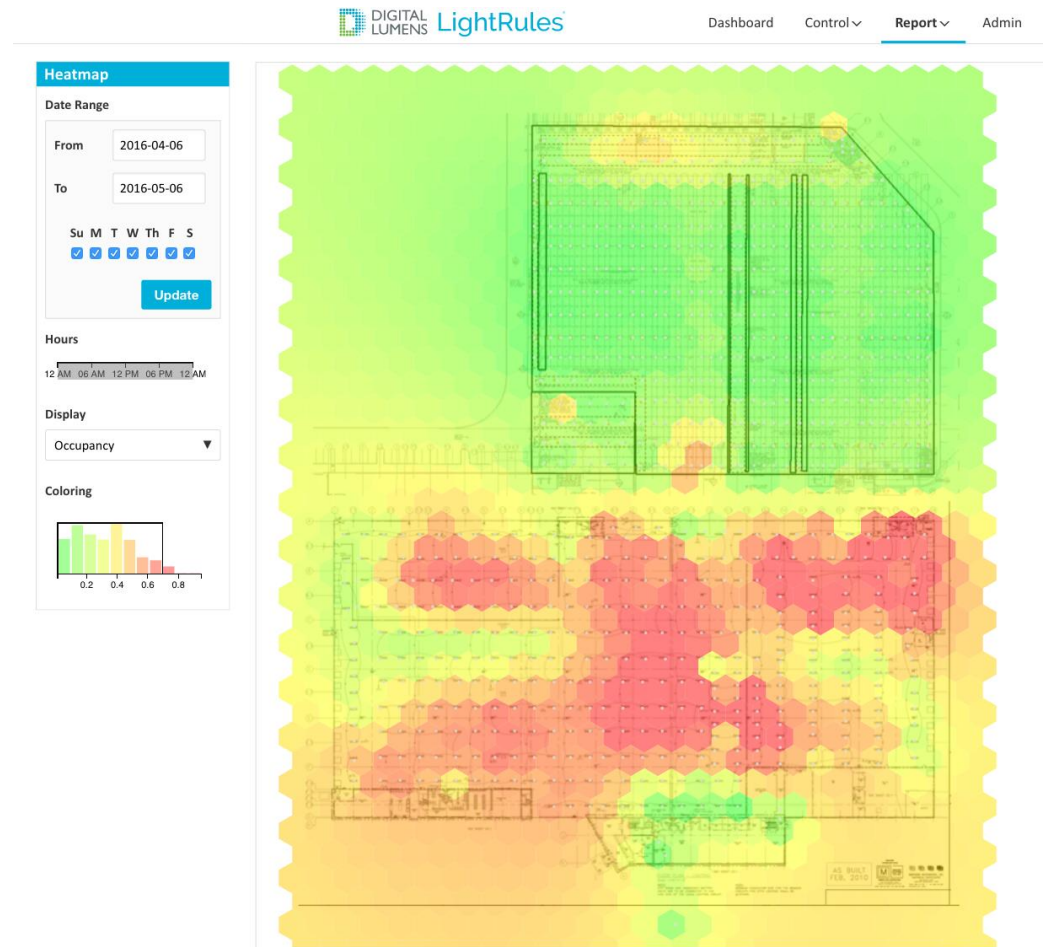
ADVANTAGES FROM ADVANCED DIGITAL LIGHTING SYSTEM: *LIGHTRULES*

- **Visibility** into usage patterns



ADVANTAGES FROM ADVANCED DIGITAL LIGHTING SYSTEM: *LIGHTRULES*

- Heat Map
Further Energy Saving!



JOB REFERENCE FOR ADVANCED DIGITAL LIGHTING SYSTEM

Ace Hardware Corporation

- World's largest hardware cooperative
- Facility Location: Rocklin, CA
- Application: Distribution Center
- Environment: Ambient
- Operating Schedule: 24 x 7

Installation Type:
Installation Size:
Lighting Choice:

Retrofit of T5 HIF & 400-Watt Metal Halides
1,000,000 ft²
Digital Lumens Intelligent Lighting System



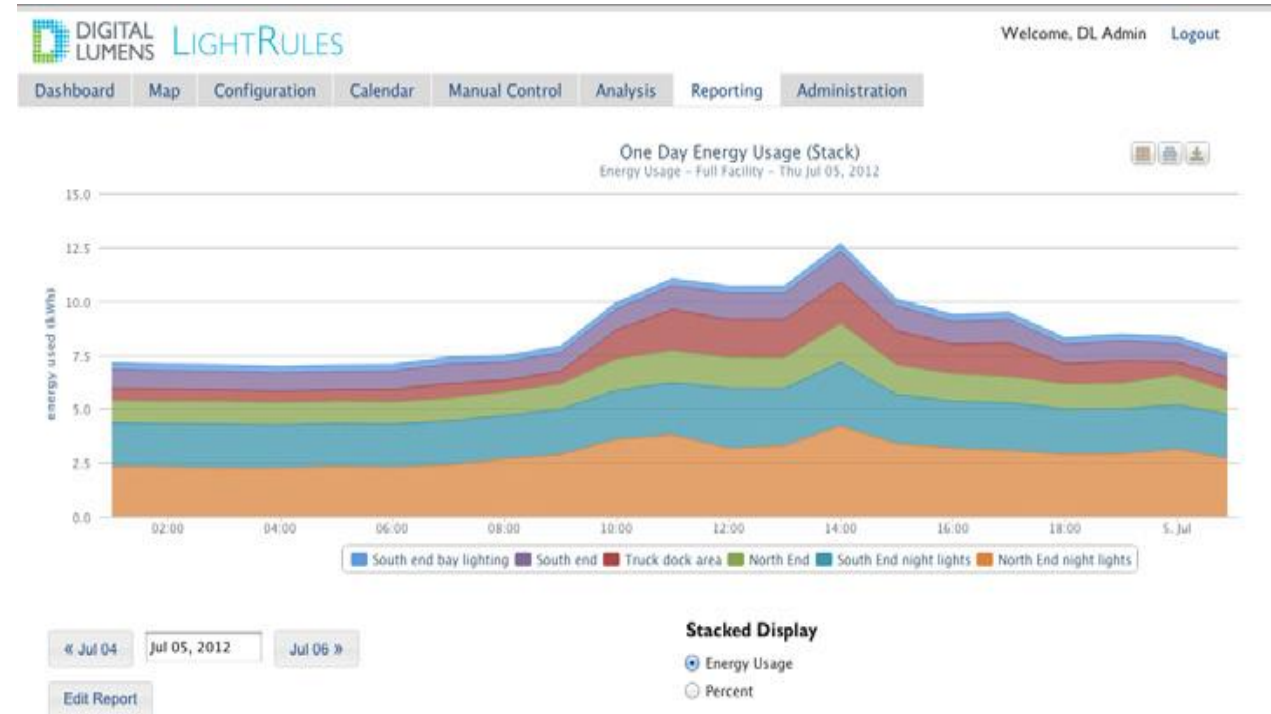
Lighting Energy Savings: 81%

JOB REFERENCE FOR ADVANCED DIGITAL LIGHTING SYSTEM

Creed Monarch

- Specializes in the contract manufacturing of precision machined ferrous and non-ferrous alloy components
- Facility Location: New Britain, CT
- Application: Manufacturing
- Environment: Ambient (up to 100°F at roof)
- Operating Schedule: Up to 12 x 6

Installation Type: Retrofit of T5 HO Fluorescents
 Installation Size: 140,000 ft²
 Lighting Choice: Digital Lumens Intelligent Lighting System
 Annual Cost Savings: \$108,436 at \$0.1046/kWh
 Annual kWh Savings: 1,036,669 kWh



Lighting Energy Savings: 90%

JOB REFERENCE FOR ADVANCED DIGITAL LIGHTING SYSTEM

Associated Grocers of New England

- One of the nation's largest retailer-owned purchasing and distribution cooperatives
- Facility Location: Pembroke, NH
- Application: Cold Storage
- Environment: Refrigerated (-15°F)
- Operating Schedule: 24 x 6

Installation Type: Retrofit of T5 HO Fluorescents
Installation Size: 56,600 ft²
Lighting Choice: Digital Lumens Intelligent Lighting System
Annual kWh Savings: 482,000 kWh



BEFORE

AFTER

Lighting Energy Savings: 90%

JOB REFERENCE FOR ADVANCED DIGITAL LIGHTING SYSTEM

Ben E. Keith Foods

- Nation's eighth largest broad line foodservice distributor and one of the world's largest independent distributors of Anheuser-Busch products
- Facility Location: Missouri City, TX
- Application: Warehouse / Cold Storage
- Environment: Ambient / Refrigerated (-40°F)
- Operating Schedule: 24 x 7



