

Excellence in Energy Green House Gas Management

Thirunavukkarasu Ramasamy

Alcon
SEE BRILLIANTLY



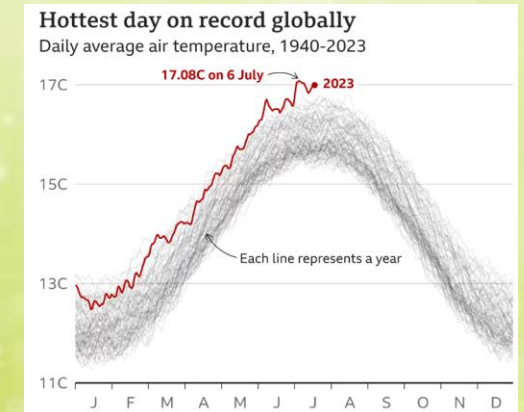
Overview of Alcon Singapore Manufacturing Pte Ltd (ASM)



- Alcon is the global leader in eye care, dedicated to helping people see brilliantly. With an over 75-year heritage, Alcon is the largest eye care device company in the world, with complementary businesses in Surgical and Vision care. Being a truly global company Alcon work in 60 countries and serve patients in more than 140 countries. Alcon have a long history of industry firsts, and each year Alcon commit a substantial amount in Research and Development to meet customer needs and patient demands.
- Alcon Singapore Manufacturing Pte Ltd (ASM) is in production since 2009 and employs approximately 150 people. The Singapore site produces Pharma products for human use. Alcon's seven-decade long history of success rests on a foundation of industry expertise, leading brands and a winning mindset. Alcon aspire to lead the world in innovating life-changing vision products because when people see brilliantly, they live brilliantly. Since its inception in 2009, ASM has been focused on our mission to grow together by nurturing a continuous improvement culture with highly skilled & agile talents, enabled by innovative technologies, consistently delivering safe & quality aseptic ophthalmology products.



- Bad news all around?
- Have we missed the window of opportunity?
- Is sustainability the only solution?



Alcon aspires to improve lives, strengthen communities and create long-term value by innovating products that improve sight



Brilliant Lives

With our partner organizations, we enable communities to access critical eye care services.



Brilliant Innovation

Our diverse talent from around the world innovates best-in-class products that change lives.



Brilliant Planet

We care for our planet by focusing on reducing emissions and waste.

Foundational to our strategy are our best-in-class workforce and a strong governance structure.

Long-term Environmental, Social, Governance (ESG) Goals

Alcon

By 2025*

- Improve vision for **5 million people** afflicted with untreated cataracts in low- and middle-income countries, including **1 million** considered cataract-blind**
- Improve vision and enhance academic success by providing **150,000 vision screenings** to children and ensuring comprehensive care for those in need

By 2030

- Become **carbon neutral** across global operations (Scope 1 and Scope 2 emissions)
- Divert **100% of non-hazardous waste** generated at manufacturing sites and distribution centers from landfill

*2021 baseline

**Vision Loss Expert Group, <https://www.iapb.org/learn/vision-atlas/>

Alcon Progress to Achieve Carbon Neutrality



BRILLIANT PLANET

Alcon cares for our planet and helps create a more sustainable world so everyone can *See Brilliantly* and Live Brilliantly. Because we manufacture about 90% of our products internally, we are able to manage our environmental footprint through efficiency and optimization to reduce emissions, water, waste and chemicals of concern.

We are working to achieve carbon neutrality across global operations for our Scope 1 and Scope 2 emissions by 2030 by reducing energy consumption and transitioning to renewable energy sources wherever possible. We strive to minimize the environmental impact of our business activities by adopting responsible policies, procedures and practices that promote the efficient use of resources and protect the environment. Through this work, we reduced our Scope 1 and Scope 2 emissions by 17% in 2022.⁸

Global Sustainability Strategy

GLOBAL ENVIRONMENTAL SUSTAINABILITY STRATEGY AND LEADERSHIP

Our Global Environmental Sustainability Committee brings together leaders from across Alcon's global operations and is responsible for setting environmental goals and implementing plans to achieve them.

The Governance and Nomination Committee oversees our environmental strategy and receives periodic updates from our Senior Vice President, Global MTO and Global Head of Health, Safety and Environment (HSE). Alcon's senior management and Board of Directors regularly assess financial performance risks, including environmental

risks, and identify ways to manage and mitigate these risks. These discussions play a critical role in our operating and investment decision-making processes throughout the business.

We receive feedback from stakeholders throughout the year through a variety of channels, including our [materiality assessment](#) and direct engagement with our Global Head of Social Impact and Sustainability. External frameworks and rankers help us identify areas for improvement so we can refine our approach.

Our Global Environmental Sustainability Strategy focuses on four priority topics:



1 SUSTAINABLE PRODUCTS AND SERVICES



2 ENERGY EFFICIENCY AND GHG REDUCTION



3 OPERATIONAL WASTE REDUCTION



4 WATER STEWARDSHIP

Reducing Product-Related Environmental Impact

Alcon partners with Plastic Bank to help improve our plastic impact while continuing to help people see brilliantly. For each ton of plastic used in our UltraSert® and AutonoMe® systems sold and PRECISION1® and DAILIES TOTAL1® contact lenses and packaging produced, Plastic Bank collected the same amount of ocean-bound plastic in vulnerable coastal communities. This partnership also introduced offsetting programs that gives Alcon the opportunity to have a plastic-neutral portfolio with our UltraSert® and AutonoMe® preloaded IOL delivery systems and our PRECISION1® and DAILIES TOTAL1® contact lenses. In 2022, Plastic Bank's program with both the Surgical and Vision Care products helped remove the equivalent of more than 32 million plastic bottles.

Read more on the partnership and its recent expansion in 2023 [here](#).

REDUCING PRODUCT-RELATED ENVIRONMENTAL IMPACT

We are working to reduce packaging waste and chemicals of concerns associated with the use of our products and services where feasible. In 2022, we partnered with external consultants to conduct lifecycle assessments on specific products to set the baseline for future product development.

