



PRODUCT PRESENTATION

STERO-360 MOBILE UV SANITIZER

OVERVIEW

- ▶ Chapter 1: About Alfaa UV
- ▶ Chapter 2: What is UV?
- ▶ Chapter 3: The Need for UV.
- ▶ Chapter 4: Introduction to the STERO-360.
- ▶ Chapter 5: Typical Stero-360 Use Cases.
- ▶ Chapter 6: Case Studies / Performance Evaluations.
- ▶ Chapter 7: Partial List of Alfaa UV Customers.



CHAPTER 1: OUR COMPANY

ABOUT ALFAA UV

THE UV EXPERTS

- ▶ The STERO-360 is designed, manufactured, and backed by Alfaa UV.
- ▶ 20+ years experience in UV technology.
- ▶ 1 lakh+ installations around the world in the pharmaceutical, F&B, and hospitality industries.
- ▶ Pan India presence with sales and service offices across 14 cities.
- ▶ Manufacturer of Indias first and only USFDA approved Ultraviolet Sterilizer for the pharmaceutical industry - Biopure.
- ▶ Customized solution based on the application and need.



MARKETS AND APPLICATIONS

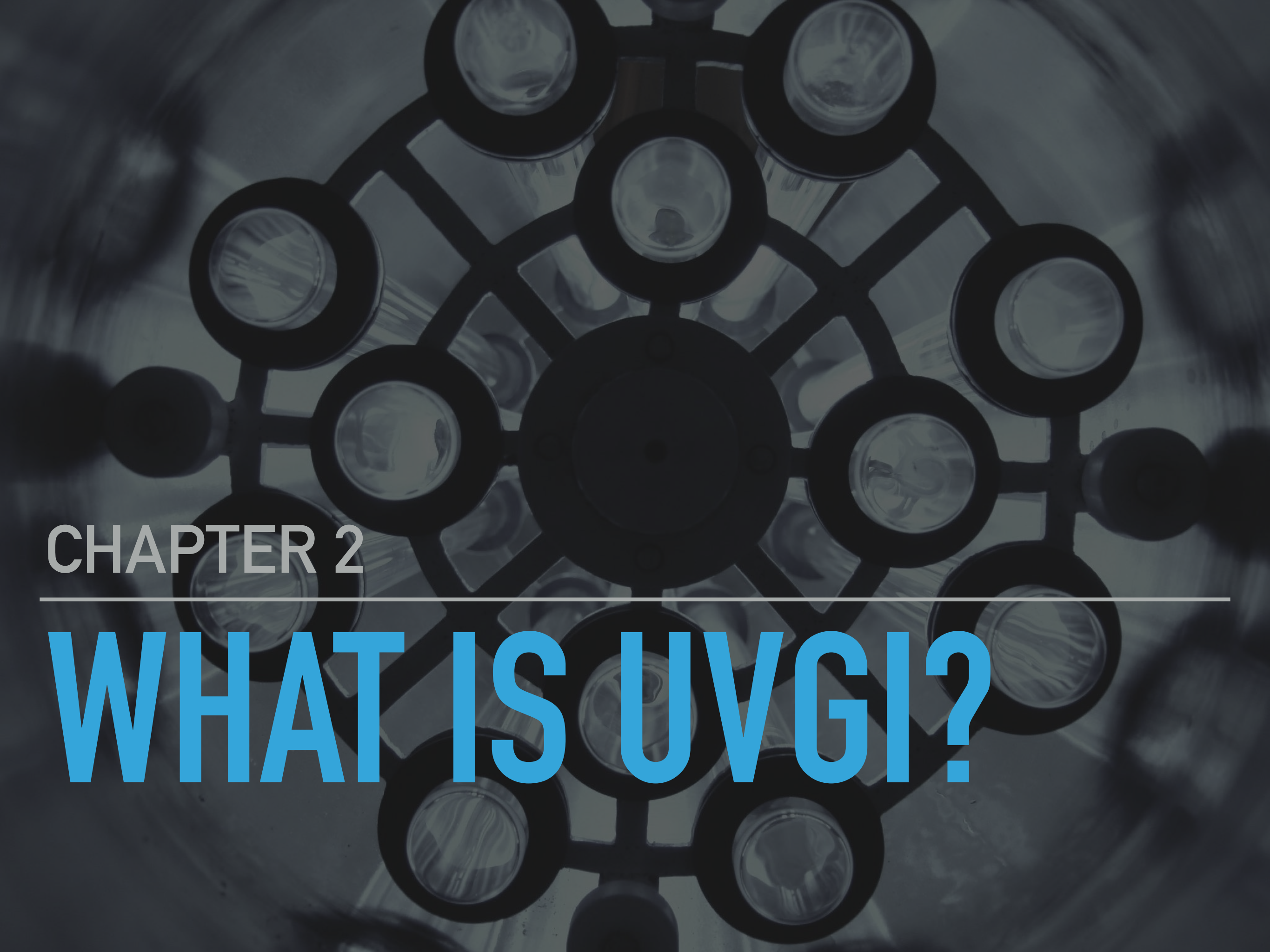
▶ Key Markets

- ▶ Bio Pharma
- ▶ Food and Beverage
- ▶ Builder and Infrastructure
- ▶ Hotel and Hospitality
- ▶ Hospitals and Healthcare

▶ Key Applications

- ▶ Water Disinfection
- ▶ Surface Disinfection
- ▶ Air Disinfection (HVAC)





CHAPTER 2

WHAT IS UVGI?

UVGI

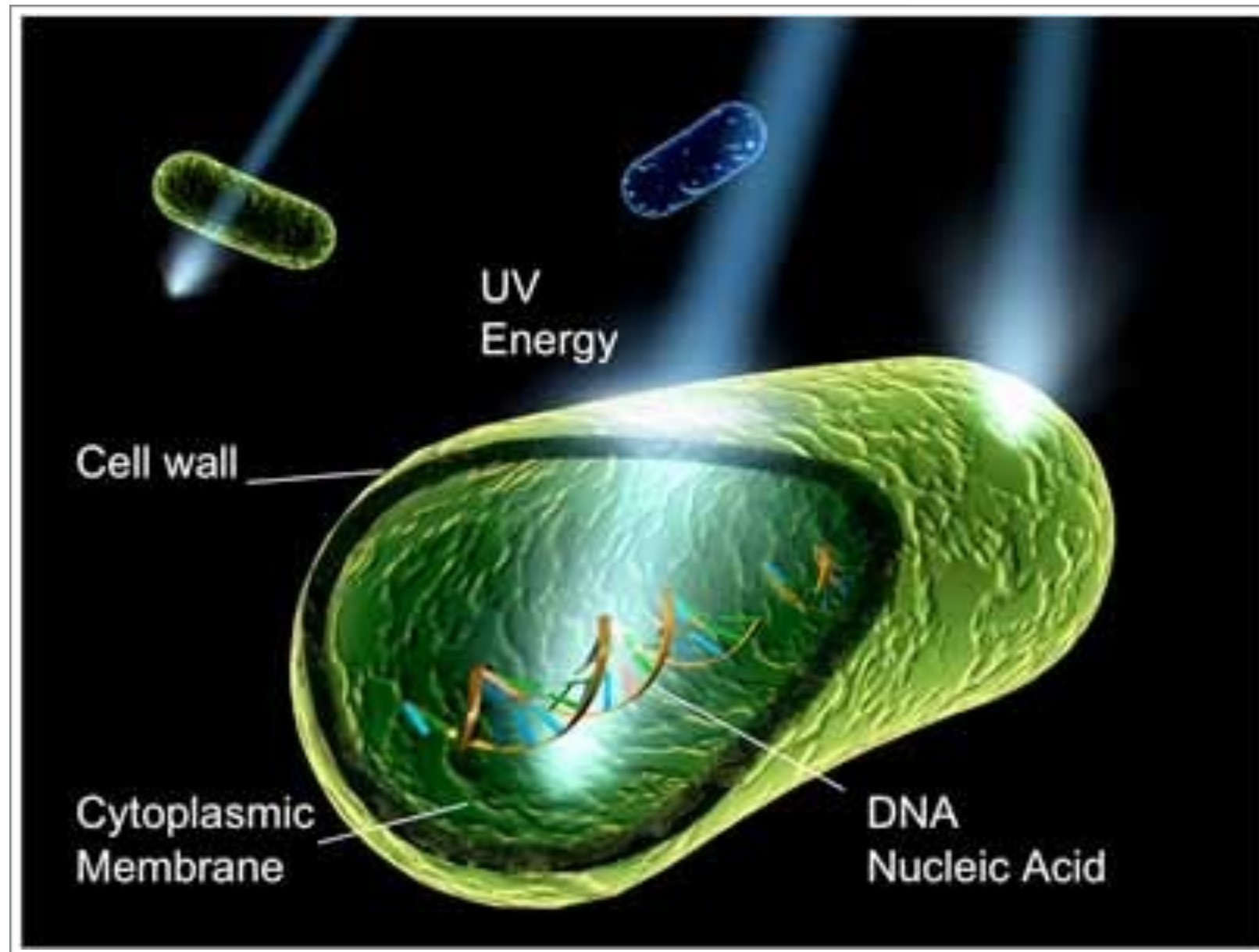
- ▶ Ultraviolet Germicidal Irradiation (UVGI) is electromagnetic radiation.
- ▶ It is used to disinfect (kill) microorganisms such as bacteria, virus, yeast, mould, and fungus.
- ▶ It is a non-chemical technology with no residuals or by-products.
- ▶ There are no known microorganisms resistant to UV.



