

BOUGATSOS CLEANROOM TECHNOLOGY

BCT

G R O U P

BOUGATSOS COOLING TECHNOLOGY



- **30+ years** in Cleanrooms & HVAC-R Industry
- **150+ clients**
- **20+ countries worldwide**
- **1000+ projects**
- Constant **turnover** increase by **30% annually**
- Shortlisted in the **30% of the fastest growing companies** in the technical sector, for the year **2023** by ICAP's industry research

ABOUT US

BCT is an Engineering – Contracting Company specialized in Cleanrooms, Clean & Dry Rooms, Industrial HVAC and Special Air Processes (Degassing for Submarine Cables and more).



We provide Turn-key Projects starting from initial Design, Developing Optimized Solutions working close to the customer and Delivering a final Project meeting the Industry needs. We make projects all over the world and for two Generations we collaborate with the Greek Manufacturing Community materializing Innovative Applications.

Our Services



Engineering Design



Consultation / Solutions Development



Turn Key Projects



Validation



Maintenance Contract



Dry Rooms Applications



BCT has implemented various projects in Low Humidity Applications and has been involved in MEP Design Processes for Li-ion Cells Production with Ultra Low Humidity Requirements (Ultra low DP).

MOISTURE: The key Enemy of Li-on Batteries

Electrodes Processing

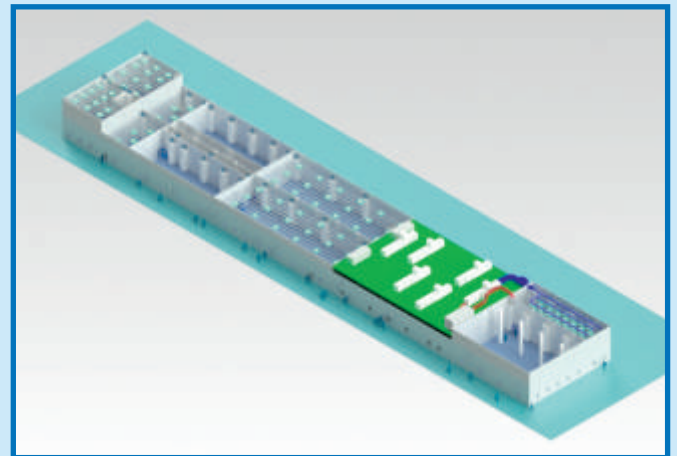
Processing of electrodes must be done under least humidity conditions.