PACKAGING WASTE

Through our package reduction programs, Alcon is finding more efficient ways to pack and ship our products. The Green Innovations Surgical Team (GreenIST) identifies opportunities to increase sustainability measures and reduce waste for commercialized products within our Surgical franchise. For example, by removing the tray from our Centurion® Fluid Management System pack, we achieved an approximately 90% reduction in material waste. In addition, we changed our printed Directions for Use booklets to electronic Instructions for Use, reducing paper usage and decreasing the weight of packages by 53%.

We redesigned packaging for iLux®, a dry eye treatment. The new design includes a foam insert made from post-consumer recycled materials, a soft case instead of the previous Styrofoam endcaps and a new box made from natural kraft brown cardboard. In 2022, this redesign resulted in approximately 50% reduction in package weight while reducing costs.

CHEMICALS OF CONCERN

We identify and eliminate chemicals of concern from our products and comply with chemical regulations, including the E.U. Registration, Evaluation, Authorization and Restriction of Chemicals; E.U. Medical Devices Regulation; California Proposition 65; Toxic Substances Control Act; and E.U. Restriction of Hazardous Substances. Alcon also leverages our position as a purchaser of extensive raw materials to help our suppliers evaluate their own footprint.

PRODUCT DESIGN AND LIFECYCLE MANAGEMENT

DEVICES AND EQUIPMENT REUSED, RECYCLED OR DONATED (METRIC TONS)

	2020	2021	2022
DEVICES AND EQUIPMENT REUSED, RECYCLED OR DONATED (METRIC TONS)	85	108	100 ⁹



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PRODUCT DESIGN AND LIFECYCLE MANAGEMENT	2020	2021	2022
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Reducing Operational Footprint

REDUCING OUR OPERATIONAL FOOTPRINT

The Global HSE team partners with the Social Impact and Sustainability team to lead the company's environmental efforts and works to achieve goals and initiatives related to emissions intensity, non-hazardous waste landfill diversion rates, water conservation and site-specific environmental projects.

The Global Head of HSE — supported by the Global HSE team — runs all HSE programmatic activities, including policy changes, targets and commitments and ensures effective governance structures are in place throughout the business. Alcon's CEO and Executive Leadership Team (ELT) engage with the Global Head of HSE to provide strategic direction and receive updates on emerging risks and impacts, as needed.

Our HSE Management System is the foundation of our environmental program and helps us ensure we meet requirements for legal compliance by investigating causes of non-compliance and implementing corrective and preventive action plans. Embedded throughout the company, the system aligns with ISO 14001:2015 Environmental Management Systems.

CLIMATE CHANGE AND GHG EMISSIONS

In 2022, Alcon set a goal to be carbon neutral for Scope 1 and Scope 2 across our global operations by 2030. We are working to reduce our Scope 1 and 2 emissions through energy improvement and efficiency projects and procurement of renewable energy. Not only did we reduce our total Scope 1 and 2 GHG emissions by 17% in 2022, but we also reduced our purchased energy GHG emissions intensity ratio by 27%.

We also seek to protect our business from both the physical and transitional risks of climate change. We evaluate the potential vulnerability of Alcon's operations and assets to climate events that are projected to take place through the mid-century under lower-emissions and higher-emissions scenarios. We also assess the potential impact of emerging policy and legal requirements, technology changes and market shifts such as consumer expectations through the mid-century under these same scenarios.

GHG EMISSIONS	2020	2021	2022
TOTAL SCOPE 1 AND SCOPE 2 GHG EMISSIONS (MTCO ₂ e) ¹⁰	327,882	309,083	256,010
GHG EMISSIONS INTENSITY RATIO — ONSITE GENERATED ENERGY (t/TJ) ¹¹	55	55	51
GHG EMISSIONS INTENSITY RATIO — PURCHASED ENERGY (t/TJ)	139	126	92



The Green Tiger Team is a cross-functional team of Alcon associates who evaluate business opportunities and risks related to the sustainability requirements in the E.U. Green Deal. The team's findings are reported to the global organization, including the HSE team and GreenIST. The Green Tiger Team also pilots local "eco-projects" that they share across Alcon's European operations. In 2022, the Green Tiger Team initiated a program to create training materials and guidelines to be placed in operating rooms, showing where and how to recycle surgical leftovers and how to properly dispose of recyclable materials. Read more about packaging reduction programs in [Reducing Product-Related Environmental Impact](#).

REDUCING OUR OPERATIONAL FOOTPRINT

- **CLIMATE CHANGE AND GHG EMISSIONS**
- In 2022, Alcon set a goal to be carbon neutral for Scope 1 and Scope 2 across our global operations by 2030. We are working to reduce our Scope 1 and 2 emissions through energy improvement and efficiency projects and procurement of renewable energy. Not only did we reduce our total Scope 1 and 2 GHG emissions by 17% in 2022, but we also reduced our purchased energy GHG emissions intensity ratio by 27%. We also seek to protect our business from both the physical and transitional risks of climate change. We evaluate the potential vulnerability of Alcon's operations and assets to climate events that are projected to take place through the mid-century under lower-emissions and higher-emissions scenarios. We also assess the potential impact of emerging policy and legal requirements, technology changes and market shifts such as consumer expectations through the mid-century under these same scenarios.

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Reducing Operational Footprint

REDUCING OUR OPERATIONAL FOOTPRINT (CONTINUED)

ENERGY

In 2022, we completed 37 energy-saving projects, including replacing old air handling units and chillers with more efficient ones, insulating steam pipes, reducing compressed air consumption for extraction module tray drying, reducing autoclave runs and optimizing autoclave cart loading. These projects resulted in an estimated energy savings of approximately 71,619 gigajoules (GJ), avoiding approximately 3,719 MT CO₂e.

Individual sites also made strong progress in 2022. Our Grosswallstadt site reduced its consumption of natural gas by approximately 33,000 GJ equivalent, in turn reducing our Scope 1 emissions by 1,600 MT CO₂e. Additionally, our Johor site replaced fluorescent lights with LED lights in multiple areas of the manufacturing environment, saving approximately 1,770 GJ of energy.

