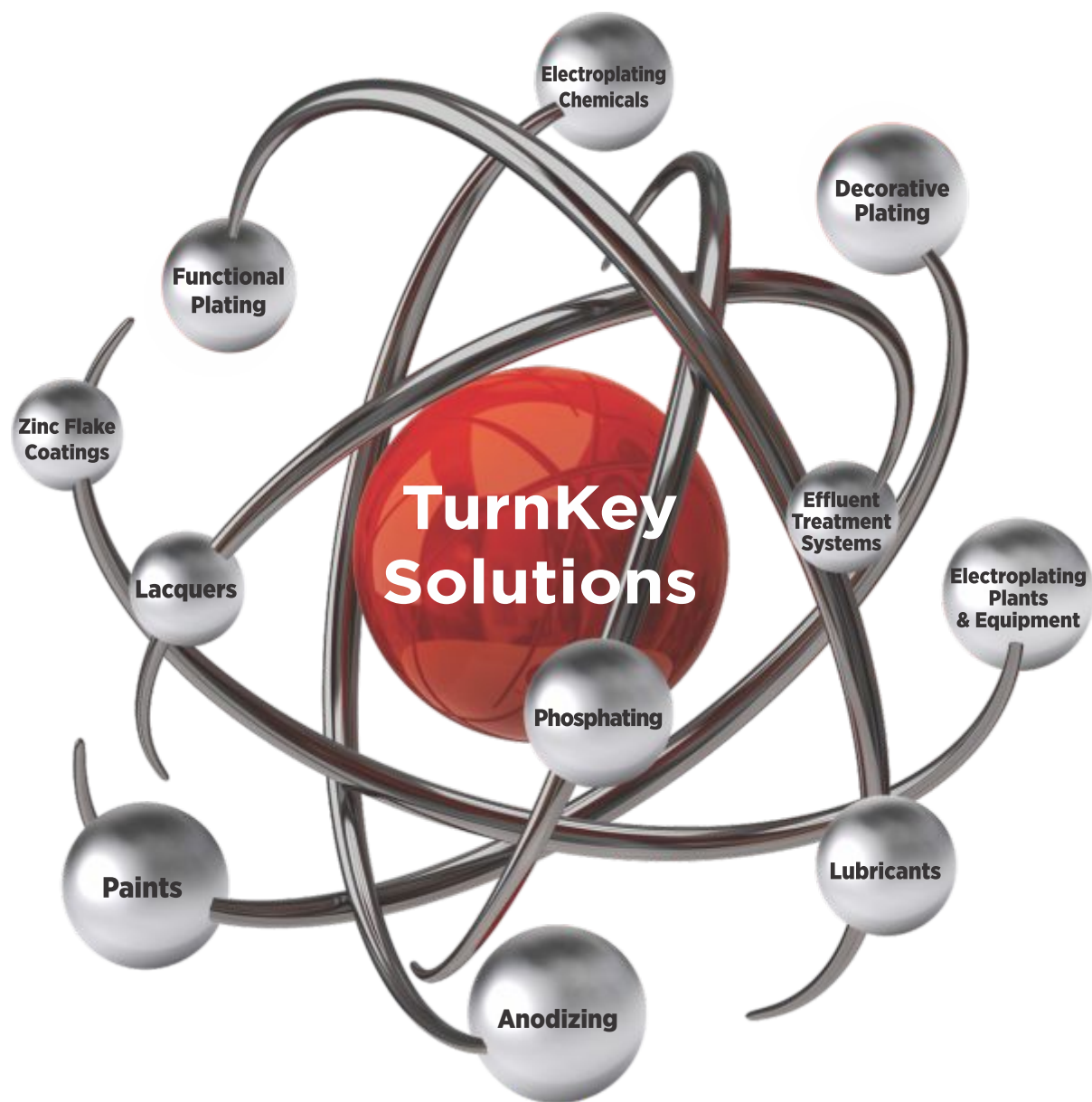


One Stop Shop For Surface Finishing



About Growel

India's trusted leader in metal finishing and surface treatment since 1957

We are pioneers in electroplating, paints, lubricants, surface treatment intermediates, and mission critical equipment. We partner with customers in diverse industries to provide comprehensive solutions backed by in-depth domain knowledge. Our R&D is recognised by the Indian Council of Science & Technology; our plants and processes are IMS certified. Additionally, we are AS9100 aerospace certified – meeting the stringent standards of NASA, FAA, and the DOD.