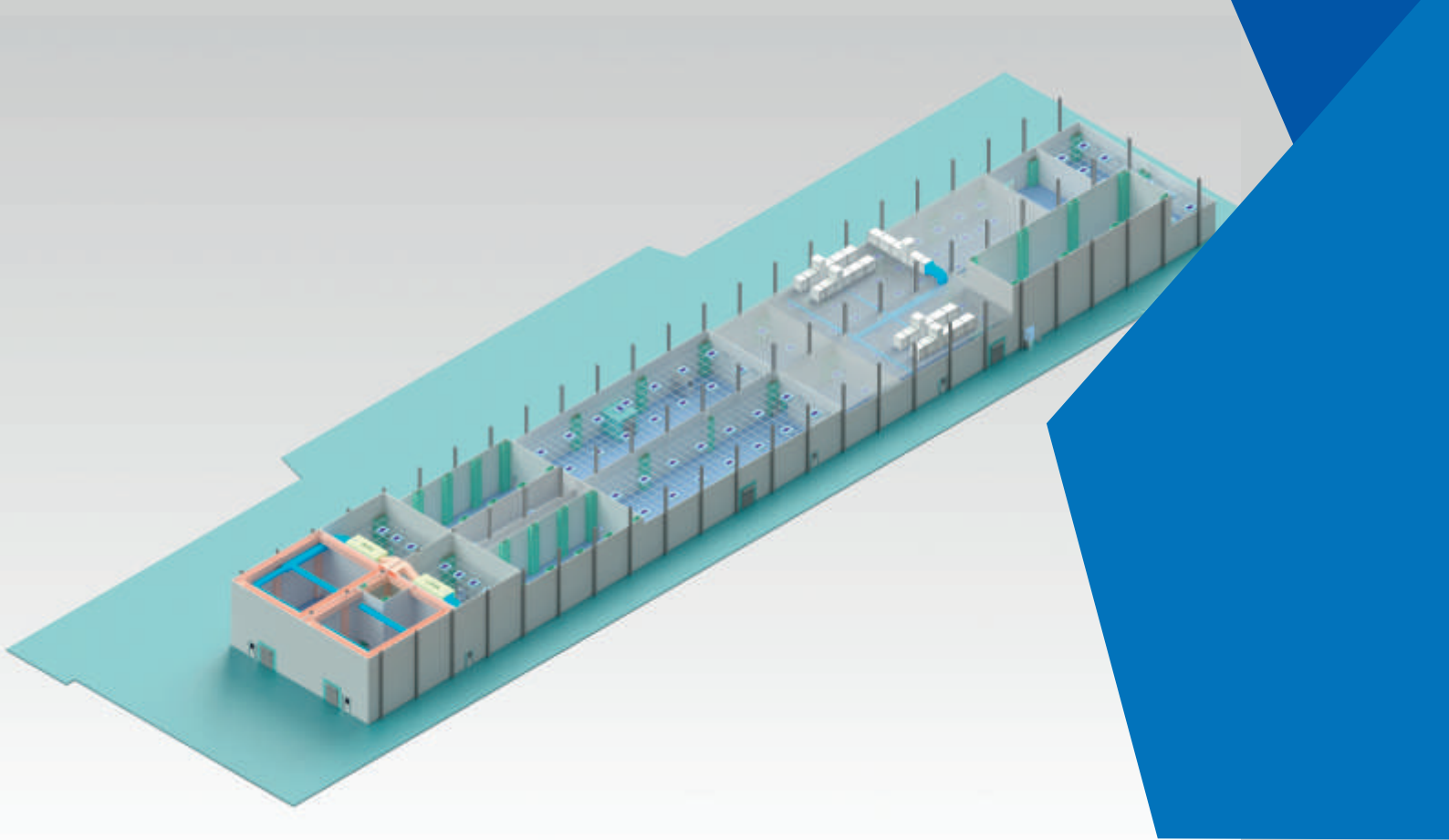
Electrolyte Instability

When water penetrates with moisture the lithium salt used as electrolyte becomes unstable.

Generation of Hydrogen Fluoride

When moisture reacts with lithium salt hydrogen fluoride is generated that leads to gassing & Bloating of the Battery, reducing its life.





In Li-ion Cell Production Plant Projects BCT can effectively provide to End-Users or Giga Plant EPC-Contractors:

- ✓ **Architectural & Structural Design of the Production Suite**
- ✓ **HVAC Design for the Low and Ultra Low Processes**
- ✓ **MEP design for the Plant Utilities**
- ✓ **Project Management & Supervision**
- ✓ **Commissioning and C&D Rooms Validation**
- ✓ **Turn-key execution of Pilot Plants**



Cleanrooms & Dry Rooms, Design, Construction & Validation

Cleanrooms Expertise



BCT group is specialized in Cleanrooms Design, Construction and Validation. We also hold International Certification in Cleanroom Technology & Cleanrooms Validation Process from Cleanrooms Testing and Certification Board – International.

We develop Cleanrooms for micro-Electronics (ISO 3 – ISO 8), for euGMP Pharmaceutical Applications (Grades A,B,C,D), for Medical Devices, for Food Processing and more.

Design scope:

- Total Compliance with GMP Standards and ISO 14644
- Zero cross-contamination RISK
- Sustainability, minimum energy footprint, LEAN Operation
- Expenditure optimization (CAPEX & OPEX)

Cleanroom Projects



CLEANROOM STRUCTURAL PART

CLEAN DESIGN CONCEPT

- Separate Materials & Personnel Flow
- Airlocks
- Rooms Overpressure from more clean to less clean
- Overpressure for cross-contamination elimination



CLEANROOM BUILD:

- Cleanrooms Construction with a Variety of Materials all Compliant with GMP Requirements.
- LAF, Special Finishes, Modular Ceiling System, Interlocks etc., Developed and Produced by BCT Group.