Installation Types:	New Construction
Installation Size:	475,000 ft ²
Lighting Choice:	Digital Lumens Intelligent Lighting System

Lighting Energy Savings: 90%

JOB REFERENCE FOR STREET LIGHTING

Project with
Croatia Government



- Year : 2011
- 300 pcs 90W 4000K installed



- Length of the street : 5 miles
- Height of the pole : 10 m

JOB REFERENCE FOR STREET LIGHTING

Project with
Philippines Government



- Year : 2011
- 1000 pcs 120W 5000K installed
- Length of the street : 20 miles
- Height of the pole : 12 meters

JOB REFERENCE FOR STREET LIGHTING

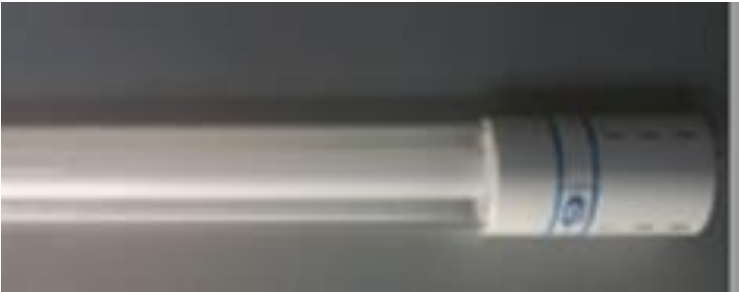
Project with
Uruguay Government



- Year : 2012
- Length of the street : 10 miles

- 700 pcs 120W 4300K installed
- Height of the pole : 10 meter

LIGHTING EQUIPMENT



E4Max Green Lighting System

- High intensity light source offering bright, full-spectrum illumination in an energy saving and low maintenance package

"E4Max" LED Series

- Nano-coating technology
- 50% Energy Efficiency, No mercury and harmful radiation
- Meet ROHS and international standards EN 62471-1 (Eye Safety Risk Assessment)

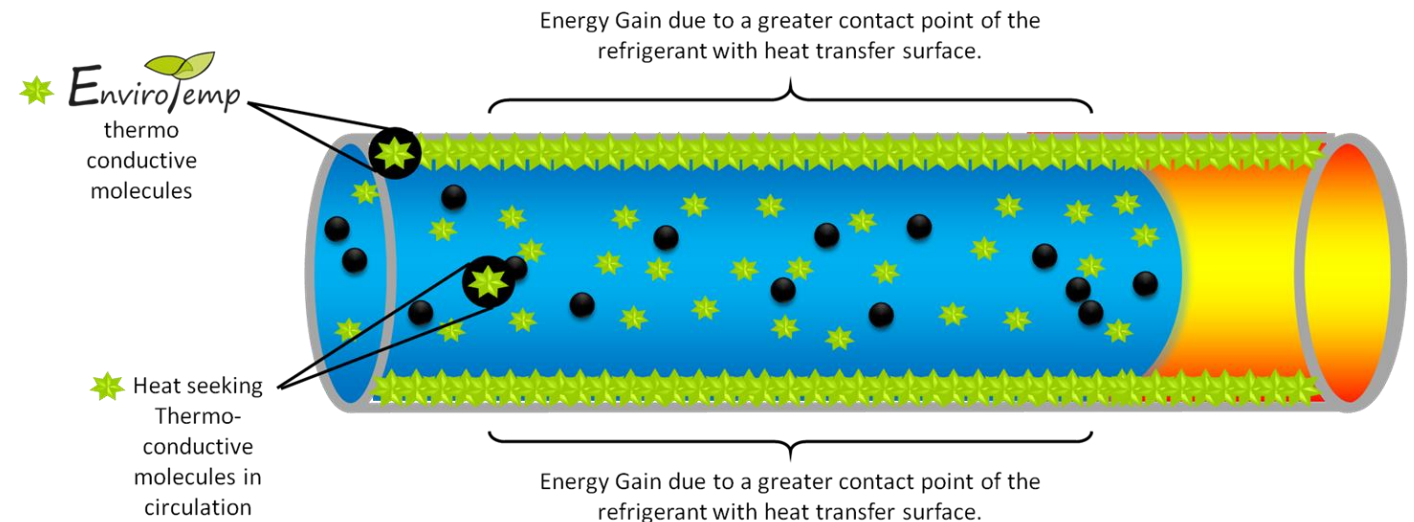
"E4Max" T5 Tube-in-Tube Series

- Benefit of T5 fluorescent tubes in reducing the environmental pollution
- Higher Energy Efficiency, higher Brightness and longer Lifetime

AIR-CONDITIONING SYSTEM

ENVIROTEMP REFRIGERATION ENERGY EFFICIENT SOLUTION

- ✓ Remove the stagnant layer of fouled oil
- ✓ Improve the systems C.O.P. /which can translate into:
 - ✓ *improved performance, increased capacity, prevent future oil fouling, reduce the laminar FRICTION, 18% energy reduction, reduce Maintenance Cost, minimal ongoing cost, restore lost efficiency, support by 100's of thousands of users world wide and fast ROI*



AIR-CONDITIONING SYSTEM EVAPORATIVE

Condensing Way	Air-Cooled	Water-Cooled	Evaporative
Condensing temp	45°C	40°C	38°C
Cooling capacity fan Flow Volume per kW	420-500m ³ /h	120-200m ³ /h	100-160m³/h
Cooling water pump	--	≥20m	3-5m
Cooling capacity energy loss per kW	0.026KW	0.038KW	0.014KW
System COP	2.5-3.2	3.2-3.8	4.2-4.8
Energy Efficiency % compare with Evaporative Chiller	Only 35% or more	Only 15-20%	As a base

AIR-CONDITIONING SYSTEM

"SOLARCOOL" EVAPORATIVE COOLED CONDENSER



**Screw
(Heating/Cooling/Boiling)
Chiller**

Cooling Capacity Range: 215-1720 KW
(61RT-490RT)
Integrated design
IPLV values up to 8
High COP Rate: 4.2 to 4.7



Screw Cool/Heat Chiller



**Modular Cool/Heat
Chiller**

Cooling Capacity Range: 31.0-142 .4 KW
(single) & The Heat Range: 30.8-190 .0
KW (single)
Modular & Integrated design
High COP Rate: 4.2 to 4.7

JOB REFERENCES FOR "SOLARCOOL" EVAPORATIVE COOLED CONDENSER MODULAR COOL/HEAT CHILLER

1. Tsuen Wan Government Offices
2. Unilever Hong Kong Ltd. (Tai Po Industrial Estate)
3. Ruttonjee Hospital



THERMAL MANAGEMENT PRODUCT

SOLARCOOL THERMAL MANAGEMENT SYSTEM

SolarCool Thermal Film

- Substantial A/C energy reduction
- Protect from Sun Heat
- **99% UV Blocking**
- **81% Infra-red light Blocking**
- **High visibility**
- Explosion-proof: Increase safety



THERMAL MANAGEMENT PRODUCT

SOLARCOOL THERMAL MANAGEMENT SYSTEM

SolarCool Thermal Paint

- Able to avoid more than 95% of solar radiation
- **Up to 50% or more Energy Reduction**
- Low cost; Unexpectedly well result
- Pollution-free environment
- Unique effects on building and facilities protection



RENEWABLE ENERGY

WIND TURBINE

TOMO Wind Turbine Renewable Energy

- Automated Blade Angle Adjustments
- The Flywheel Mechanism
- Wind Tunnel/Fin Design for maximizing the energy production