ADVANCED SOLUTIONS
FOR THE
AEROSPACE INDUSTRY



Grauer & Weil (India) Limited

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www.growel.com

Chemicals | Engineering | Paints | Lubricants | Real Estate



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GC/STFA/0519/0224/500

Growel offers a comprehensive range of high quality, tailor made products for surface treatment and coatings for the aerospace and defence industries. Our products not only meet the stringent demands of international standards – QUALANOD, ASTM, ISO, GOST, AMS, MIL spec, but also the rigorous requirements of OEMs. We are one of India's few AS 9100 certified companies, and products that are treated with our solutions meet the rigorous standards of NASA, FAA and DOD for aerospace-grade solutions.

DISCLAIMER: Our recommendations are provided in good faith and reflect our expertise. However, as the conditions of product usage are beyond our control, this information is provided with the explicit understanding that Grauer & Weil (India) Limited shall not be held responsible to any individual for any resulting outcomes. This statement is not an endorsement to use any product in contravention of existing patent rights.

Advanced Solutions for the Aerospace Industry

Growel possesses an in-depth knowledge of the aerospace industry’s needs, catering to OEMs, part manufacturers, and suppliers. We are one of the very few Chemical and Engineering companies world over, capable of offering an integrated package of chemicals, paints, lubricants, engineering plants, and effluent treatment and waste water recovery systems.

Our bouquet of products includes Aluminium Conversion Coatings, Cadmium, Chromium, Nickel, Zinc and Zinc alloy plating, Electroless Nickel plating, Epoxy Primers, Polyurethane topcoats and enamels, and numerous other offerings for aircraft and missile bodies.



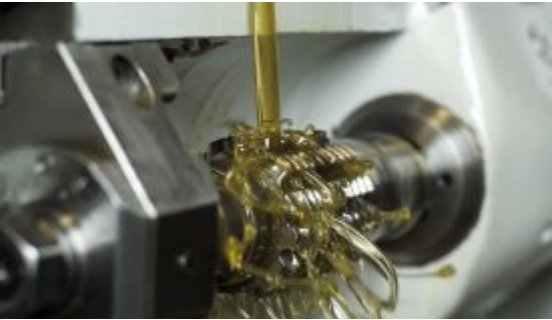
Chemicals



Engineering



Paints




Lubricants




Real Estate

International Associates



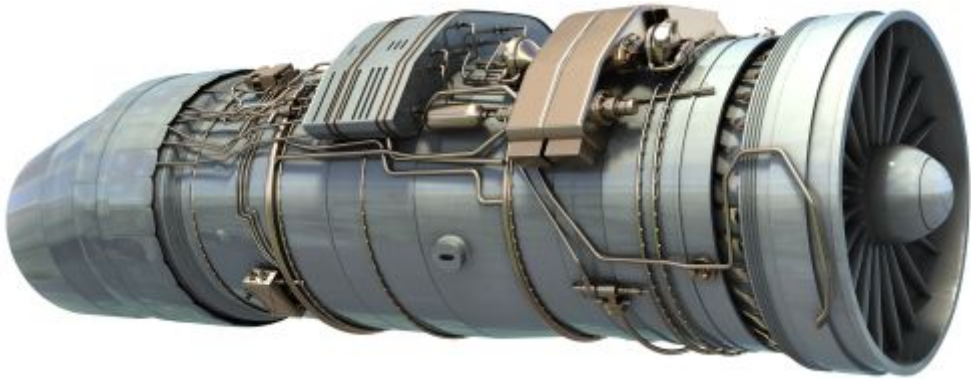
NOF METAL COATINGS GROUP

NOF – Technology cum distribution collaboration with NOF Metal Coatings Group of Japan



TRANSOCEAN COATINGS




Transocean Coatings is a worldwide association of paint producers. The Association develops, manufactures and sells antifoulings, anticorrosives and many more coatings for ships, offshore installations, industrial facilities and yachts.