EFFECT OF UVGI ON MICROORGANISMS

- ▶ Ultraviolet Germicidal Irradiation is electromagnetic radiation that can destroy the ability of microorganisms to reproduce and effectively “kills” the organism.
- ▶ UVC photons at 254nm severely damages the cell due to the absorption of these UV wavelengths by the nucleic acids inside the organisms. This destroys the cell DNA.
- ▶ Once the DNA is destroyed, the organism is inactivated and killed.

IMPACT OF UV ENERGY ON A MICROORGANISM



THE CONCEPT OF UV DOSE

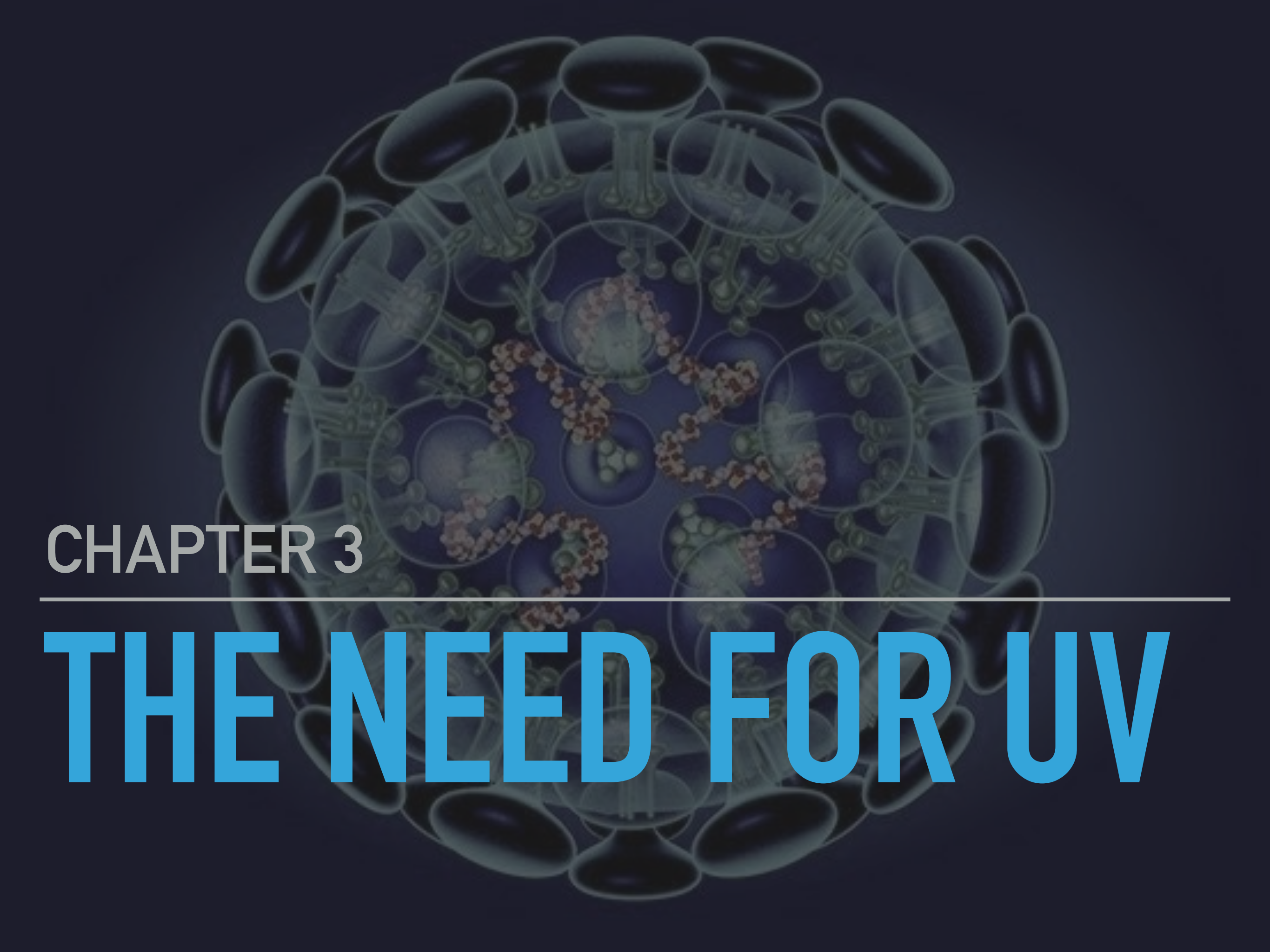
($\mu\text{W-sec/cm}^2$)