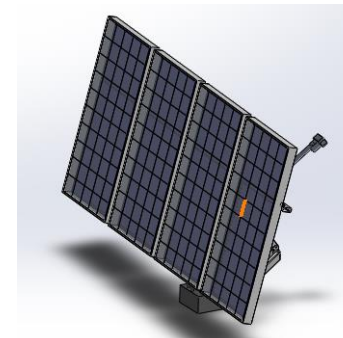
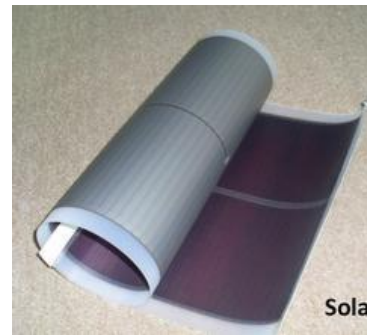
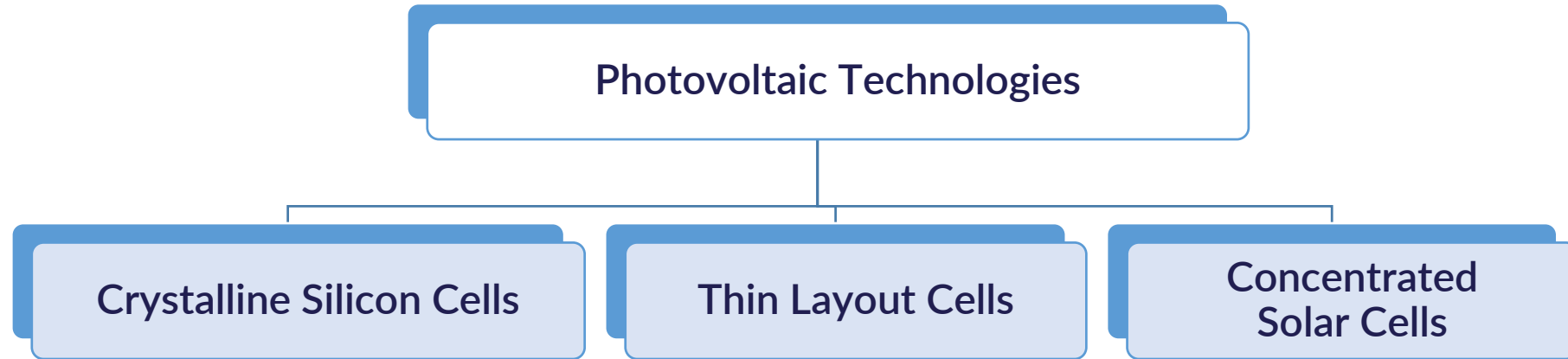
RENEWABLE ENERGY SOLAR PANEL

- 3000 MW Solar PV Project in Middle East under progress
- Apart from 1st and 2nd generations of PV Panel, BillionGroup will adopt the latest 3rd generation of PV panel for upcoming Solar PV projects in Asia and Europe.



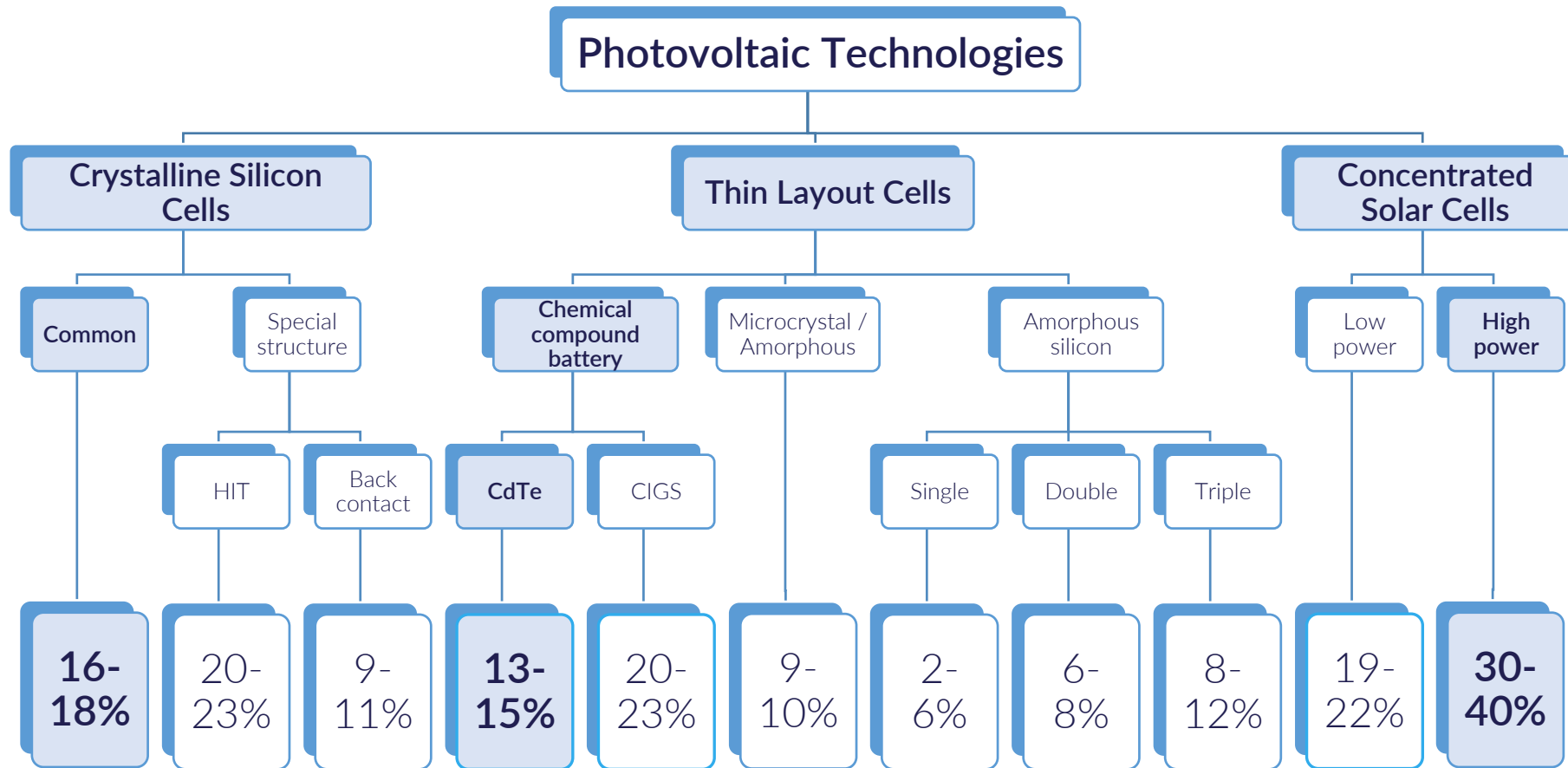
RENEWABLE ENERGY

CONCENTRATED PHOTOVOLTAIC



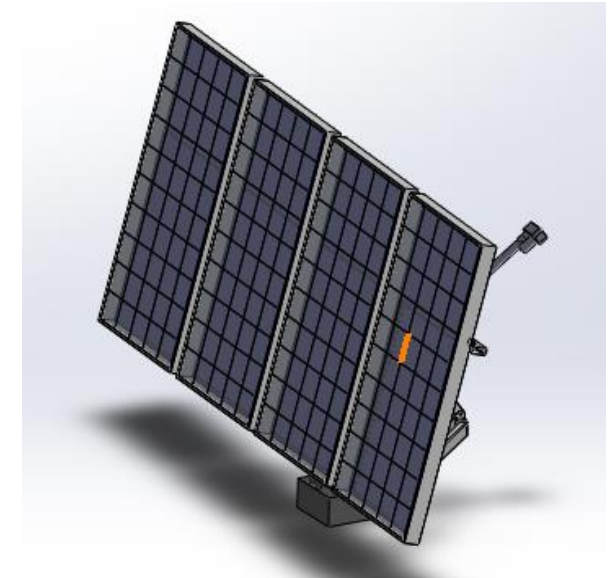
RENEWABLE ENERGY

CONCENTRATED PHOTOVOLTAIC



RENEWABLE ENERGY CONCENTRATED PHOTOVOLTAIC

Energy Efficiency And Environmental Friendly			
	Crystalline Silicon Cells	Thin Layout Cells	Concentrated Solar Cells
Energy Payback Time (Year)	2.5	2	0.5
Main Pollutants Emission (G/W)	2	1.8	0.1
% Of Non-recyclable Materials (%)	70	60	2



Concentrated with dual-axis tracking stent

- Annual energy derating of Concentrate solar cells: <0.5%

JOB REFERENCES FOR CONCENTRATED PHOTOVOLTAIC

Qinghai Golmud 3MW Concentrated Photovoltaic Project

- Average 50kWh per month



OTHER JOB REFERENCES OF ENERGY AND ENVIRONMENTAL CONSULTANT

JOB REFERENCES FOR ENERGY EFFICIENCY IMPROVEMENT

K. Wah Asphalt Limited

- Variable-frequency technology for asphalt heating system
- **Cleaner Production Partnership Programme**
- **Carbon Smart Project**
- **Annual Reduction of Fuel Consumption:** around 212,578 L (equal to HKD1,615,593)
- **Annual Energy Cost Saving:** HKD150,000
- **Project Investment:** HKD 164,400
- **ROI:** around 1.2 months
- **Carbon Footprint Reduction:** around 556 tons CO₂



*Variable-frequency Drive of
Asphalt Heating Furnace*

JOB REFERENCES FOR ENERGY EFFICIENCY IMPROVEMENT

K.Wah Concrete Co Limited

Cleaner Production Partnership Programme
Carbon Smart Project



- Air output to chimney
- Estimated average flow rate: 60,000m³/Hr
- Temperature: 80°C