Chemicals
Trusted Aerospace-grade Surface Treatment Chemicals

Our cutting-edge chemical solutions have gained approval from aerospace OEMs, making them the go-to choice for the aerospace and defence industries.

Categories	Process / Product	Unique Features
Cleaners	Growspace 814 SPL	Chelated alkaline multipurpose cleaner for substrates such as aluminum alloys, titanium alloys, low alloy steels, magnesium alloys, zinc base die-castings etc. Meets Specification: BAC 5749 (on QPL) Boeing.
	Growspace EX 28 Cleaner	Chelated alkaline multipurpose liquid cleaner for substrates such as aluminum alloys, magnesium alloys, titanium alloys, low alloy steels, etc. It can also be used to clean exterior painted surfaces. Meets Specification: BAC 5749 (on QPL) Boeing.
	Growspace Aqueous Cleaner	Heavy duty inorganic base aqueous cleaner designed specially for aluminum, magnesium, titanium alloys to aircraft industries as well as ferrous & nonferrous alloys. This product is effective on hard to remove soils since it dissolves surface oxides thereby under mixing the absorbed oils. Meets Specification: CSS 253 Issue: 6 Feb 2001 (Approved by Rolls Royce for use at Godrej Aerospace).
Cadmium	Growspace Cadal Cadmium Salt	Produces matt white deposits with excellent throwing power.
	Growspace Cadmium Brilliant Process	Designed to produce silvery bright, non-porous cadmium deposit straight from the bath – suitable for rack & barrel plating process. Meets Specification: A-A-50800A.
	Growspace CAD	Used for cadmium electroplating. Meets Specification: A-A-50800A.
Zinc Plating	Growspace CZ Ultra	Cyanide zinc brighteners with superb, unmatched brightness. Meets Specification: AMS 2402.
	Growspace CLZ 978	Acid zinc brightener system with high quality brightness. Meets Specification: AMS 2402.
	Growspace 2015 Process	Alkaline brightener system produces mirror bright deposit and also, sustainable on longer scale of production. Meets Specification: AMS 2402.
Zinc Alloy Plating	Growspace NIZ Plus	Non cyanide alkaline Zn+Ni plating process for high corrosion resistance and low hydrogen embrittlement. Environment friendly alternative to Cadmium plating. Meets Specification: AMS 2417 & ASTM F519 for hydrogen embrittlement.
	Growspace COZ	Easy to operate, acid Zn-Co plating process. Alloy composition: Zn: > 99% & Co: up to 1% is feasible.
	Growspace ZCO	Alkaline Zn-Co plating process, very similar to that of alkaline zinc plating. Alloy composition: Zn: > 99% & Co: up to 1% is feasible.