($\mu\text{W/cm}^2$)

(seconds)

$$\text{UV DOSE} = \text{UV INTENSITY} \times \text{EXPOSURE TIME}$$

- ▶ An organism must receive the correct UV dose in order for it to get inactivated.
- ▶ The mean UVC dose requirement for the coronavirus group of organisms (of which COVID-19 is a part) is 26,000 $\mu\text{W-sec/cm}^2$ for a 4 log (99.99%) kill rate.
- ▶ The STERO-360 is designed to provide a 50,000 $\mu\text{W-sec/cm}^2$ dose to a target surface at a distance of 1.8 meters (and height upto 2.5 meters) within 2.5 minutes.
- ▶ The recommended cycle for a room about 150-200 sq. ft. Is 10 minutes to compensate for losses due to shadowing.



CHAPTER 3

THE NEED FOR UV

WHY IS UV NEEDED?

- ▶ COVID-19 is primarily transmitted through contact with respiratory droplets which are spread when a person coughs or exhales.
- ▶ Others get infected by touching these surfaces and then touching their eyes, nose, or mouth.
- ▶ Everyday objects and surfaces that we come in contact with, could be hazardous, even after conventional chemical disinfecting.
- ▶ Research confirms that the life of the virus ranges between 12-72 hours, depending on the surface.

WHY IS UV NEEDED?

- ▶ Conventional chemical sanitizing by wiping down with disinfectant can be effective.
- ▶ However, it is very prone to human errors (eg. missing spots).
- ▶ It is also expensive and time consuming - think wiping down a gym with all the touch points and equipments.
- ▶ A well design and engineered UV system can provide a very effective solution to this need for sanitizing and disinfection.

THE HISTORY OF UV DISINFECTION FOR AIR AND SURFACES

- ▶ UV is a 90+ year old technology.
- ▶ 1937: Application in schools to control measles.
- ▶ 1957: UV used to control TB
(US CDC now recommends UV for controlling TB.
- ▶ 1974 - UV used to control microbiological growth on HVAC surfaces.
- ▶ 2000 - US Army recommends UVGI for disease isolation.
- ▶ 2007 - ASHRAE study demonstrates reduction in surgical site infections using UV technology.

SOME NOTABLE UVGI INSTALLATIONS WORLDWIDE FOR COVID-19



New York MTA (Subway Cabin Disinfection)



Aircraft Cabin Disinfection, Boeing



Airport Tray Sanitization, Rome Airport



Hospital Room/OT Disinfection



CHAPTER 4

INTRODUCTION TO THE ALFAA UV STERO-360

THE STERO-360-6900

- ▶ High performance mobile UV sanitizer.
- ▶ 6 high intensity UL certified UVGI emitters (ozone free).
- ▶ Proprietary high efficiency energy distribution system to increase the irradiated UV dose on target surfaces by > 100%.
- ▶ Realtime performance validation with NIST / US FDA approved PRISM technology - ensures complete sanitation every single time.



THE STERO-360-6900

- ▶ Delivers a target UV dose 50,000 $\mu\text{W-sec/cm}^2$ @ 1.8m in just 2.5 minutes!
- ▶ App based control for remote operation.
- ▶ Preset functionality ensures that the device is placed in the ideal location in room every time. Eliminates operator error and is critical for proper sanitation.
- ▶ Data logging with web interface* for verification and audit trail.