- 55KW Fresh air blower inside cladding.
- Estimated air flow rate 18,000m³/Hr (after install inverter to slow down)



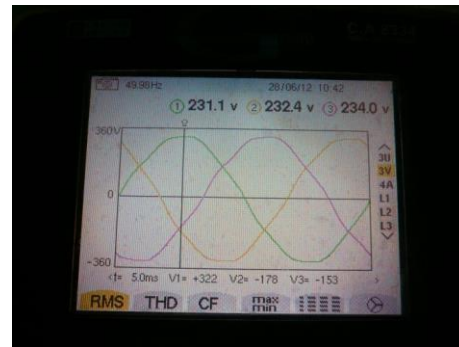
JOB REFERENCES FOR ENERGY EFFICIENCY IMPROVEMENT

Hop Lun (Hong Kong) Limited's Manufacturing Facilities in Bangladesh

- Energy Consultant for 1 Year



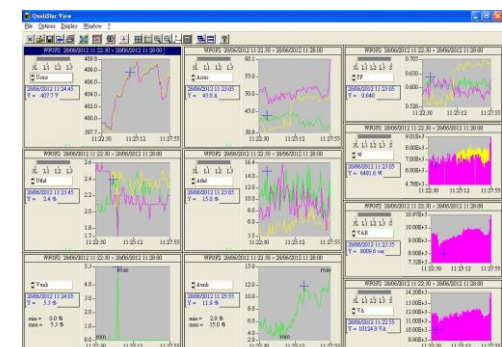
Emergency Generator



Electrical System



Lighting System



Power Supply Monitoring System

JOB REFERENCES FOR ENERGY EFFICIENCY IMPROVEMENT

Surface Mount Technology (Holdings) Limited

- Air compressor system and electrical system improvement
- Energy consultant over 4 years
- **Annual Energy Cost Saving: Over HKD30,000,000**



JOB REFERENCES FOR ENERGY EFFICIENCY IMPROVEMENT

A-Fontane Company Limited

- Design checker to checking the facilities, operation mode and management
- Provide reasonable alternatives in design, selection and connection of variable-frequency drives for circulating pumps and furnaces
- **Annual Energy Cost Saving: Over HKD10,000,000**



BillionGroup Consultant Services

Waste Management, Waste Recycling, Waste to Energy

SERVICES INCLUDED BUT NOT LIMIT TO :

1. Landfilled Mining
2. Waste to Energy Solutions
3. Refuse Derived Fuel (RDF)
4. Waste Heat Recovery System
5. Others

LANDFILLED MINING

- Contaminated Sites and Landfills
- Evaluation & Remediation
- Climate Change Adaptation
- D4-Services
- Environmental Management Consulting
- Planning & Permitting
- Renewable Energy Solutions
- Sustainable Environmental Services
- Waste Management
- Risk Management



WASTE TO ENERGY SOLUTIONS

1. Incineration
2. Gasification



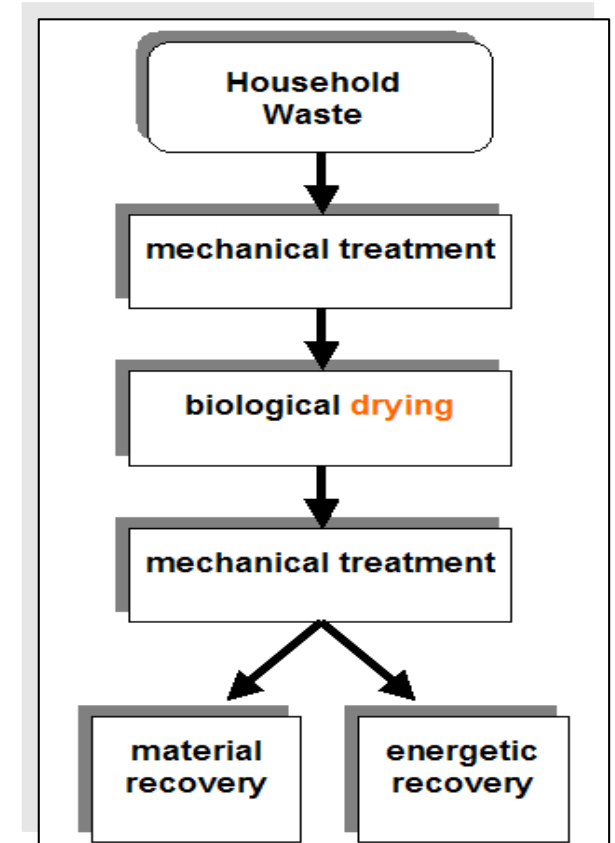
Today's Waste Tomorrow's Energy

REFUSED DERIVED FUEL (RDF)

- **Recovery** of the heating value of wastes in combustion processes (not thermal treatment in WTE only!)
- **Minimization** of disposal quantities
- **Substitution** (+saving!) of fossil fuels, minimization of greenhouse-effect

1. Biological Drying

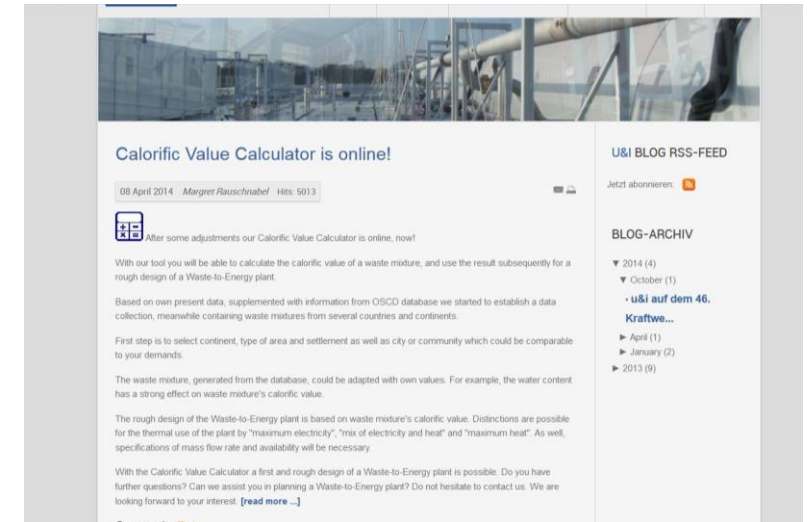
2. Mechanical Treatment



ONLINE-TOOLS – CALORIFIC VALUE CALCULATOR FOR STEP 1 BIOLOGICAL DRYING

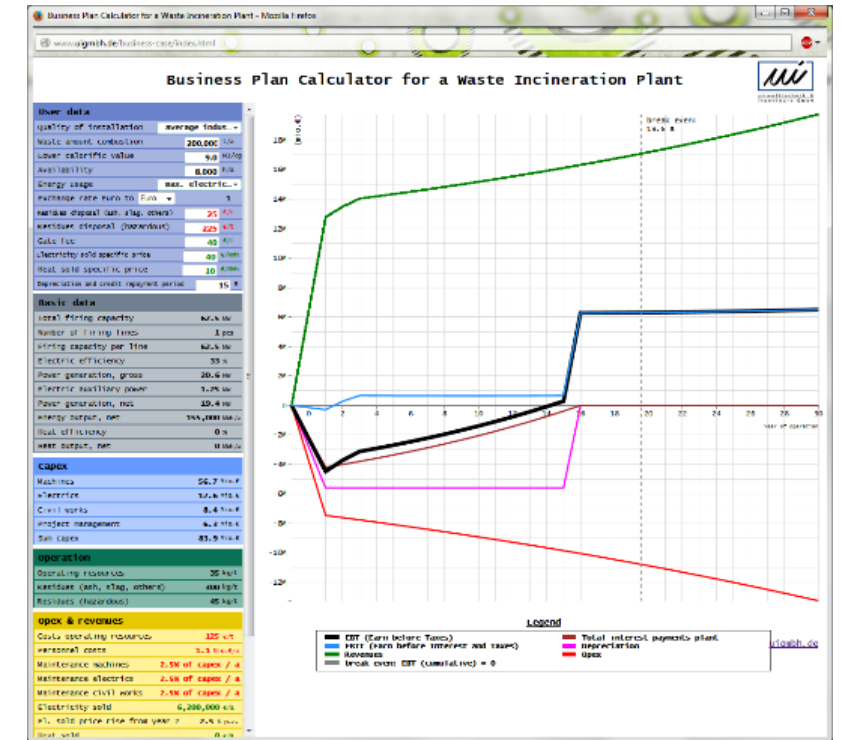
With our tool on <http://www.uigmbh.de/cvc.html> it is possible to calculate the calorific value of a waste mixture, and use the result subsequently for a rough design of a Waste-to-Energy plant.