Hexavalent Chromates	Growspace FeZ	Alkaline Zn-Fe plating process. Offers extraordinary corrosion protection. Alloy composition: Zn: > 99% & Fe: up to 1% is feasible.	Phosphating	Growspace Zn 602	Nickel modified heavy duty phosphating system.	
	Growspace Sn Zn	Cyanide free, neutral Tin Zinc plating process. Offers excellent corrosion resistance while exposed to reducing atmosphere. Provides highest resistance to Kesternich test as compared to other zinc alloys. Alloy composition: Zn: 25-35% & Sn: 65-75%.		Growspace Zn 601 / 604	Calcium modified, Tri-cationic room temperature phosphating system to obtain medium to lower coating weight. Ideal choice for improving adhesion to be followed by, painting &/or power coatings.	
	Growspace 982L	High chrome containing chromating process to obtain golden iridescent chromating film with very high corrosion resistance on zinc & zinc alloy plating.		Growspace Mn 641/643	Oil absorptive, crystalline, black / dark-grey Manganese-Iron phosphate coating on steel and iron surfaces to reduce wear and prevent galling of moving parts. Meets Specification: IS 3618/1966 Class A.	
	Growspace 952	High chrome containing chromating process to obtain olive green chromating film with very high corrosion resistance on zinc & zinc alloy.		Growspace Eco 100	Nano ceramic coating – technical replacement for phosphate coating pre-paint &/or powder coating helps user's to conform eco-awareness.	
	Growspace 992 A & B	Twin additive silver based chromating process for Zinc & Zinc alloys to obtain glossy, jet black finish. Offers moderate corrosion resistance.		Blackening Process	Growspace S 34	High temperature blackening process for mild steel components. Meets Specification: MIL-DTL-13924, AMS-2485, TT-C-490.
Trivalent Chromates	Growspace Al 990	Hexavalent chromate conversion coating for aluminum alloys. High corrosion resistance and adherence to paints. Meets Specification: AMS 2473, MIL-DTL-81706 and MIL-DTL-5541.	Electroless Nickel	Growspace Instablack 33	Power saver blackening process.	
	Growspace 2203C	Hexavalent chrome free thick film iridescent passivate for Zn & Zinc alloys. Offers very high corrosion resistance (> 192 hrs WR).		Growspace Ni 425	High phosphorous (10 - 12%), electroless Nickel deposits that have excellent corrosion resistance, elongation and low stress. Meets Specification: MIL-C-26074, AMS 2404.	
	Growspace 1907	GenNext trivalent chrome based passivating system based on built in nano-particle. Offers very high corrosion resistance (> 240 hrs. WR).		Growspace Ni 625	High phosphorous (10 - 12%), RoHS compliance electroless Nickel deposits that have excellent corrosion resistance, elongation and low stress. Meets Specification: MIL-C-26074, AMS 2404.	
Nickel Plating	Growspace 791	Hexavalent chrome & Silver free, excellent single additive chromating system to obtain corrosion resistant glossy black chromate coating for zinc plated components.		Growspace Ni 632	New highly stable, high speed Mid phosphorous (7 - 9%) electroless Nickel process especially designed as per RoHS compliance for economical operation and good corrosion protection. Meets Specification: MIL-C-26074, AMS 2404.	
	Growspace Multilayer Nickel Plating process	Specially designed semibright, high sulphur sandwich layer, fully ductile bright nickel with exceptional ductility, micro-porous & micro-cracked nickel plating.		Growspace Ni 426	Unique high performance; low phosphorous, high hardness RoHS compliance electroless nickel process, specially designed for functional engineering applications. Meets Specification: MIL-C-26074, AMS 2404.	
Chrome Plating	Growspace Nickel Sulphamate	Produces stress free, fine grained, ductile thick nickel deposit. very useful for electroforming application.	Electropolish	Growspace EN 0709 CLF	New generation, Cadmium-Lead free, high speed midphos (7 -10 w/w %) electroless nickel process. Employs a completely different stabilizer and buffer system. Meets Specification: MIL-C-26074, AMS 2404.	
	Growspace HS Chrome Salt	Mixed catalyzed chrome plating process with very good throwing power.		Growspace Enoir EN passivation	Black electroless nickel passivation. Cobalt & chrome free, works well with all three variants of electroless nickel. Improves corrosion resistance. Designed for optical & solar application/aerospace industry.	
Growspace L 600 Chrome	High efficiency hard chrome plating process- designed to provide consistent deposit hardness ~ 1000 HV. Meets Specification: QQ-C-320, AMS 2406.	Growspace EPSS 3015 / 3018		Unique acid blend with promoters to obtain glossy bright finish on different grades of stainless steels.		
Specialized Plating Tin & Tin Alloy	Growspace CV Chrome salt	Chrome plating process based on traditional catalyst. Very suitable for thick coating e.g hydraulic cylinders etc.		Plating on Aluminium & Magnesium	Growspace Alzincate etc.	Specialized pre-treatment process – cleaners, zincating, electroless nickel, along with desired plating & other processes.
	Growspace LTC	Lead-Tin-Copper plating for bearings.			Anodising	i-Fin Al series
	Growspace BR Tin	Bright acid tin plating – produces mirror bright, silvery white deposit with good solderability.				
	Growspace Matte Tin	Produces pleasant matte finish.				
	Growspace HS Tin	Methane sulphonate based tin plating process where propensity to whisker formation is very low.				
Silver	Growspace 64	Produces satin tin lead plating (63:37) with excellent solderability. Meets specification: MIL-P-81728.				
	Growspace Silver Salt	Compounded salt to produce silver coating. Utilization of inorganic brightener system would produce good brightness along with higher deposit hardness (upto 190 VPN). It is also possible to use organic type brightener system to meet decorative requirements.				
Gold	Growspace Gold Plating processes	A whole gamut of different types of gold plating process with variety of colour tones. Meets specification: AMS 2422.	<div></div>			