WASTE

Our waste management strategy starts with reduction and prevention, then reuse, then recycling. Alcon has a goal to divert 100% of non-hazardous waste generated at manufacturing sites and distribution centers from landfill by 2030. In 2022, our landfill diversion rate from MTO sites was 95.85%, which improved by 1.54% over our 2019 rate. We implemented approximately 2,700 tons of waste elimination or reduction through 31 projects at MTO sites. For example:

- Our Fort Worth North manufacturing site implemented a program to reuse shipment pallets, resulting in approximately 349 MT of waste savings.
- Our Singapore manufacturing site redesigned the platform for the intermediate bulk container to improve its use of chemicals. The redesign turns approximately 11 MT of hazardous material from disposal to use annually.
- Our Cork site introduced a new, lighter wrapper for pallets being shipped to distribution sites, using 40% less wrap per pallet. A new lid was designed to cover the boxes on pallets, replacing multiple individual box lids. These two small changes represent an estimated 15 MT of waste savings.

Alcon validates sites' Zero Waste to Landfill status by conducting annual third-party audits at participating sites. Sites that were already at 100% landfill diversion maintained their status in 2022. Sites that are still working toward 100% landfill diversion saw a minimum of a 5% increase in diversion over 2021.

HAZARDOUS WASTE

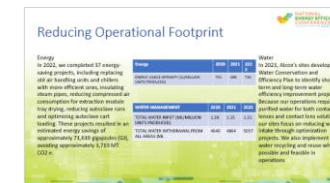
Alcon maintains a no hazardous waste to landfill requirement across all sites, unless a site is under a jurisdiction that requires hazardous waste to landfill disposal. Our Waste Management Policy also requires all sites to develop a Waste Management Plan (WMP) and review it annually. The WMP must contain:

- A waste inventory, including significant waste streams, characterization of waste (hazardous, non-hazardous, medical, etc.), legal waste code, contractor responsible, disposal route, etc.
- A waste minimization plan
- Onsite waste handling and storage requirements
- Management of waste contractors
- Final disposal of wastes

WATER

In 2021, Alcon's sites developed a Water Conservation and Efficiency Plan to identify short-term and long-term water efficiency improvement projects. Because our operations require purified water for both contact lenses and contact lens solution, our sites focus on reducing water intake through optimization projects. We also implement water recycling and reuse where possible and feasible in operations.

In 2022, sites implemented 234 water projects, resulting in 334 megaliters (ML) of water savings across our Vision Care and Surgical operations. The projects ranged from installing water flow regulators in restrooms to optimizing the water pre-treatment system and redesigning the tray cleaning to harvest rainwater. Our Singapore manufacturing site implemented a reverse osmosis system with a projected annual savings of approximately 54 ML of water.



ENERGY MANAGEMENT

2020

2021

2022

ENERGY USAGE INTENSITY
(GJ/MILLION UNITS PRODUCED)

791

688¹²

730

WATER MANAGEMENT

2020

2021

2022

TOTAL WATER INPUT
(ML/MILLION UNITS PRODUCED)

1.28

1.15

1.21

TOTAL WATER WITHDRAWAL FROM
ALL AREAS (ML)

4,640

4,864

5,057

Reducing Operational Footprint

Energy

In 2022, we completed 37 energy-saving projects, including replacing old air handling units and chillers with more efficient ones, insulating steam pipes, reducing compressed air consumption for extraction module tray drying, reducing autoclave runs and optimizing autoclave cart loading. These projects resulted in an estimated energy savings of approximately 71,619 gigajoules (GJ), avoiding approximately 3,719 MT CO₂ e.

Energy	2020	2021	2022
ENERGY USAGE INTENSITY (GJ/MILLION UNITS PRODUCED)	791	688	730

WATER MANAGEMENT	2020	2021	2022
TOTAL WATER INPUT (ML/MILLION UNITS PRODUCED)	1.28	1.15	1.21
TOTAL WATER WITHDRAWAL FROM ALL AREAS (ML)	4640	4864	5057

Water

In 2021, Alcon's sites developed a Water Conservation and Efficiency Plan to identify short-term and long-term water efficiency improvement projects. Because our operations require purified water for both contact lenses and contact lens solution, our sites focus on reducing water intake through optimization projects. We also implement water recycling and reuse where possible and feasible in operations

Sustainability Facts in Figures

REDUCING OUR OPERATIONAL FOOTPRINT

Energy	2020	2021	2022	Emission	2020	2021	2022
Energy usage (Gj/m units produced)	791	688	730	Total Scope 1 & 2 GHG emissions(MT _{CO₂e})	328K	309K	256K
Total fuel consumption-non renewable sources Gj	1073k	1093k	1063k	Direct(Scope1)GHG emissions(MT _{CO₂e})	79K	81K	74K
Total fuel consumption-renewable sources Gj	283	1129	1581	Market based energy indirect (scope2) GHG emissions(MT _{CO₂e})	249K	228K	182K
Electricity consumption Gj	1786K	1809K	1983K	Production,imports and exports of ozone depleting substances (ODS)(tR11e)	0.73	0.57	0.59
Steam consumption Gj	49K	49K	21K	NO _x (MT)	39.76	45.45	38.73
Electricity sold Gj	202	216	289	Sox (MT)	1.27	1.53	0.88
Total reduction in energy consumption achieved through conservation and efficiency initiatives Gj	29K	43K	72	Volatile organic matter(VOC)(MT)	43.83	38.58	41.55
				Particulate matter (PM)(MT)	7.96	8.01	8.04

Alcon Environmental Policies

- **HSE Compliance Management Policy:** Describes our approach to managing our HSE compliance obligations, as well as our interactions with governmental agencies regulating HSE aspects of our activities, operations and products.
- **Air Permitting, Emissions and Prevention of Significant Deterioration Policy:** Establishes procedures to permit and monitor sources of air emissions at our sites, as well as procedures to evaluate discharges and regulatory requirements and ensure compliance.
- **Energy Management Standard:** Describes our sustainable management principles for energy and related GHG emissions throughout all of our company's activities.
- **Waste Management Standard:** Establishes minimum requirements for waste management programs at our sites, aiming for safe and sustainable waste management for all types of waste.
- **Water Effluent Discharges Standard:** Ensures that sanitary process and stormwater discharges (effluents) from Alcon facilities comply with legal regulations.
- **HSE Risk Management Standard:** Outlines mandatory requirements for our locations to proactively identify and address internal and external HSE hazards and risks.