- Based on own present data, supplemented with data from OSCD database we started to establish a data collection, meanwhile containing waste mixtures from several countries and continents.
- First step is to select continent, type of area and settlement as well as city or community which could be comparable to your demands OR to use preselected waste mixtures.
- The waste mixture, generated from the database, could be adapted with own values..
- With the Calorific Value Calculator a first and rough design of a Waste-to-Energy plant is possible.



ONLINE-TOOLS – BUSINESS CALCULATOR FOR STEP 1 BIOLOGICAL DRYING

- By using the Business Case Calculator it is possible to generate a rough assessment of a business case for a waste-fired incineration or RDF fired Power Plant. With several parameters it is possible to estimate whether a plant will be refunded by the gate fee of the delivered waste or due to high energy rates by using a smaller gate fee.
- The values of the top table are individually adjustable resp. valuable. In the following tables calculated values and other fixed values are only being listed. All assumptions and dependencies used for calculation are based on our experiences.
- Results of the calculation with your data and basis values will be presented in a diagram. It shows course of revenues, OPEX (operational expenditure), depreciation, EBIT (earnings before interest and taxes), total interest payments plant und EBT (earnings before taxes).
- With the Business Case Calculator a rough estimate of the feasibility of a waste incineration plant is possible.



JOB REFERENCES FOR RDF POWER PLANTS + STATE OF THE ART WTE

Industrial Combined Heat and Power Plant Korbach

Client: MVV Energie AG

Time Period: 2006 - 2011

Invest: approx. 28 m €

Summary/Description:

Installation of a RDF-industrial cogeneration plant in Hesse on the location of Continental AG (Tyre factory).

Technical Data:

- Mono-line grate combustion for RDF with a performance of 36 MWth (75,000 t/a)
- Extraction condensation turbine Semi-dry flue-gas cleaning
- 2 * 20 MWth gas-fired standby-boiler



JOB REFERENCES FOR RDF POWER PLANTS + STATE OF THE ART WTE

Industrial Combined Heat and Power Plant Korbach



JOB REFERENCES FOR RDF POWER PLANTS + STATE OF THE ART WTE

Industrial Combined Heat and Power Plant Korbach



JOB REFERENCES FOR RDF POWER PLANTS + STATE OF THE ART WTE

Replacement Investment (ERIN) Combustion Line A at the Ruhleben Site



JOB REFERENCES FOR RDF POWER PLANTS + STATE OF THE ART WTE

Replacement Investment (ERIN) Combustion Line A at the Ruhleben Site

Client: BSR Berliner Stadtreinigungsbetriebe

Period: 2010 – 2014

Summary/Description:

BSR installed a new combustion line for municipal solid waste (MSW) to replace four existing combustion lines at MHKW Ruhleben. The new combustion line A at the site Ruhleben was installed while the existing plant was in operation. The integration in the existing plant took place at different locations during the gradual implementing. Thereby the secure disposal of MSW of the German Federal state of Berlin had to be ensured at any time. The commissioned main contractor was Fisia Babcock Environmental GmbH.

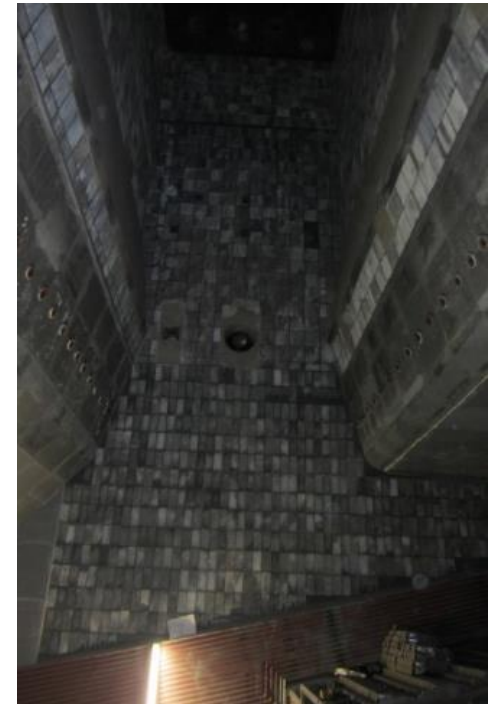


Technical Data:

- Thermal output 90 MW
- Caloric value from 6,000 kJ/kg up to 14,000 kJ/kg (dimensioning 9,000 kJ/kg)
- Quasi-dry flue gas cleaning
- Parameters of live steam 68 bar and minimum 460 °C

JOB REFERENCES FOR RDF POWER PLANTS + STATE OF THE ART WTE

Replacement Investment (ERIN) Combustion Line A
at the Ruhleben Site



JOB REFERENCES FOR RDF POWER PLANTS + STATE OF THE ART WTE

RDF Power Plant "ETN Heringen"

Client: E.ON Engineering GmbH/E.ON Energy from Waste Heringen GmbH
Period: 2007 to 2011
Investment: approx. 132 m €

General description:

Construction of a two-line incineration plant for RDF to supply an industrial area with a second external superheating system to increase steam parameters



JOB REFERENCES FOR RDF POWER PLANTS + STATE OF THE ART WTE

RDF Power Plant for Industrial Supply



JOB REFERENCES FOR RENEWABLE ENERGY (WASTE TO ENERGY) PROJECTS

Biogas Park (anaerobic digestion) Grossenlueder

Client: Biothan GmbH

Period: 10/2010 - 02/2014

Description:

Biothan GmbH, a subsidiary of GWV Fulda, GWV Osthessen and the city of Fulda, has erected a high innovative plant for the production of bio natural gas at Finkenberg.

The facility includes two plants on one site.

First one is a wet fermentation for biogenic residues (organic wastes and slurry) and the second one is a dry fermentation plant for separate collected household waste.

The produced biogas will be upgraded and fed into the gas grid in natural gas quality. Hereby the valuable regenerative energy is produced from waste.



JOB REFERENCES FOR RENEWABLE ENERGY (WASTE TO ENERGY) PROJECTS

Biogas Park (anaerobic digestion) Grossenlueder



JOB REFERENCES FOR RENEWABLE ENERGY (WASTE TO ENERGY) PROJECTS

Biogas Park (anaerobic digestion) Grossenlueder



JOB REFERENCES FOR RENEWABLE ENERGY (WASTE TO ENERGY) PROJECTS

Bio-Mechanical Treatment and Dry Fermentation Plant



JOB REFERENCES FOR RENEWABLE ENERGY (WASTE TO ENERGY) PROJECTS

Dry Fermentation as Upstream Facility for the Composting Plant Bützberg



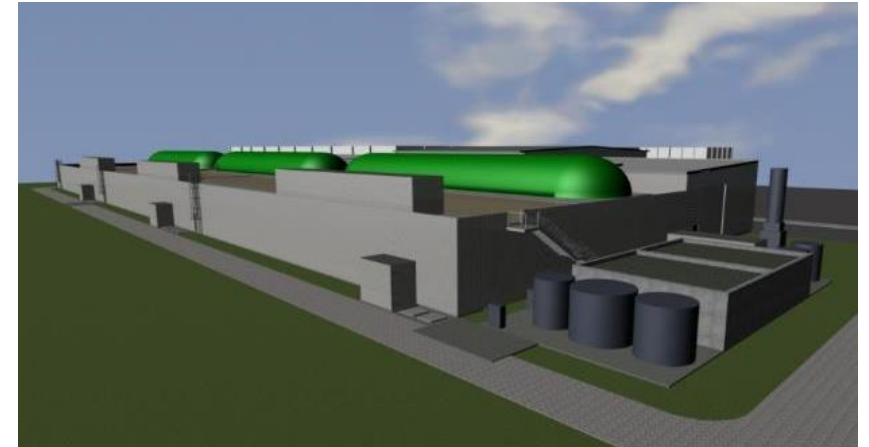
JOB REFERENCES FOR RENEWABLE ENERGY (WASTE TO ENERGY) PROJECTS

Dry Fermentation as Upstream Facility for
the Composting Plant Bützberg



JOB REFERENCES FOR RENEWABLE ENERGY (WASTE TO ENERGY) PROJECTS

Dry Fermentation as Upstream Facility for
the Composting Plant Bützberg



JOB REFERENCES FOR RENEWABLE ENERGY (WASTE TO ENERGY) PROJECTS

**Dry Fermentation as Upstream Facility for
the Composting Plant Bützberg**



WASTE HEAT RECOVERY SYSTEM

Boiler Waste Heat Recovery System

1. Boiler system for our corporate clients using the condensate water recovery system and flue gas heat recovery system, **saving fuel costs over 3 million dollars.** Meanwhile, we also re-engineer the boiler system fan frequency and the **annual electricity savings is more than 500k dollars.**
2. Another client's boiler system is also done the similar heat recovery system and they save the fuel costs **over 15%.**



WASTE HEAT RECOVERY SYSTEM

Waste Water Heat Recovery System

A textile plant used sewage heat recovery system and they **save fuel costs more than 3 million dollars yearly.**



BillionGroup Consultant Services

Green Transportation

SERVICES INCLUDED BUT NOT LIMIT TO :

Airport Facilities

1. Green-Airport Management
2. Security and Information Systems
 - Traffic Control Systems (TCS)
 - Automation Systems (Automation)
3. Aviation Control System
4. Airfield Lighting
5. Others

Transportation System

1. Electronic Road Pricing System
2. Anti-Earthquake Expressways
3. Others

Evolution Building Shift

SECURITY AND INFORMATION SYSTEMS

1. Traffic Control Systems (TCS)
2. Automation Systems (Automation)

SECURITY AND INFORMATION SYSTEMS

Traffic Control Systems (TCS)

1. Air Traffic Management Systems

- Integrated systems able to cover all the ATM requirements for en-route, approach and terminal areas.
- Full range of modular and integrated products to comply with the operational requirements to guarantee and increase the airport safety and resilience.