Basic Chemicals	Growspace HA 37	Used for electroplating & pickling. Meets specification: ASTM 1146 – 97.
	Growspace HF	Meets specification: Godrej (CSS – 18), Issue 5.
	Growspace SA	Used for electroplating, anodizing & descaling. Godrej (A - A – 55828A).
	Growspace NA	Used for pickling & descaling. Godrej (CSS – 17), Issue 8.
	Growspace CA	Used for electroplating chromium. Godrej (A - A – 55827D).
	Growspace PA	Used for electroplating. Godrej (A - A – 55820B).


Oils & Lubricants	Growspace Cutsol series / Multi Cut SS 40	Cutting oil & corrosion inhibitor – should be chosen for smooth grinding & machining.
	Growspace RPWB 500	Water based, VOC free rust preventive with value added feature to be used as cleaning agents.
	Growspace ALSB 105	Vanishing, drawing & stamping oil (de-watering type).

Paints


High Performance Speciality Products for Aviation, Defence, and Space Research Projects

Products	Unique Features
Product for Aluminium and TI-Alloy BT6C- BrahMos Missile	Thin film high performance coatings conforming to GOST specification.
	Tested & validated by DRDL and NMRL.
	Primer BL 02 - GOST 12707-77: 2x10-15 microns.
	Primer AK 70 - GOST 25718-83: 1x8-12 microns.
Products for Steel Alloy - BrahMos Missile	Enamel EP 525 Green / Grey - GOST 22438-85: 2x15-20 microns.
	Special Epoxy paints. Operating temperature minus 60 to plus 120 dc conforming to GOST specification.
	Primer AK 070: 1x8-12 microns.
Product for Rocket deployed under extreme conditions - Pinaka Rocket	Enamel EP 525 Green / Grey: 2x15 microns.
	Cyclic temperature resistant from minus 40 dc to plus 55 dc.
	Tested & validated by ARDE.
	Epoxy primer DTD 5567 A Red oxide: 1x40 to 50 microns.
	Modified PU matt finish DTD 5580 A Olive Green: 2x40 to 50 microns.
	EP acrylic PS aircraft Grey [matt]: 1x40 microns.


We also cater to Ordinance Factories and other OEM suppliers of Defence Equipment



BrahMos



Pinaka Rocket



High Performance Coatings

Products Systems

Proven Product Systems for the Aerospace & Defence Industry

Our products – approved by the DRDL, NMRL, HAL & the Indian Navy stand as a testament to our commitment to excellence.