CLEANROOM HVAC SYSTEM

- Provide the necessary air flow to achieve the required Classification
- Maintain constant Temperature and Relative Humidity
- Achieve Differential Pressures and Pressure Cascades
- Safeguards Cross-Contamination Avoidance



CLEANROOM VALIDATION

Cleanroom Validation - Testing - Certification Elaboration of All tests according to ISO 14644. IQ, OQ Protocols according to ISO 14644, euGMP, FDA Requirements





Design, Construction & full Technical Support in:

- **HVAC Systems**
- **Refrigeration**
- **Special Industrial Air Applications**

A photograph of industrial HVAC and refrigeration equipment installed on the exterior of a large metal building. The equipment includes a large ducted unit on the left, a vertical stack of pipes in the center, and a large condenser unit on the right. The background shows a clear blue sky with some clouds.

INDUSTRIAL HVAC

& REFRIGERATION

BCT company's core expertise is the design and installation of HVAC and Refrigeration systems for Industrial Purposes.

Having developed numerous of solutions for almost all production processes BCT holds special know-how and experience to provide:

- ✓ Temperature Control and Heat Dissipation Manipulation
- ✓ Humidity Control
- ✓ Ventilation to meet specific Environmental Requirements
- ✓ Volatile Agents Control
- ✓ Particles Generation Control
- ✓ Low and Extra Low Temperature and Humidity Control

INDUSTRIAL HVAC

& REFRIGERATION



Each HVAC system comprises of a number of subsystems which are tailored developed to meet industrial process requirements. Those are:

- ✓ Air Handling Systems
- ✓ Cooling Medium Systems
- ✓ Humidification Systems
- ✓ Pump Stations
- ✓ Air Distribution Circuits
- ✓ Cooling/Heating Medium Piping
- ✓ Power & Control
- ✓ Operation Monitoring

INDUSTRIAL HVAC

PROJECTS



PROCESS COOLING



Almost all products require process cooling but most frequently:

- Milk after pasteurization
- Chocolates Tempering process
- Cooling tunnels (apart from freezing tunnels)
- Double wall mixers (food and pharma)
- Cables after vulcanization
- Plastic casting molds
- Extrusion processes

Process cooling aims in providing cooling to products during the production process.

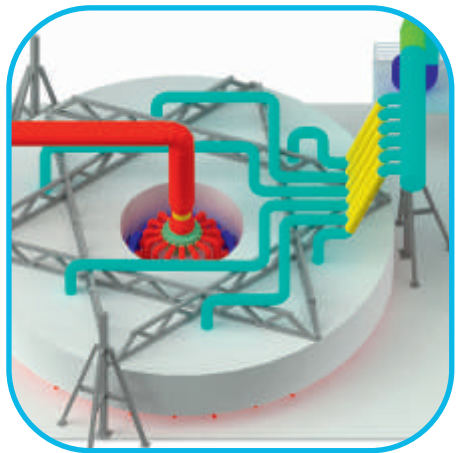
SPECIAL INDUSTRIAL AIR APPLICATIONS



DEGASSING

Degassing is a very important process in submarine cables production aiming in the removal of insulation Methane and other Volatiles.

It is also performed in other manufacturing processes such as drying after coating. Our company has implemented several degassing systems for submarine cables production and holds special know-how in systems design, construction and commissioning.



The logo for BCT GROUP is centered on the page. The letters 'B', 'C', and 'T' are large, white, sans-serif characters. The letter 'C' is uniquely styled, composed of a ring of small white dots. Below these three letters, the word 'GROUP' is written in a smaller, white, sans-serif font, with each letter spaced out. A thin white horizontal line is positioned directly beneath the word 'GROUP'.

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