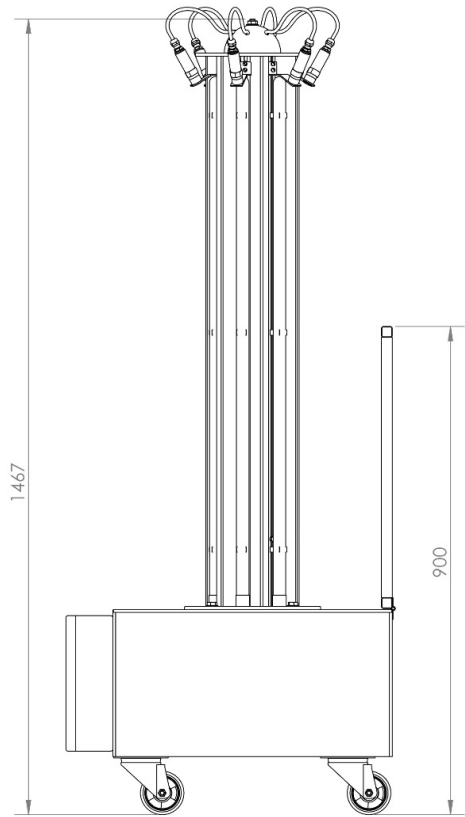
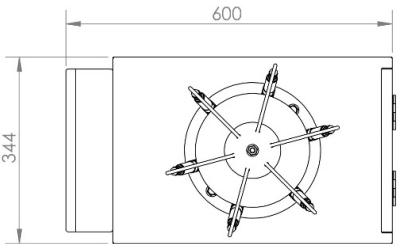


* Requires working mobile data on the operators mobile device.

TECHNICAL SPECIFICATIONS

Unit	Model	Alfaa UV Stero-360-6900
	UV Dose (at 6 feet for 10 minutes)	50,000 µJ/cm²
	UV Emitters	6 EA (High Intensity Type With Quartz Encapsulation)
	UV Emitter Power	100 W EA
	UV Emitter Model	UC-UL-900-1X
	UV Emitter Certification	UL Certified (UL 1995 + UL 2043)
	UV Emitter Life	12,000 Hours / 9000 Cycles
	UV Energy Distributor	Hexagonal Parabolic Reflector System for 360° Distribution
Electrical	Voltage	220-240V / 50-60Hz
	Maximum Power Consumption	680 W
	UV Emitter Drivers	6 EA
	UV Emitter Driver Type	High Intensity, High Frequency (UL Certified)
	Circuit Breaker	10A
	Cable Length	10 meters
Ambient Conditions	Ambient Temperature	10 °C to 40 °C
	Protection Rating	IPX0
	Construction	Stainless Steel
Electronics / Software Features Standard and Optional Features	Controller	Alfaa UV CT1 Industrial Controller
	Communications	WiFi + Bluetooth
	Room Layouts Program Storage	500 (for Automatic Room Disinfection Cycles)
	Data Logging	Cloud Based (10,000 Records)
	UV Intensity Radiometer with IntelliDose	Optional
	Remote Lamp On-Off	Hardwire / via App
	Lamp Replacement Reminder	Yes
	Lamp Failure Indication (with Alarm)	Yes

Unit Dimensions (in mm)



ALFAA UV STERO-360 VS OTHERS

Salient Feature	Alfaa UV Stero-360	Others
UV Emitter Power	100W Each	40W Each
UV Emitter Certification	UL Certified	-
UV Energy Distributor	High Efficiency Parabolic Reflector System with UV Reflective Coating (> 100% Increase In Radiated UV Dose)	-
UV Lamp Type	Specially customized for HVAC and surface disinfection applications.	Off the shelf UV lamps designed for water treatment which provide much lower output when used in air.
Realtime Performance Validation with NIST Traceable UV Dosimeter	Available. Ensures system is delivering the promised UV energy in real-time.	-
Construction	Stainless Steel	Power Coated MS / GI
Remote Operation	Yes (WIFI + Bluetooth)	-
Room Presets	Available. Makes using the product fool proof by eliminating chances of human error.	-
Data Logging with Web Dashboard	Provides detail report and audit trail with disinfection history for a particular room.	-
UV Installations Pre-COVID for Surface and HVAC Applications	> 2000	-
UV Experience & Track Record	> 20 Years in UV Devices	Inadequate experience and Installations. No installations pre-pandemic.
Spares Availability	Ample stock availability at various service offices across the country. Service by a dedicated team of UV experts.	Will be a major challenge for long term support.