PRODUCT NAME	RESIN SYSTEM		END USE	MEETING SPECIFICATION
PUTTY KO-0032GREY	SILICON	Accelerator	Metallic surfaces of missile bodies.	TY 6-10-1977-84
PRIMER EP-104 WHITE	EPOXY	POLYAMIDE	Metallic & non-metallic surfaces.	TS 6-10-1124-76
UNI. Z/C PRIMER AK-70 YELLOW	PVB		Wings, fins, gas generator devices.	GOST 25718-83
WASH PRIMER BL-02	PVB	ACID	Metallic surfaces.	GOST 12707-77
P. Z/C PRIMER FI086	ALKYD/ DRIER		Metallic surfaces, -60 C to +200 C.	GOST 16302-79
ENAMEL EP-51 BLACK	EPOXY	POLYAMIDE	Non metallic ventilators, signal devices, antennae, -60 to +70 C.	GOST 9640-85
ENAMEL EP 140 BLACK / RED/ WHITE / GREEN	EPOXY	POLYAMIDE	Marking, stamping and Labelling; -60 to +70 C.	GOST 24709-81
ENAMEL EP-525 DARK GREEN	EPOXY	POLYAMIDE	Metallic sub units, non-metallic exterior surfaces; -60 C to +120 C.	GOST 22438-85
ENAMEL PF 566 GREY	SILICON		Non metallic surface.	TY 2313-073-05034239-95
EPOXY MATT FOR RADOM GREY	EPOXY	POLYAMIDE		
EPOXY MATT FOR RADOM BLACK	EPOXY	POLYAMIDE		
ACRYLIC GLOSSY FINISH AS-1115 DOVE GREY	ACRYLIC RESIN		For helicopter skin	TY-6-10-1029-83
ACRYLIC GLOSSY FINISH AS-1115 LIGHT GREY	ACRYLIC RESIN		For helicopter skin	TY-6-10-1029-79
STYRENE ALKYD ENAMEL EMERALD GREEN MATT FINISH	ALKYD / DRIER		Cockpit panels, Control rods.	TU - 6 10 11 - 13 - 79
PENTADUR ENAMELN LB - 12384 GREEN	EPOXY	POLYAMIDE	Painting of nose cone & ventral fin.	MPTY - 6 - 10 - 676 - 67
PENTADUR ENAMEL AK - 5178 OLIVE GREEN	EPOXY ESTER	ISOCYANATE	For camouflage painting scheme.	TU - 6 - 10 - 1720 - 79
PENTADUR EPOXY ENAMEL LIGHT GREY LB - 12384	EPOXY	POLYAMIDE	Finishing of steels, aluminium alloys & magnesium alloys of aircrafts.	MPTY - 6 - 10 - 599-66
PAINT REMOVER FOR EPOXY PAINT	DICHLOROMETAHNE PARAFIN		For removal of semi-baked & bake epoxy paint EFO aircraft parts.	TU - 06 - 10 - 1169 - 76
STN - 25 ENAMEL GREEN/RED/WHITE/ BLACK	ACRYLIC BASE		Various pipe lines Mechanical rotables of SU-30 MKI aircraft	GOST-5406-84
EPOXY CHROME FREE PRIMER YELLOW	EPOXY	POLYAMIDE	Two component lead and chromate free, anti-corrosive zinc phosphate primer.	MIL-DTL-53022 E
EPOXY MID COAT GREY	EPOXY	POLYAMIDE	Excellent durability in random contact with various chemicals, solvents, sea water and severe climatic conditions.	MIL-PRF-22750 G
2K PU TOP COAT GREY	POLYESTER	ISOCYANATE	Glossy topcoat. Tough and elastic. Excellent exterior durability in all weather conditions.	MIL-PRF-85285
ENAMEL KHV 16	ACRYLIC BASE		Hydraulic accumulator activation rods, tank head assembly.	TU-6-10-1351-83

Engineering
Advanced Engineering Projects

From iconic institutions like Hindustan Aeronautics Ltd. to Air India and the Indian Air Force, we have led groundbreaking projects in surface finishing for the aerospace industry. Our expertise span projects across a wide range of applications.

Consolidated Highlights of Projects we have executed for the Aerospace Industry:

- Turn-key project(s) featuring plating lines for hard chrome, cadmium, zinc, zinc phosphating, copper plating, silver plating, anodizing, hard anodizing, electroless nickel, and chemical milling & cleaning lines with comprehensive accessories.
- Anodizing lines with distinct processes encompassing sulphuric & tartaric acid anodizing, Boric acid + H₂SO₄ anodizing, and Chromic acid anodizing along with their Effluent Treatment Plants.
- Pretreatment, cleaning, and plating lines dedicated to overhauling aircraft engines and components.

Our automated end to end solutions come with advanced material handling systems, exhaust systems, and all accessories and auxiliary equipment. In addition to establishing new lines, we offer our services to modernize existing lines.

We have over 6 decades of experience in designing and engineering automatic plants for various applications. Please reach out to us to learn more about our solutions for aerospace.