How does Singapore site perform in support of Global sustainability?

- Singapore site has been aggressive in setting targets backed by management support for project approvals.
- Electricity, Natural Gas and Water consumption has gone down significantly in the past 4 years.
- Significant reduction in Waste generation & disposal.
- Solar power capacity installed at the site (~15%).
- Encouraging community activities among Associates.
- Encouraging innovative thinking.

Alcon Commitment to Health and Safety

ISO 14001:2015 Certification

ZERTIFIKAT · CERTIFICATE · CERTIFICADO · CERTIFICAT



CERTIFICATE

The Certification Body of
TÜV SÜD AMERICA INC.

hereby certifies that

Alcon Vision, LLC.
6201 South Freeway
Fort Worth, TX 76134 USA
(see page 2-9 for additional locations)

Has implemented an Environmental Management System in accordance with:

ISO 14001:2015

The scope of this Environmental Management System includes:

Environmental Programs Related to the Design, Development, Manufacturing, Production, Distribution, Servicing, Installation, and WaveLight® Technology Equipment of Ophthalmic Medical Devices, Products, Implants, Standalone Software, Solutions and Gels

Certificate Expiry Date: October 7, 2025
Certificate Registration No: 951 06 3471
Issue Date: November 30, 2022
Reissue Date: N/A



Greg Bates
Greg Bates
Director Business Assurance America
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The validity of this certificate is contingent on the company maintaining its management system to the requirements of the indicated standard and is subject to regular monitoring by TÜV SÜD America.



ZERTIFIKAT · CERTIFICATE · CERTIFICADO · CERTIFICAT



CERTIFICATE

Alcon Laboratories Belgium BVBA
Lichterveld 3
2870 Puurs, Belgium

Scope - Manufacturing of Ophthalmic Procedure Packs and Distribution of Ophthalmic Devices, Pharmaceutical Products, Cosmetic Lens and Food Supplements

Alcon Vision, LLC
11460 Johns Creek Parkway
Johns Creek, GA 30097 USA

Scope - The Manufacturing, Research & Development and Distribution of Disposable Contact Lenses

Alcon Singapore Manufacturing Pte Ltd
19, Tuas South Avenue 14, Tuas Biomedical Park II
637313 Singapore, Republic of Singapore

Scope - The Manufacturing of Sterile Ophthalmic Medications

Alcon Laboratories Ireland Ltd
Cork Bus. & Technology Park,
Model Farm Road, Cork, Ireland

Scope - The Manufacturing of Medical Devices and Accessories

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Alcon Singapore Energy Policy

Energy Policy

Alcon is committed to become carbon neutral across global operation by 2030 (Scope 1 and Scope 2 emission)

This policy shall apply to all Alcon Singapore Manufacturing Pte Ltd operations, facilities, business units and employees.

The objectives of this policy are to improve energy consumption efficiency, reduce cost, optimize capital investment for energy efficiency, reduce environmental impact due to greenhouse gas emissions, and conserve natural resources.

Towards this end, we shall:

- Benchmark our facilities to Year 2021.
- Reduce energy use by 15% relative to the 2021 base year by 2026.
- Reduce natural gas (NG) use by 15% relative to the 2021 base year by 2026.
- Installation of Solar Photovoltaic system to generate at least 10% of the facility's total energy consumption by 2027.
- Comply with all relevant legislations and other requirements relating to energy use, consumption, and efficiency.
- Maintain an energy management system with the set goals and targets to monitor energy performance.
- Ensure the availability of information and of necessary resources to achieve objectives and targets.
- Establish energy management objectives, targets, and reviewing them periodically to achieve our objectives.
- Carry out awareness-raising, training and maintenance optimization programs as may be required in pursuit of improved energy performance.
- Document and communicate our energy policy to all our staffs working within the organization, to ensure that they are aware of their individual energy policy obligations.

This Energy Policy and objectives shall be reviewed at least annually and will be made available to the public, customers, suppliers, and any other interested parties upon request.



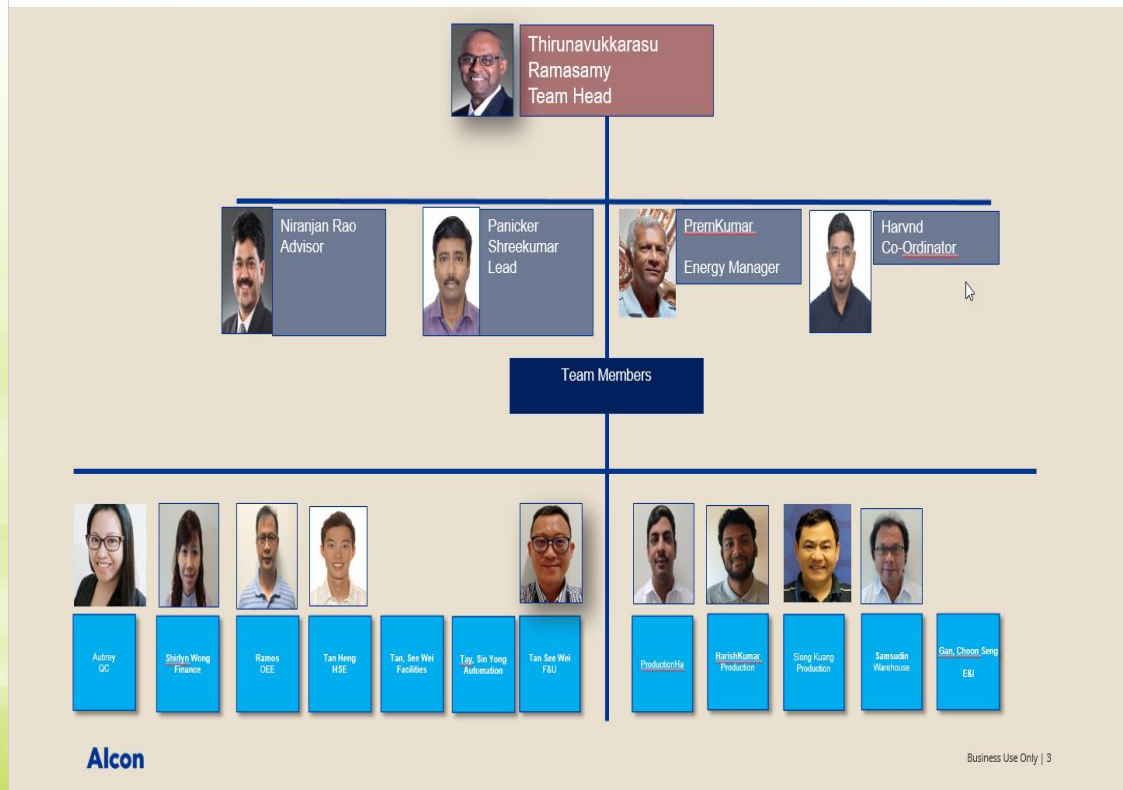
Thirunavukarasu, Ramasamy
General Manager,
Alcon Singapore Manufacturing Pte Ltd