CHAPTER 5

**CLASSIC APPLICATIONS OF
ALFAA UV STERO-360**

ALFAA UV STERO-360 INSTALLATIONS

FOR OFFICE CABINS



ALFAA®
THE UV EXPERT

ALFAA UV STERO-360 INSTALLATIONS

FOR WORKSPACES



ALFAA UV STERO-360
INSTALLATIONS
FOR
WORKSPACES



ALFAA UV STERO-360
INSTALLATIONS
FOR PANTRY
AREAS



ALFAA UV STERO-360
INSTALLATIONS
FOR TOILET
WASHBASINS



ALFAA UV STERO-360
INSTALLATIONS
FOR TOILET
URINALS



ALFAA UV STERO-360 INSTALLATIONS

FOR MEETING ROOMS



ALFAA UV STERO-360 INSTALLATIONS

FOR MEETING ROOMS



ALFAA UV STERO-360 INSTALLATIONS

FOR CAFETERIAS



ALFAA UV STERO-360 INSTALLATIONS

FOR GYMNASIUMS

INESIS



ALFAA UV STERO-360 INSTALLATIONS

FOR RECEPTIONS



ALFAA UV STERO-360 INSTALLATIONS

FOR RECEPTIONS



ALFAA UV STERO-360
INSTALLATIONS

FOR
ELEVATORS



ALFAA UV STERO-360
INSTALLATIONS

FOR HOTEL
ROOMS



ALFAA
THE UV EXPERT

ALFAA UV STERO-360 INSTALLATIONS

FOR HOTEL ROOMS



ALFAA UV STERO-360 INSTALLATIONS

FOR HOTEL BATHROOMS



ALFAA UV STERO-360 INSTALLATIONS

FOR HOTEL BATHROOMS



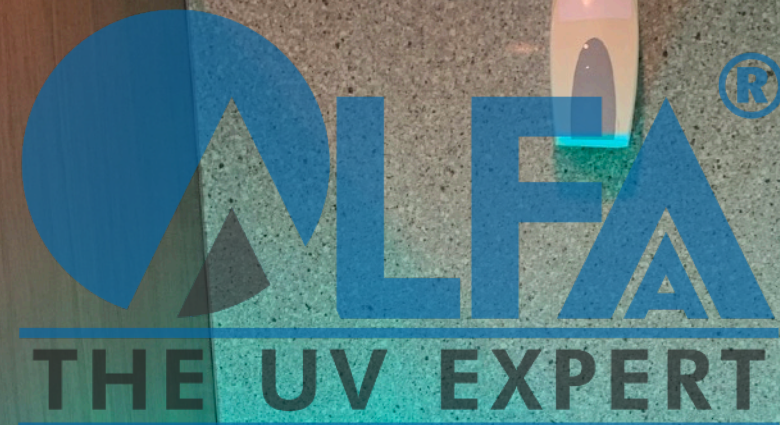
ALFAA UV STERO-360 INSTALLATIONS

FOR AIRPORT/HIGH TRAFFIC WASHROOMS



ALFAA UV STERO-360
INSTALLATIONS

FOR TOILET
CUBICLES



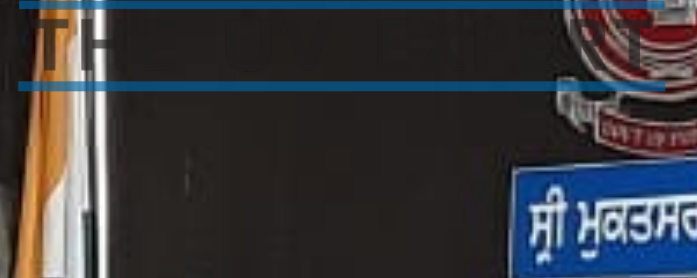
ALFAA UV STERO-360 INSTALLATIONS

FOR WAREHOUSES AND STORES



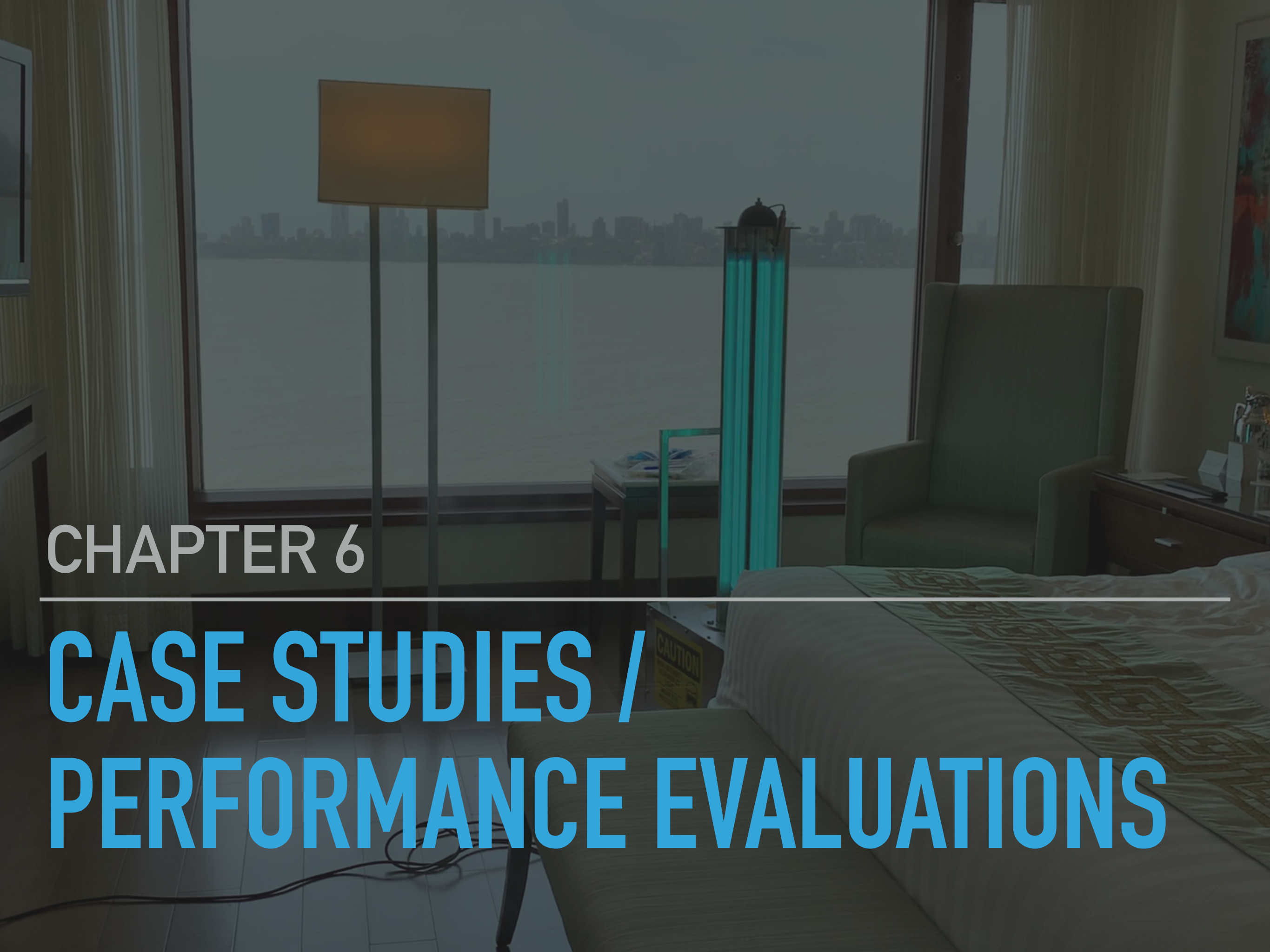
ALFAA UV STERO-360 INSTALLATIONS

FOR OFFICER CABINS



Samsung Triple Camera