Hard Chrome Plating Plant



Silver Plating Plant



Zinc Plating Plant

Quality Assured: The Growel Advantage

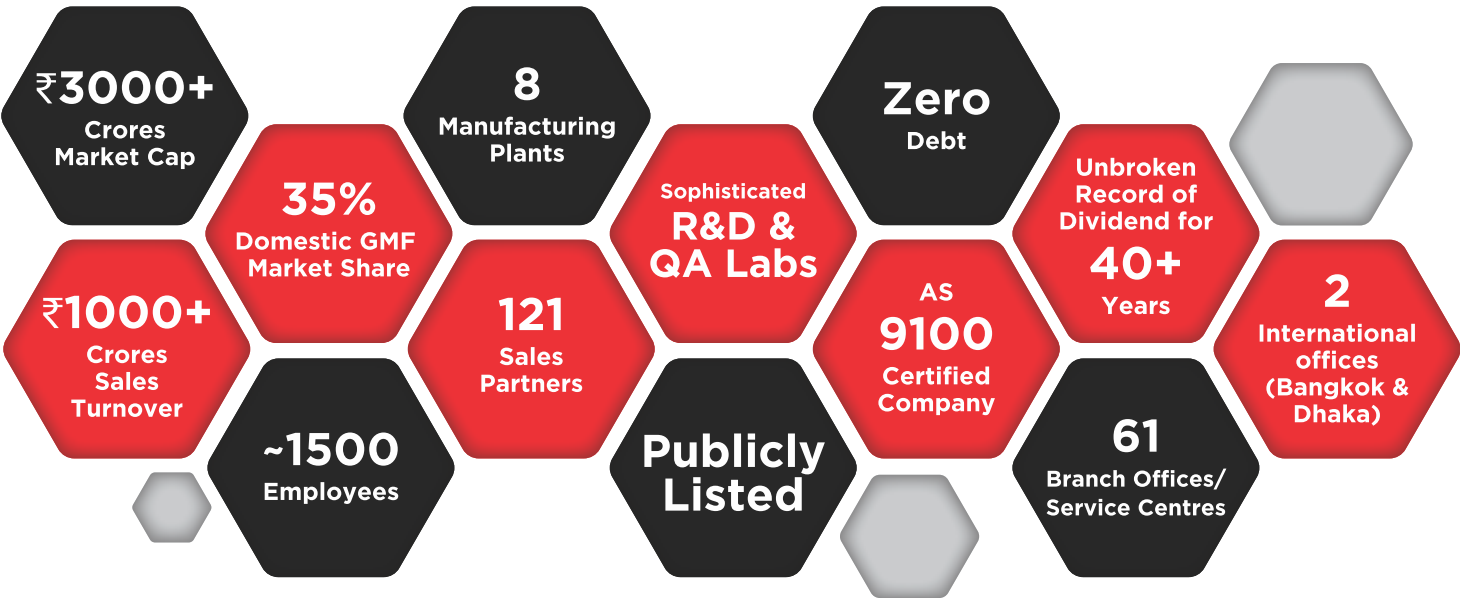
Growel’s trailblazing R&D is recognized by The Indian Department of Scientific and Industrial Research – a testament to our technological prowess. We are IMS certified (ISO 9001, 14001, and 45001), and are the first Indian chemical company with AS9100 Aerospace Certification, meeting the stringent aerospace quality standards demanded by NASA, FAA, and DoD. Finally, products processed with our anodizing chemistries conform to both QUALANOD and MIL spec.

We are consistently engaged in research and development, and continuously refine testing methods for innovative product development. Growel strategically partners with world renowned manufacturers and solution providers, to bring cutting-edge solutions to India. This collaboration empowers Indian manufacturers, providing them with the competitive edge needed to thrive in global markets. **We are open to joint developments and projects to cater to the unique needs of the Aerospace and Defence industries.**

As a responsible corporate citizen, we prioritize environmental sustainability and community welfare. Our commitment is reflected in the ongoing development of green practices within our organization and our extensive CSR activities, contributing to the holistic growth of local communities.