Alcon

- Clearly states the objective of the policy.
 - Improve energy consumption efficiency
 - Reduce Cost
 - Optimize capital investment for energy efficiency
 - Reduce environmental impact due to green house gas emission.
 - Conserve natural resources.
- Clearly state the short term goal (5 years)
 - Reduce energy use by 15%.
 - Generate at least 10% electricity by solar.

Energy Management Team

Site Energy Management Team



ENERGY Commitment

Alcon management is committed to energy efficiency improvement since the plant started up in Year 2009. They managed to optimize the energy consumption by more than 29% reduction in Year 2021 compared to 2019. In due course, an energy management team was formed with the members representing different departments, with Site GM as the team head, Engineering department head as an advisor and the Senior Critical equipment Manager as the Lead.

Energy Management Team



Energy Management team meets every 2 months and discuss the energy consumption pattern and compares consumption with the target. Year beginning Site GM directs the team on the target and the path forward for the year.

Team members with input from their functional team discuss issues in the energy management team and the path forward decided during the meeting.

Capex requirement for projects related to energy improvement are discussed and the finance representative will guide the team on these matters. The finance representative also informs the team about the dollar value of the savings achieved in the site.

Associates Participating in Community Events



Training and Capability Building

Employee Training

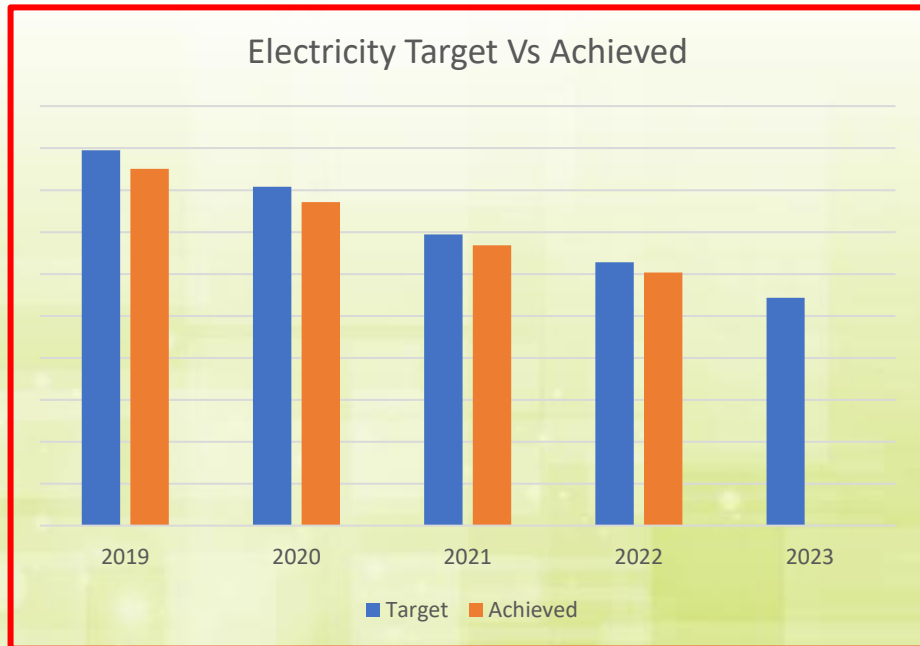
- Alcon Energy management system training is conducted through the online training portal. All the facilities new Engineers are expected to go through this.
- One of the member of Energy team and facilities is undergoing SCEM course and site is planning to have more SCEMs in future. Beside this, Alcon strongly support Associates to attend EENP conference and send staff members for other energy related course to enhance the knowledge of the Operating staff.
- Energy team members are given a general training during the energy team meeting on projects which are completed with emphasize on the energy saving part.