2. Maritime Management Systems

- Systems for maritime traffic control & management, as well for monitoring the marine environment and supporting rescue operations at sea.
- Multiple control layers (local, area and central) acting on different operational levels.
- Management of automated arrival and departure of ships in the port, along with the security solution.

SECURITY AND INFORMATION SYSTEMS

Traffic Control Systems (TCS)

3. Border Control Systems

- Systems for national border security, land or coastal, through the use of sensors, radar systems, specialized optical , secure communication devices and UAVs
- Heterogeneous data and video streams for real-time identification of critical areas and potential threat scenarios.

4. Emergency Management Systems

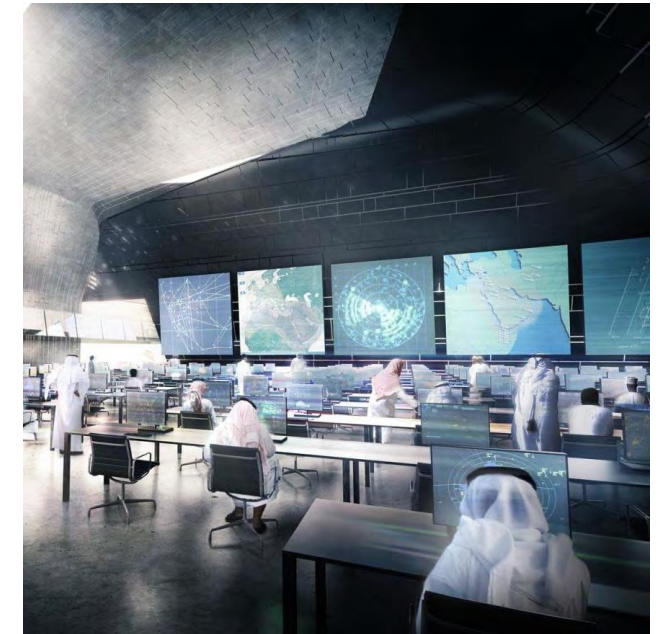
- Support National and Local Authorities in decision marking or coordination of activities/resources.
- Network of weather radar systems for meteorological and aeronautical interest.

JOB REFERENCES FOR SECURITY AND INFORMATION SYSTEMS – TCS HAMAD INTERNATIONAL AIRPORT (HIA DOHA)

Air Traffic Control Solution

For control civil and military air traffic from the routes to ground operations.

- ✓ Radar sensors and ground stations (MLAT/ADS-B) for air and ground traffic
- ✓ Control tower systems
- ✓ ATM operation center with 35 processing systems for radar data and flight plans
- ✓ Automatic system scheduler for departures and arrivals
- ✓ Integrated meteorological system
- ✓ Runway sensors and navigation aid
- ✓ Atc Simulator

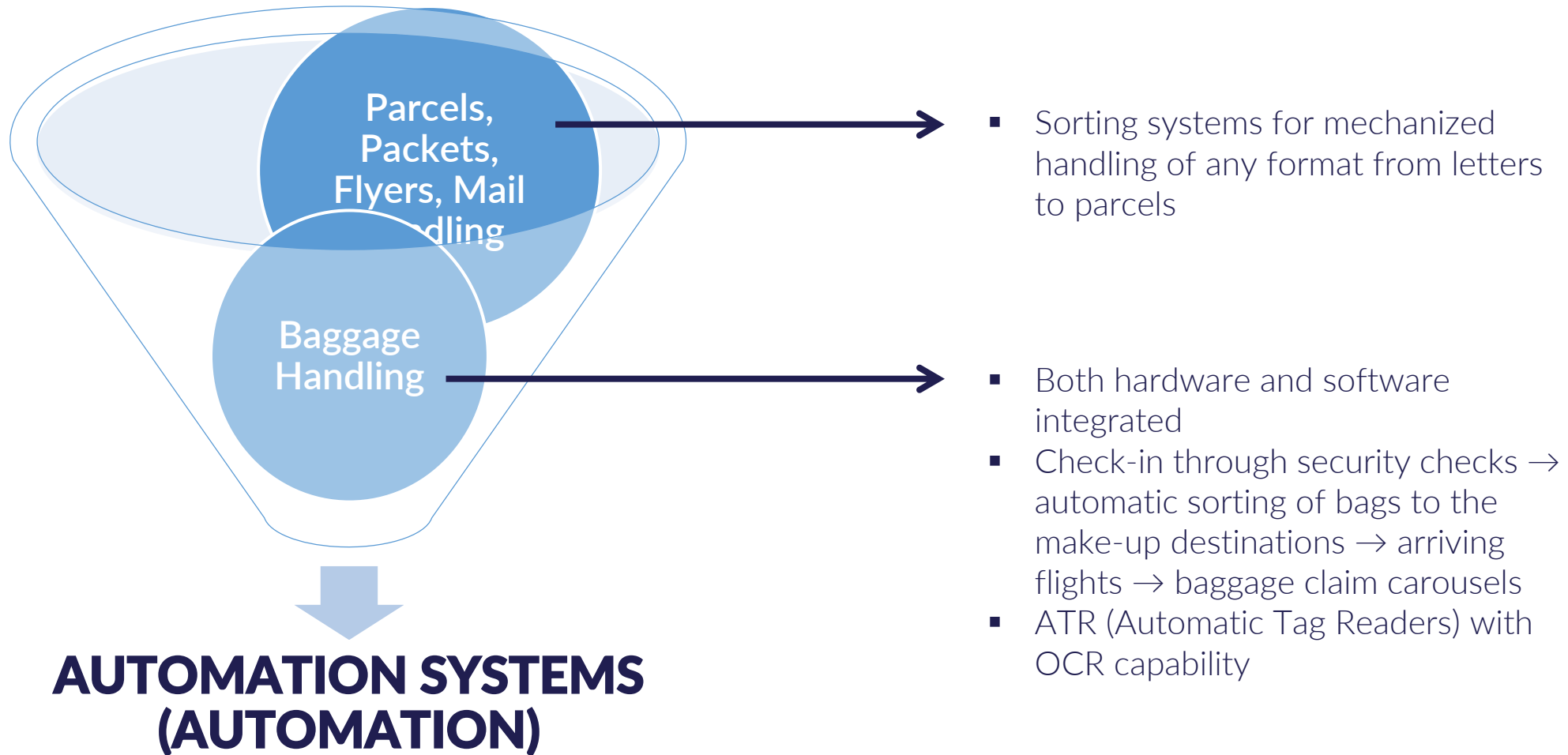


JOB REFERENCES FOR SECURITY AND INFORMATION SYSTEMS – TCS VIETNAM HANOI ACC

Management of the Northern FIR

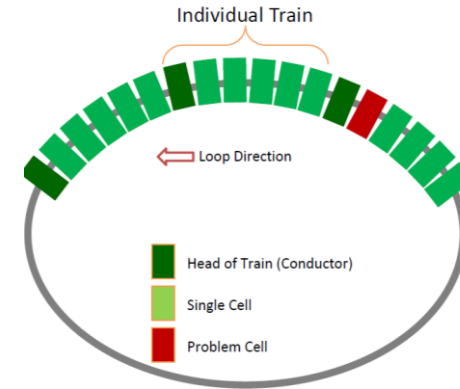
- ✓ An automated air traffic management system with **24 new Control Working Positions (CWP)**s. In case of needs, **four complete CWP suites** can be **reallocated** as Ho Chi Minh backup air traffic center.
- ✓ Operational environment together with **an advanced simulator** to aid the training of ATCOs, and a test and evaluation system.
- ✓ Installation and integration of the **new air traffic approach tower** in NoiBai and the **air traffic control tower** at CatBi.