Shot with my Galaxy A50





CHAPTER 6

CASE STUDIES / PERFORMANCE EVALUATIONS

TESTING

- ▶ The STERO-360 and its associated emitters have been tested extensively by various customers independently.
- ▶ Following are a few of the results shared with us.
- ▶ Evaluation typically involves smearing innocuous suspension of the microorganisms on target surfaces.
- ▶ Micro swabs and cultures are collected before and after sanitation to check the effectiveness of the disinfection process.



TEST RESULTS AT CUSTOMER SITES

Industry	No. Of Samples (Organisms)	Log Reduction	% Reduction
A Prestigious Five Star Hotel Chain	10 (TBC, E-Coli)	4.71	> 99.998%
A Leading Food Processing Company	75 (E-Coli, Staphylococcus aureus, Salmonella)	5.18	> 99.999%
A Prominent Financial Services Company	16 (TBC, Y&M)	4.27	> 99.994%
India's Leading Telecom Company	12 (TBC, Y&M)	2.12	> 99.2%

CHAPTER 7

OUR CUSTOMERS

SOME OF OUR VALUED CUSTOMERS (AIR & SURFACE UV PURIFICATION APPLICATIONS)

• **Metro & Infra Projects**

- DMRC (Delhi Metro Rail Corporation)
- LMRC (Lucknow Metro Rail Corporation)
- CMRL (Chennai Metro Rail Corporation)
- NMRP (Nagpur Metro Rail Project)
- Airport Authority of India, Dehradun

• **Commercial**

- Capgemini
- Boeing Industries
- JPMC (J P Morgan Chase)
- Axis Bank
- PVR Cinemas
- Paypal Holding
- Ascendas, Bangalore
- Texas Instruments Bangalore
- Vodafone India
- Wipro Ltd.
- Infosys Limited