Training and Capability Building

Energy Efficiency initiative/Campaign

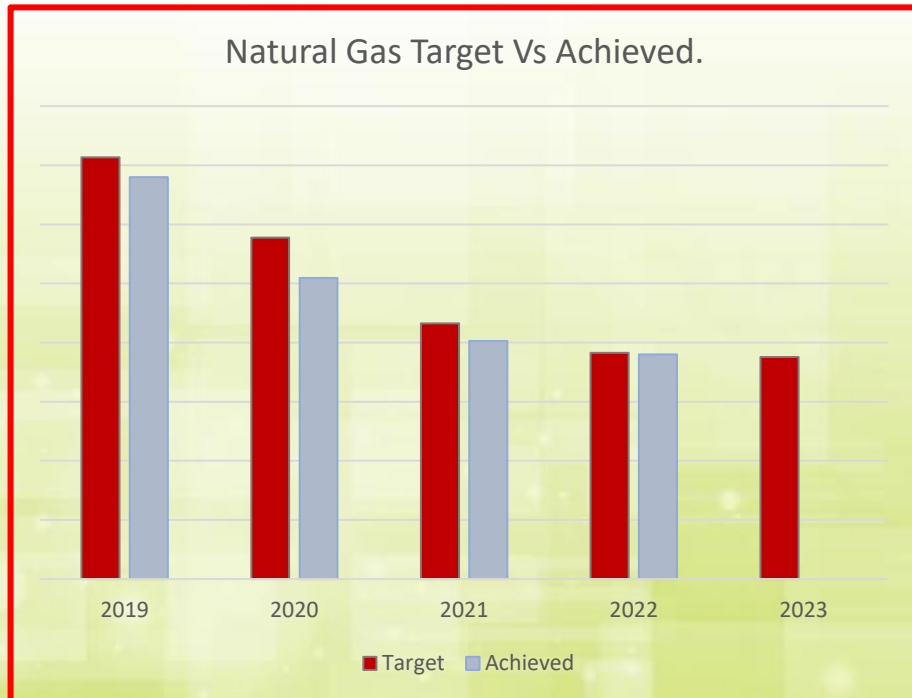
- Energy team members will be kept in the loop on the projects being undertaken.
- Engineering team morning meeting discussion on the performance of the previous day will be done.
- Monthly updated posters of the energy consumption are displayed for everyone to see.
- Some important energy related messages are displayed in the TV console.
- Individual achievements are recognized by management.

Electricity Consumption



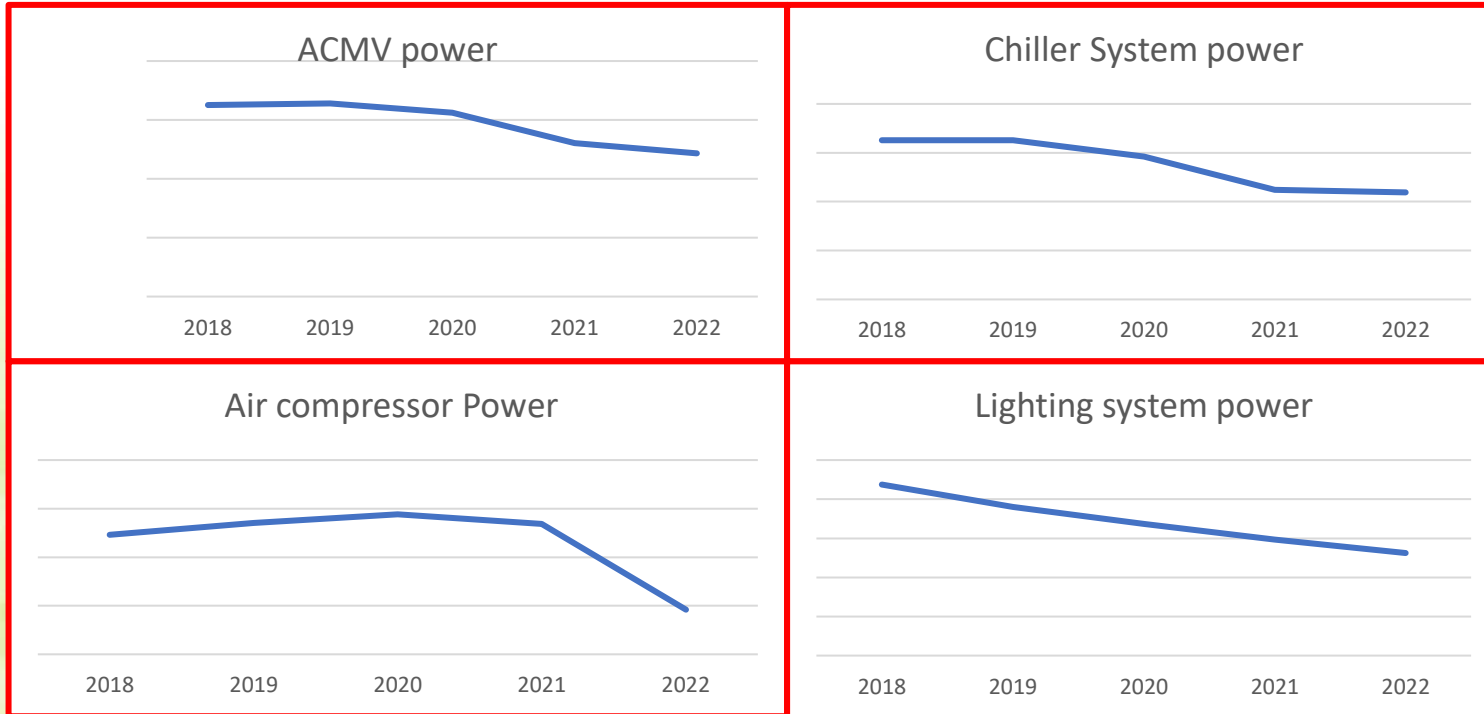
- Consistently target was set around 5 to 10% reduction on consumption.
- Management support for projects were given on time.
- Total electrical energy reduction from 2019 to 2023 on target is **39%**