MULTISORTING BAGGAGE HANDLING SYSTEM

INNOVATIVE BHS

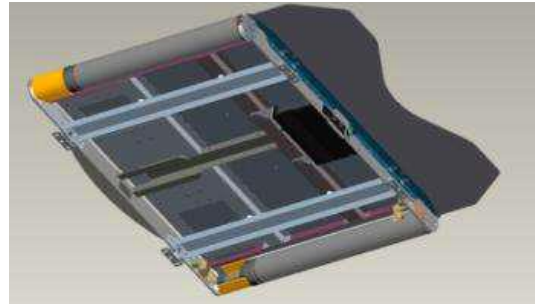


Intrinsic Redundancy

Wi-Fi Transmission of Commands & Data



*Propulsion System
Linear Synchronous Motors*



Motor roller



*Contactless Energy Transmission
Inductive Power Transfer (IPT)*

MULTISORTING BAGGAGE HANDLING SYSTEM

After integrated BHS, you will

Reach Energy Efficiency (33% drop in energy costs)

Extend Lifespan of Components (50% increase)

Reduce Operational Costs (20% drop in O&M costs)

Reduce Downtime Duration (Over 40% drop)

JOB REFERENCES FOR MULTISORTING BAGGAGE HANDLING SYSTEM

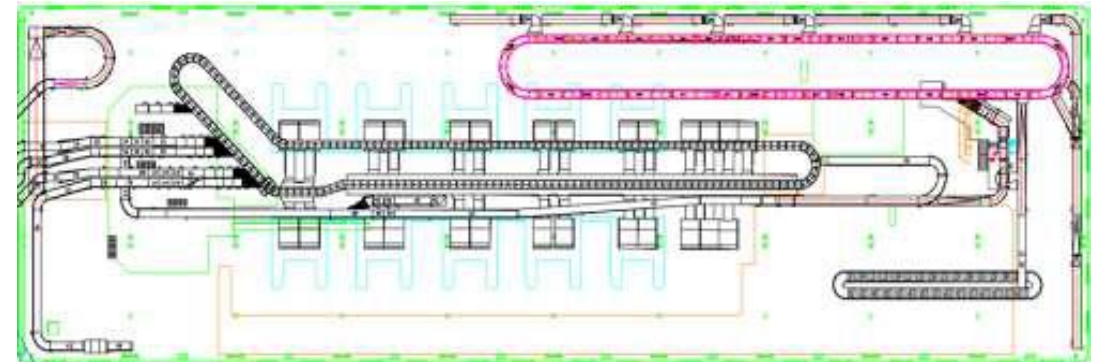
Extension of BHS in Terminal 1 at Genève Aéroport

Solution

- MBHS® cross-belt sorter 160 meters in length
- 180 meters of conveyor
- 1 OOG line
- 9 chutes with 1 slide
- SAC, SCADA and IT system integration

Highlights

- Installation & commissioning in 4 months
- Seamless transition and connected to existing legacy system
- Increase existing sorter capacity by 30%
- No stop in operations
- Integration with existing sorter
- Modify and enhance the OOG



JOB REFERENCES FOR MULTISORTING BAGGAGE HANDLING SYSTEM

Extension of BHS in Terminal 1 at Genève Aéroport



Sorter could be fixed up on the ceiling.

JOB REFERENCES FOR MULTISORTING BAGGAGE HANDLING SYSTEM

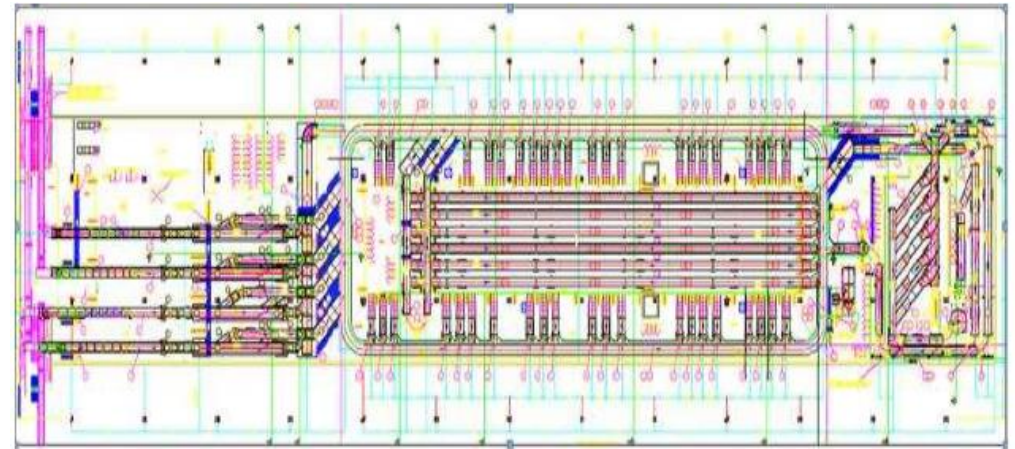
Terminal Europe – BHS Dedicated to Schengen Zone Flights at Aeroporti di Roma

Solution

- MBHS® cross-belt sorter 220 meters in length
- Over 8,000 bph
- 6 induction lines
- Early Baggage System with capacity of 720 baggage

Highlights

- Running operations not affected by replacement
 - Maximum time available to go live: two months
 - Only night time available for deployment and commissioning
- Replacement of a legacy sorting system composed by 1 pre-sorting system (shoe sorting technology) and 2 sorters (cross belt technology)



JOB REFERENCES FOR MULTISORTING BAGGAGE HANDLING SYSTEM

BHS for the Basel Mulhouse Freiburg International Airport

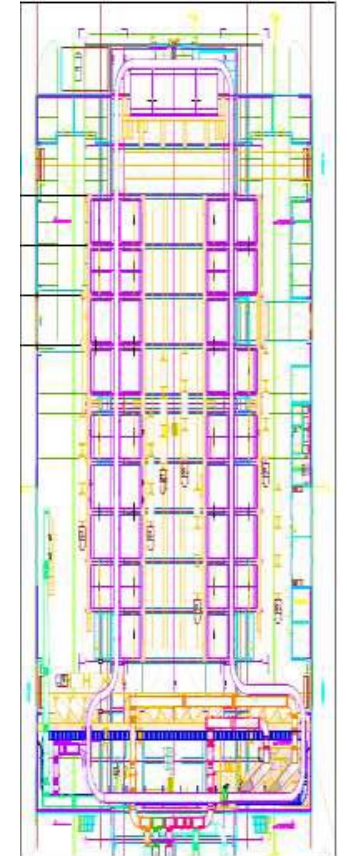
Solution

- MBHS® sorter 250 meters in total length
- 1 collection line, 2 routing lines
- 6 chute areas
- 1 line for handling “charter flights” baggage

Highlights

- Significant limitations in terms of available space and building configuration
- Integration with third party SAC, SCADA and upstream conveyors

- Substitution of the legacy manual sorting system (carousel-like) with an automatic cross-belt sorter in Mulhouse Airport



JOB REFERENCES FOR MULTISORTING BAGGAGE HANDLING SYSTEM

BHS for the New Alitalia-etihad Terminal at Rome Fiumicino Airport

Solution

- 2 MBHS® cross-belt sorters, 1,100 meters in total length
- 24 lines of induction to the sorter
- 8,000 meters in conveyors total length
- 14 ATR
- 6 manual coding stations
- Integration with Standard 3 HBS

Highlights

- Delivery, installation, commissioning and full service maintenance of the end-to-end Baggage Handling System
- New plant dedicated to Alitalia/Etihad flights on two levels: mezzanine + street level
- BHS to be connected through new passages to the current Terminal 1 Pier B + (domestic + international) that will become the terminal for the exclusive use of Alitalia/Etihad



JOB REFERENCES FOR MULTISORTING BAGGAGE HANDLING SYSTEM

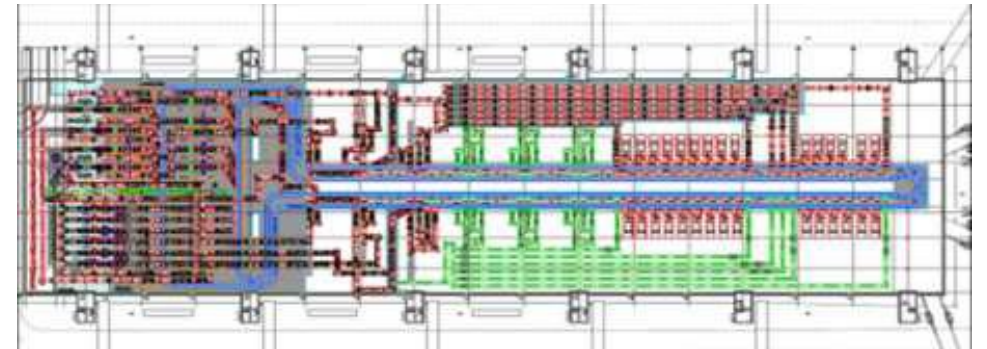
BHS for the New International Terminal at Rome Fiumicino Airport