- Danfoss Industries Pvt. Ltd.
- Kalpataru Builders
- Korum Mall
- Siemens, Bangalore
- Qualcomm, Bangalore
- Armed Forces of Saudi Arabia
- Supreme Court of India
- Kotak Bank, Mumbai
- Cummins India Limited
- Edelweiss Asset Management Ltd.
- High Commission of Canada
- Karnataka Power Corporation Limited
- ISF Industries
- Mantle Solutions, Kochi
- Oberoi Hotels
- Reserve Bank of India
- Raheja Corp.
- IBM

• **Hospitals**

- Jaslok Hospital & Research Centre
- Sir H N Reliance Foundation Hospital
- Fortis Hospitals
- AIIMS Hospitals
- HCG Hospital
- AIIMS, Bilaspur
- Breach Candy Hospital
- KIMS Hospital
- Sion Hospital
- Sky Super Speciality Hospital
- IPGME & SSKM Hospital
- Lokmanya Tilak Municipal General Hospital
- Lourdes Hospital
- Principle Healthcare & Wellness Pvt Ltd
- Sarojini Devi Eye Hospital
- Nair Charitable Hospital Mumbai
- Sky Super Speciality Hospital Kerala

- M R Bangur Hospital
- APCRDA (L&T)
- LTMG Hospital
- SPRE
- Nair Hospital
- Kohinoor Hospital
- Seven Hills Hospital
- KEM Hospital

• **Pharmaceutical & Process**

- USV Pvt. Ltd.
- Teva Pharmaceutical Ltd.
- Roche
- Procter & Gamble
- Danone Food Company
- Pepsico India Limited
- ITC Ltd.
- Serum Institute Of India
- Mother Dairy
- Divis Laboratories
- Mylan Laboratories
- Pepsi
- USV

SOME OF OUR VALUED CUSTOMERS (WATER PURIFICATION APPLICATIONS)

- Ajanta Pharma Ltd
- Alkem Ltd
- Asea Brown Boveri
- Asian Paints Ltd
- Associated Capsule
- Aurobindo Pharma Ltd
- Bajaj Auto Ltd
- Banner Pharma Ltd
- Baskin Robbins
- Bayer (India) Limited
- Bharat Serium
- BHEL India Ltd.
- Carlsberg Ltd.
- Castrol India
- Central Park, Bangalore
- China Garden, Mumbai
- Cipla Limited
- Coca Cola
- Colgate Palmolive Ltd
- Dabur India Limited
- Divis
- Dow Corning
- Dr Reddy's Laboratories Ltd
- E Merck Ltd
- EEI Capsules
- Elite Pharma
- Flemming
- Frito Lays India
- Galaxy Surfactants
- Glenmark Pharmaceuticals Ltd
- Godrej Agrovvet Ltd
- Graphite India Limited
- Hetero Labs
- Hindustan Antibiotics
- Hindustan Unilever Ltd.
- Hongkong & Shanghai Bank
- Hotel Ashok, Bangalore
- Hotel Leela, Mumbai / Goa
- Indian Navy
- Indian Oil Corporation
- Indoco Remedies Ltd
- Infosys Ltd.
- IPCA Labs Ltd.
- Jain Irrigation Systems Limited
- Jaslok Hospital
- Johnson & Johnson (Ethnor)
- Kopran Laboratories
- Kwaliti Biscuits
- Mahindra & Mahindra (Ford Divn)
- Marine Plaza, Mumbai
- Matrix Labs
- Micro Labs. Pvt. Limited
- Mylan Laboratories Ltd.
- Nerolac Paints
- Nandos Indage
- Natco Pharma Ltd
- Oberoi Hotel
- Oros Lab
- Parle Products Limited
- PepsiCo India Holdings Ltd.
- Pernod Ricard
- Pfizer Limited
- Phlox Pharma
- Pioma Industries Ltd
- Rama International, Aurangabad
- Ramada Renaissance, Goa
- Ranbaxy Laboratories Ltd
- Romell Estate.
- RPG Life Sciences Ltd
- Sea Rock Sheraton, Mumbai
- Shreeram Mills Ltd
- Shreya Life Sciences
- Sudesh Sea Foods Ltd
- Sun Pharma Ltd
- Taj, Nasik
- Temptations Foods Ltd.
- Texas Instruments
- The Ambassador, Mumbai
- The Oberoi, Bangalore
- United Breweries Ltd
- Venkateshwara Hatcheries
- Windsor Manor, Bangalore
- Wockhardt Limited
- Zydus Cadilla



For more details or a live demonstration with no obligations:

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