Natural Gas Consumption



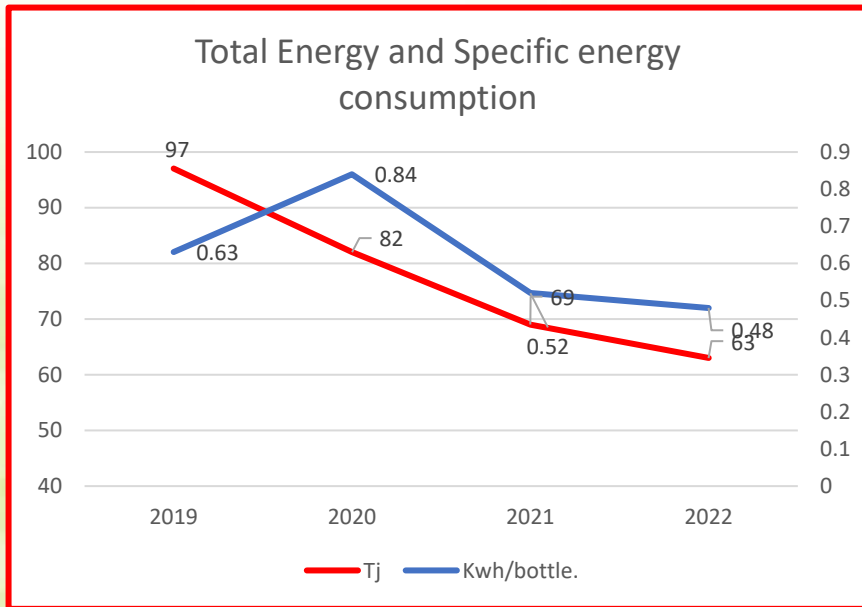
- Total reduction of Natural Gas target from 2019 to 2023 is **47%** .
- Total of 4 projects helped to reduce the consumption.
- Going for a low capacity boiler to meet the site present operational strategy in the coming year.
- Total equivalent CO₂ reduced is 6800Mt.

Energy Reduction in All Systems



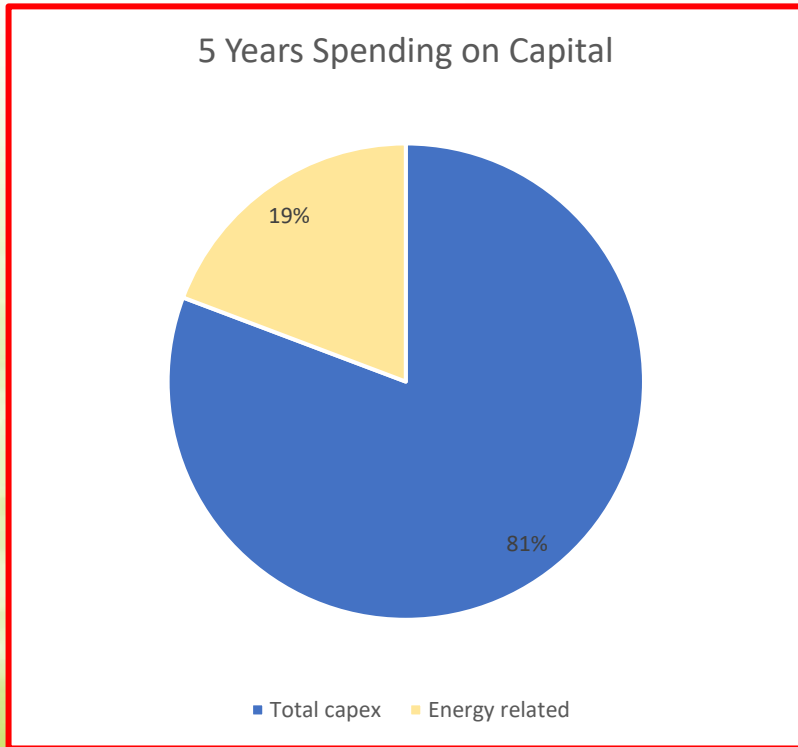
All the major system which account for majority of energy (electrical) shows a reduction over the years showing the sustainable effect put in for optimizing the systems with projects.

Total Energy and Specific Energy Consumption



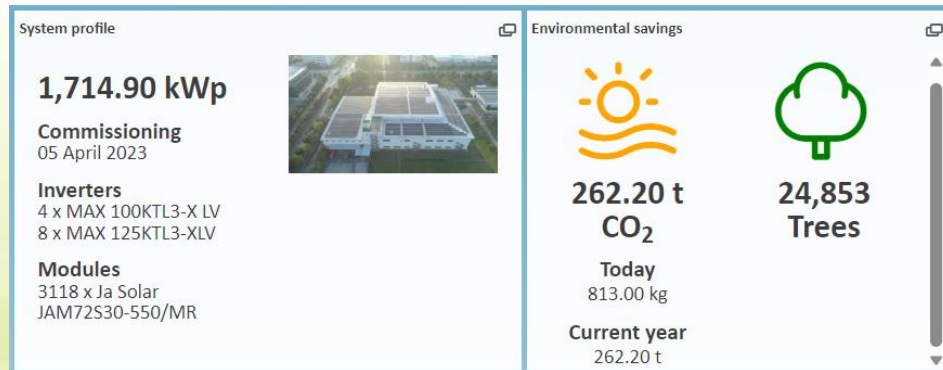
- Total Energy Reduction from 2019 to 2022 (Actual) is **35%**
- Specific energy consumption (Kw/bottle) reduction from 2019 to 2022 (Actual) is **23%**

Capital Spend on Energy Projects



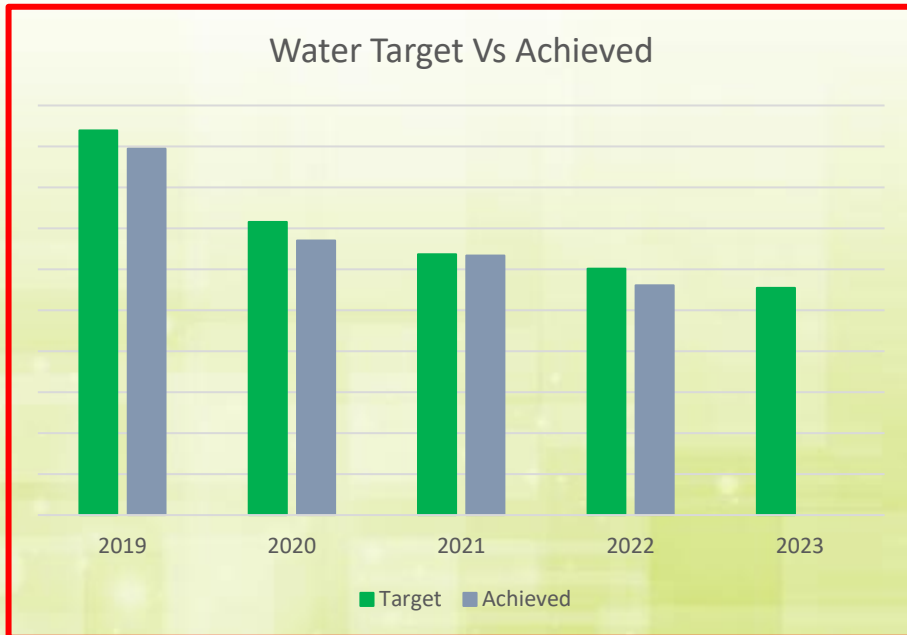
- Alcon has spent 19% of the total Capex spent on energy projects in the last 5 years.
- Our Sustainability Projects will continue to get a major portion of the Capex in the coming years.