Solution

- 2 MBHS® cross-belt sorters, 950 meters in total length
- 11 lines of induction to the sorter
- 7,000 meters in conveyors total length
- 13 ATR
- 330 meters in carousels total length
- Integration with Standard 3 HBS

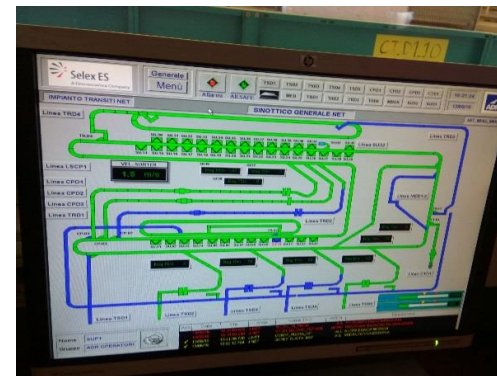
Highlights

- Delivery, installation, commissioning and full service maintenance of the end-to-end Baggage Handling System
- The plant will be deployed on three levels
- BHS entirely dedicated to the new international terminal



CASE STUDY

Multisorting Baggage Handling System at Rome Fiumicino Airport



EVOLUTION BUILDING SHIFT

- Relocate the building without demolition of building.
- ✓ Elimination of large cost of demolition and construction
- ✓ Reduction of pollutions generated during the demolition and construction processes
- ✓ Solution for road problems caused by natural disasters



JOB REFERENCES FOR EVOLUTION BUILDING SHIFT BEIJING BRITISH CONSULATE

- Class A heritage/cultural property under national protection

1. Shifted 5m to the west
2. Turned back and shifted 25m to the south
3. Turned back again and shifted 45m to the west
(for conserving a nearby Old & Valuable Tree)

- Total shifting distance: **80m**

Length: 74.5 m, Width: 17.5 m, Height: 15.95m

Gross Leasable Area: **1,800 m²**

Total estimated weight of shifting: **3500 tons**



JOB REFERENCES FOR EVOLUTION BUILDING SHIFT BUILDING OF LIAONING PROVINCE DALIAN PRISON

Residential Building

- *Residents above 2 floor live as usual during the evolution building shift*
 1. Shifted 58m to the west
 2. Shifted 4.565m to the north
- Total shifting distance: **62.565m**

Length: 50 m, Width: 11 m, Height: 18 m

Total estimated weight of shifting: **5,000 tons**



ANTI-EARTHQUAKE EXPRESSWAYS STRUCTURAL REINFORCEMENT TECHNIQUE



STRUCTURAL REINFORCEMENT TECHNIQUE

- Bridge Pier Reinforcement
- Bridge Foundation Reinforcement
- Seismic Isolation Measures
- Beam Falling Prevention Measures
- Subgrade Strengthening
- Others

ANTI-EARTHQUAKE EXPRESSWAYS

SEISMIC RETROFITTING TECHNIQUES

Bridge Pier Reinforcement

- adopts the methods of enlarging section, outsourcing steel pipe or sticking fiber composite material.



1. Enlarging section method



2. Outsourcing steel pipe method



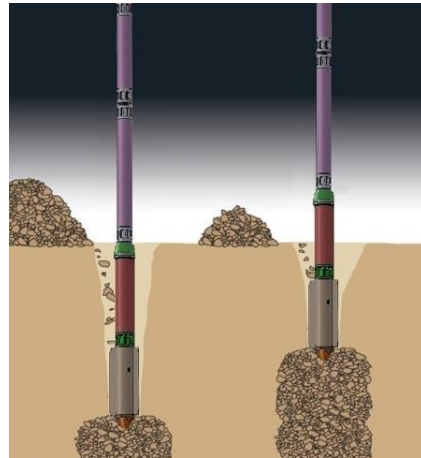
3. Sticking fiber composite material method

STRUCTURAL REINFORCEMENT TECHNIQUE

Bridge Foundation Reinforcement



Reinforced method of bending strength of pile caps



Vibroflotation reinforcement method



Vibro-squeezing sand pile reinforcement method



Dynamic consolidation method

STRUCTURAL REINFORCEMENT TECHNIQUE

Seismic Isolation Measures



Replacement of isolation bearings



Replacement lift of isolated bearings



Adding the damper

STRUCTURAL REINFORCEMENT TECHNIQUE

Beam Falling Prevention Measures



The Seismic Block of continuous beam



The Seismic Block of bent cap

STRUCTURAL REINFORCEMENT TECHNIQUE

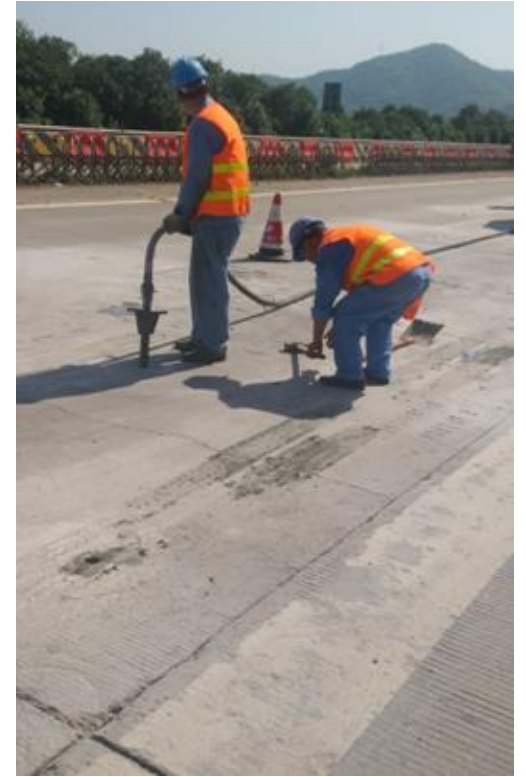
Subgrade Strengthening



Slope Protection of retaining wall



Geogrid Strengthening



Grouting Consolidation

STRUCTURAL REINFORCEMENT TECHNIQUE

Others



Stick Steel
Strengthening
Method



External Pre-stressing Method



Changing of the Mechanical System

ANTI-EARTHQUAKE EXPRESSWAYS STRENGTHENING OF THE LUOYANG PEONY BRIDGE



The Luoyang Peony Bridge is 1369.65m long with 34 width. **The earthquake fortification is lever B, and seismic fortification intensity grade is 8.** The peony bridge is composed of main bridge and approach. The main bridge across the Luohe River, and the approach is viaduct connecting Jiefang Road. **The reinforcement for the approach is the main part of this work.**

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PROJECT OF STRENGTHENING OF THE LUOYANG PEONY BRIDGE

Issues



Bearing slip and offset



Transverse crack



Beam and plate joint corrosion

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PROJECT OF STRENGTHENING OF THE LUOYANG PEONY BRIDGE

Solutions



Replace bearings



Bond steel plate at the top of all middle piers



Enlarge the section of V type pier

ANTI-EARTHQUAKE EXPRESSWAYS PROJECT OF MAINTENANCE AND REINFORCEMENT OF BRIDGES IN G60 XIANGTAN-SHAOYANG HIGHWAY, HUNAN PROVINCE



G60 Highway is a main part of National Highway Project, its section in Hunan province is called Xiangtan-Shaoyang Highway (also Tan-Shao Highway), which links Xiangtan, Loudi and Shaoyang with a total length of 220.1 km. The Tan-Shao highway is **designed with four lanes, Seismic fortification Level B, Seismic fortification Intensity Grade 7**. It is **built with concrete surface, and the other 146.620km is bituminous concrete**.

ANTI-EARTHQUAKE EXPRESSWAYS MAINTENANCE AND REINFORCEMENT OF BRIDGES IN G60 XIANGTAN-SHAOYANG HIGHWAY, HUNAN PROVINCE

Solutions



Pier and pillar defects fixing



Hinge joints grouting sealing



Carbon fiber sheets affixing

ANTI-EARTHQUAKE EXPRESSWAYS MAINTENANCE AND REINFORCEMENT OF BRIDGES IN G60 XIANGTAN-SHAOYANG HIGHWAY, HUNAN PROVINCE

Solutions



Bearings replacing



Externally bonded steel plates



Subgrade compaction grouting

CLIENT REFERENCE



Thank You

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