Our Credentials



Dadra Plant



Paints Plant



Research & Development



Jammu Plant



Barotiwalla Plant



Vapi Plant

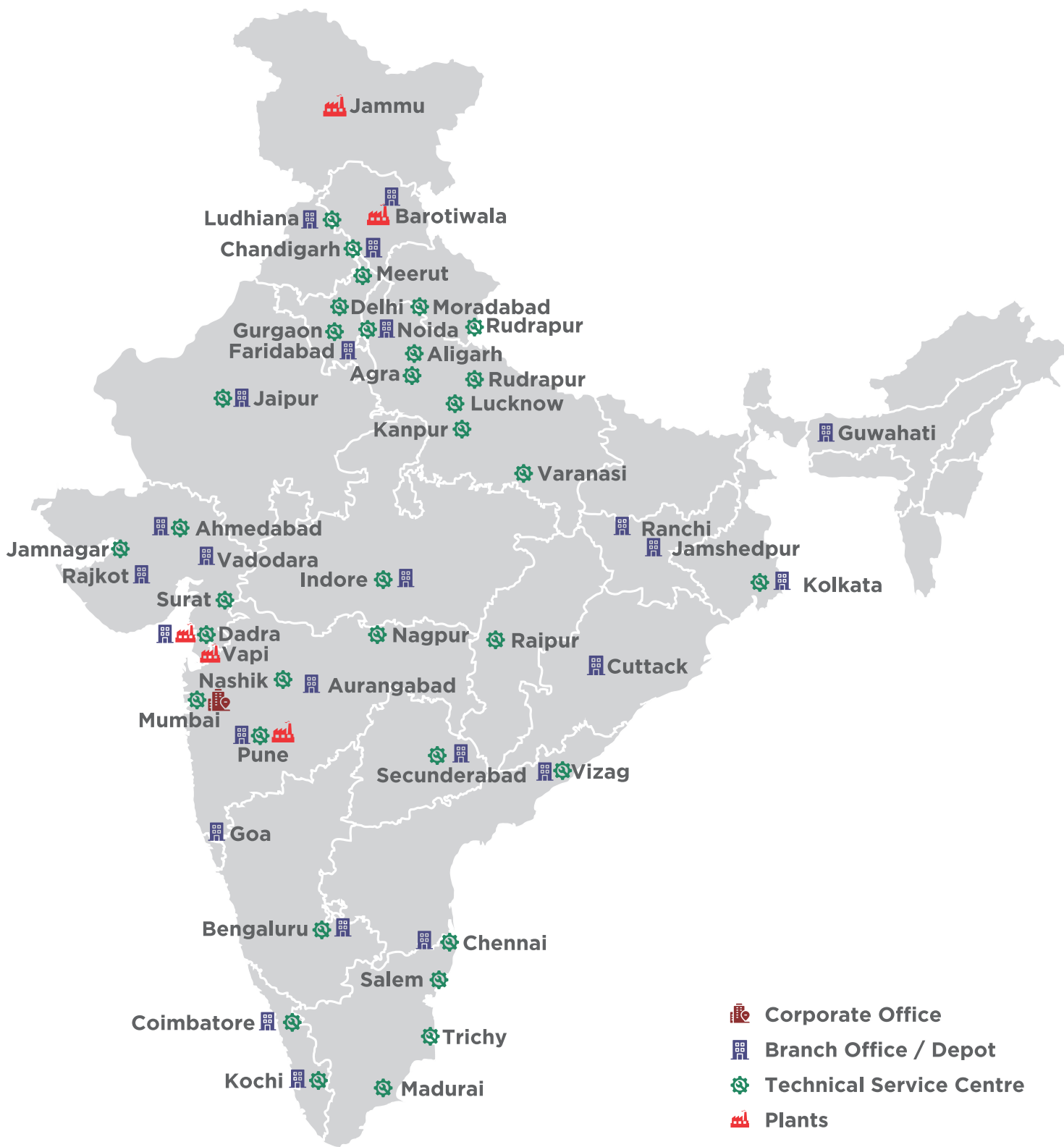


Pune Plant



Quality Control

Growel Network



Our Esteemed Customers



Aerospace Certification