Renewable Energy



- Commissioned renewable Solar power for site.
- Expected to generate/export about 17% of the site electricity demand.

Water Consumption



- Total water reduction from 2019 to 2023 target is **40%**
- Target achieved by recycling and optimization projects.

Waste Disposal



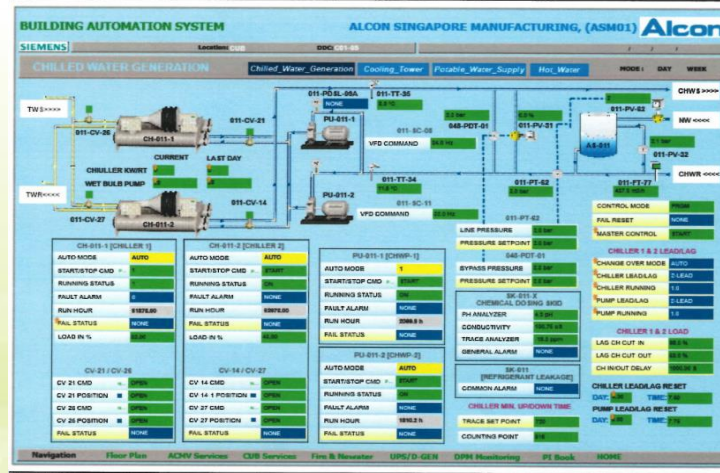
- 19% reduction from 2019 to 2022 and in 2023 it is expected to be 60% reduction of waste disposal.
- Alcon is the first healthcare company to be GreenCircle Certified for Zero Waste to Landfill for three of its ophthalmic drop and solutions manufacturing facilities and Alcon Singapore is one among them.

Projects Which Contributed to The Energy Reduction at Site

- Chilled temperature optimization. Project started in 2018 and continues till date.
- Chilled water pump speed reduction. VFD adjusted in steps starting in 2019.
- Changeover to LED lights in all areas (Lab, Admin, Packaging etc)
- Boiler feed water pump change to a lower capacity pump.
- Optimization of Lab air change rates during weekend.
- RH% limit change in L3 Clean room. Hot water demand reduced and saving seen on Natural gas via lower boiler capacity.
- Air change rate reduction in L3 clean room. ACR change resulted in lower power consumption in AHU's.
- Flash steam recovery from return condensate tank. This project recycled the vent steam to the boiler saving energy required for the boiler.
- Small size compressor for Instrument/Process air system replacing a big compressor.

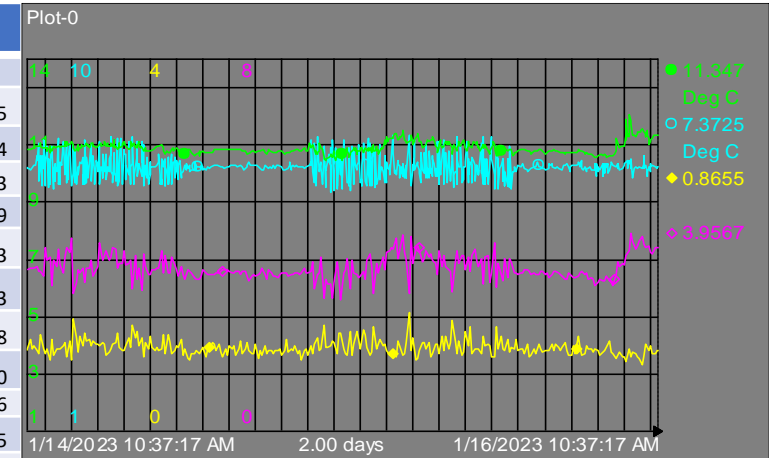
Energy Monitoring system

Siemens Alcon_Cooled_Water_Generation 1/16/2023



SG_ALCON_PRO (3.15)

Date	CHRW flow	Inlet T	Outlet T	Dt	Kj/kg
01-Jan-21 00	-6300.17	10.65	6.53	4.11	17.25
02-Jan-21 00	-5767.29	10.22	6.44	3.78	15.84
03-Jan-21 00	-4163.43	10.22	6.46	3.75	15.73
04-Jan-21 00	-1431.07	10.99	6.58	4.41	18.49
05-Jan-21 00	1143.20	11.06	6.68	4.37	18.33
06-Jan-21 00	3708.03	11.12	6.87	4.25	17.83
07-Jan-21 00	6869.15	10.95	6.80	4.14	17.38
08-Jan-21 00	8158.07	11.12	6.82	4.29	18.00
09-Jan-21 00	7534.28	10.93	6.81	4.12	17.26
10-Jan-21 00	8369.49	10.85	6.83	4.02	16.85
11-Jan-21 00	9735.69	11.16	6.79	4.37	18.32



- Monitoring system collects all the data and stores in a Server.
- Data can be imported to Excel for analysis.
- Data can be converted in Graphical form for monitoring and Analysis.
- Alarm management system alert the operator when Alarms are sounded.
- Alarm discussion in daily morning meeting.

Future Drive towards Sustainability

Projects completed in 2023 and in the pipeline

- Change AHU Centrifugal to Axial fans.
- New low capacity chiller to replace existing higher rated chiller.
- Low capacity boiler to replace the existing higher rated boiler.
- LED light change in other areas.

THANK YOU

Alcon
SEE BRILLIANTLY

