Freeztech
INNOVATIONS

CCUS
Redefining CO_2 Production

Distillery | Brewery | Diesel | Flue Gas
Natural Gas | CO_2 Revert

Freeztech Innovations

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We are a global professional organization specializing in CO_2 production plant setup, recovery, specialty gases, and manufacturing special machines, including Dry Ice Machineries.

- With over 25 years of expertise in CO_2 Plant & Recovery, using our proprietary Carbon Capturing Technology, we offer tailored solutions for breweries/ distilleries. Our comprehensive process includes Raw CO_2 recovery, scrubbing, liquefaction customized CO_2 production plant requirements.

Captured CO_2 purity: **>99.9% Vol**

About Us

Established in 2010, **Freeztech Innovations**, a part of the SVCG Group, takes pride in being a premier hub for CCUS Technologies, and Carbon Sequestration.

Here at Freeztech Innovations, we are dedicated to revolutionizing CO_2 production and recovery solutions, transcending traditional boundaries to offer innovative services tailored for a wide range of industries. Our commitment extends beyond mere adaptation; we strive to redefine the landscape of carbon capture, utilization, and storage (CCUS), ensuring a sustainable and environmentally conscious future. As a forward-thinking company, we recognize the urgent need to address climate change and mitigate greenhouse gas emissions. Through our comprehensive CCUS initiatives, we aim to minimize environmental impact while maximizing economic benefits for our clients. Our solutions not only reduce carbon footprints but also unlock new opportunities for resource optimization and circular economy practices.

At Freeztech Innovations, we are more than just a provider of CO_2 recovery services; we are catalysts for change, leading the way towards a cleaner, greener future. Join us as we redefine CO_2 production, recovery, and utilization, paving the path for a sustainable tomorrow and beyond.

Join the Fight Against Climate Change

As the world grapples with the urgent need to combat climate change, industries like power generation, chemicals, steel production, breweries, distilleries, and coal power plants are under increasing pressure to curb their carbon footprint. Carbon capture emerges as a crucial solution to achieve emission reduction targets.

What is Carbon Capture?

Carbon capture is a process of trapping carbon dioxide emissions from sources like power plants or industrial facilities, preventing them from entering the atmosphere. It involves capturing CO_2, transporting it, and usually storing it underground to mitigate climate change by reducing greenhouse gas emissions and their impact on the environment.

Through post-combustion capture (PCC), specialized plants use solvents to chemically absorb CO_2 from these gases. The captured CO_2 can then be utilized in various ways, from enhancing oil recovery to serving as a feedstock for commodity production or even underground storage as a carbon abatement measure.

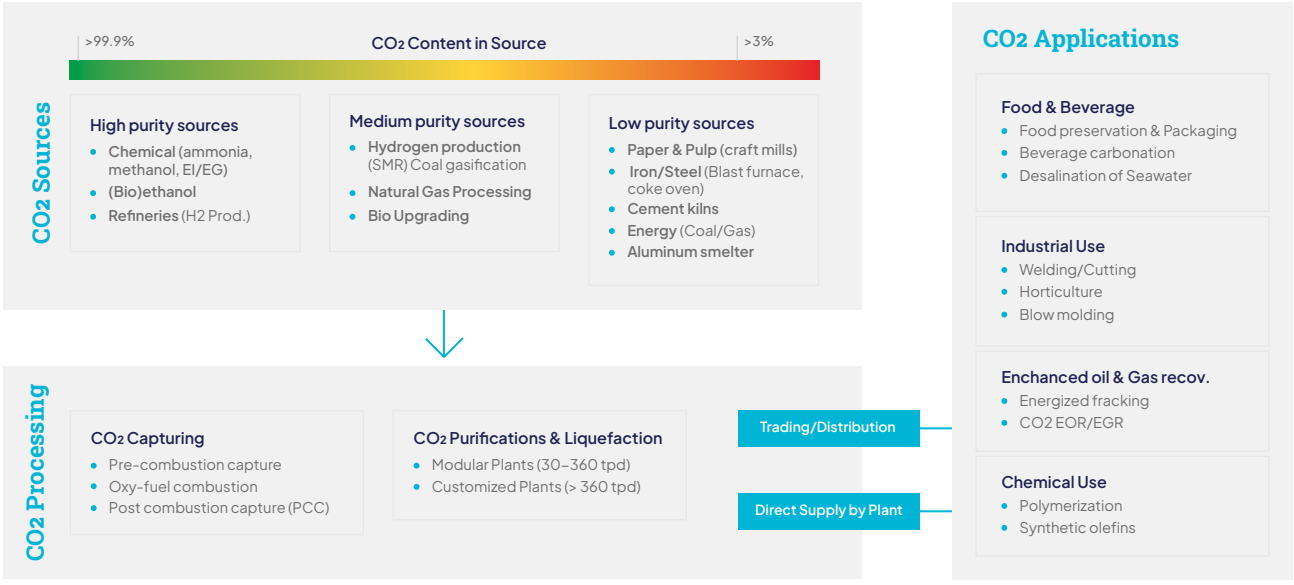
Innovative Solutions for a Greener Future

At Freeztech Innovations, we are committed to driving innovation in carbon capture technologies. Our high-performance gas treatment solutions offer industries like power plants, oil refineries, cement manufacturing, breweries, distilleries, and coal power plants the means to significantly reduce their greenhouse gas emissions. Join us in the fight against climate change. Together, we can make a difference.

Towards a Greener Future:
Our Commitment to " Net Zero" Emissions

Opportunities for Carbon Capture:

- **Breweries & Beverage Production:**
  Capture CO_2 emitted during fermentation for efficient production
- **Biogas & Anaerobic Digestion:**
  Recycle CO_2 from waste decomposition to minimize emissions
- **Food Processing:**
  Reuse CO_2 from various processes like chilling and freezing
- **Greenhouses & Agriculture:**
  Enhance plant growth with captured CO_2 for sustainable farming
- **Chemical & Petrochemical:**
  Capture emissions for synthesis or sequestration
- **Renewable Energy:**
  Integrate into biomass plants to achieve carbon neutrality
- **CCS Projects:**
  Capture emissions from power plants for underground storage
- **Oil & Gas Processing:**
  Utilize or store captured CO_2 from processing and refining operations



Unlocking Potential: CO_2 Solutions

Core Competencies of Freeztech Innovations

Engineering & Commissioning

- CO_2 Recovery Plants for Distilleries, Breweries
- CO_2 Production Plants From Stack Gas/Flue Gas
- CO_2 Production from Diesel Generators
- Adsorption Plants - MEA
- Cryogenic Plants
- Carbon Capture and Utilization Plants

Other Services

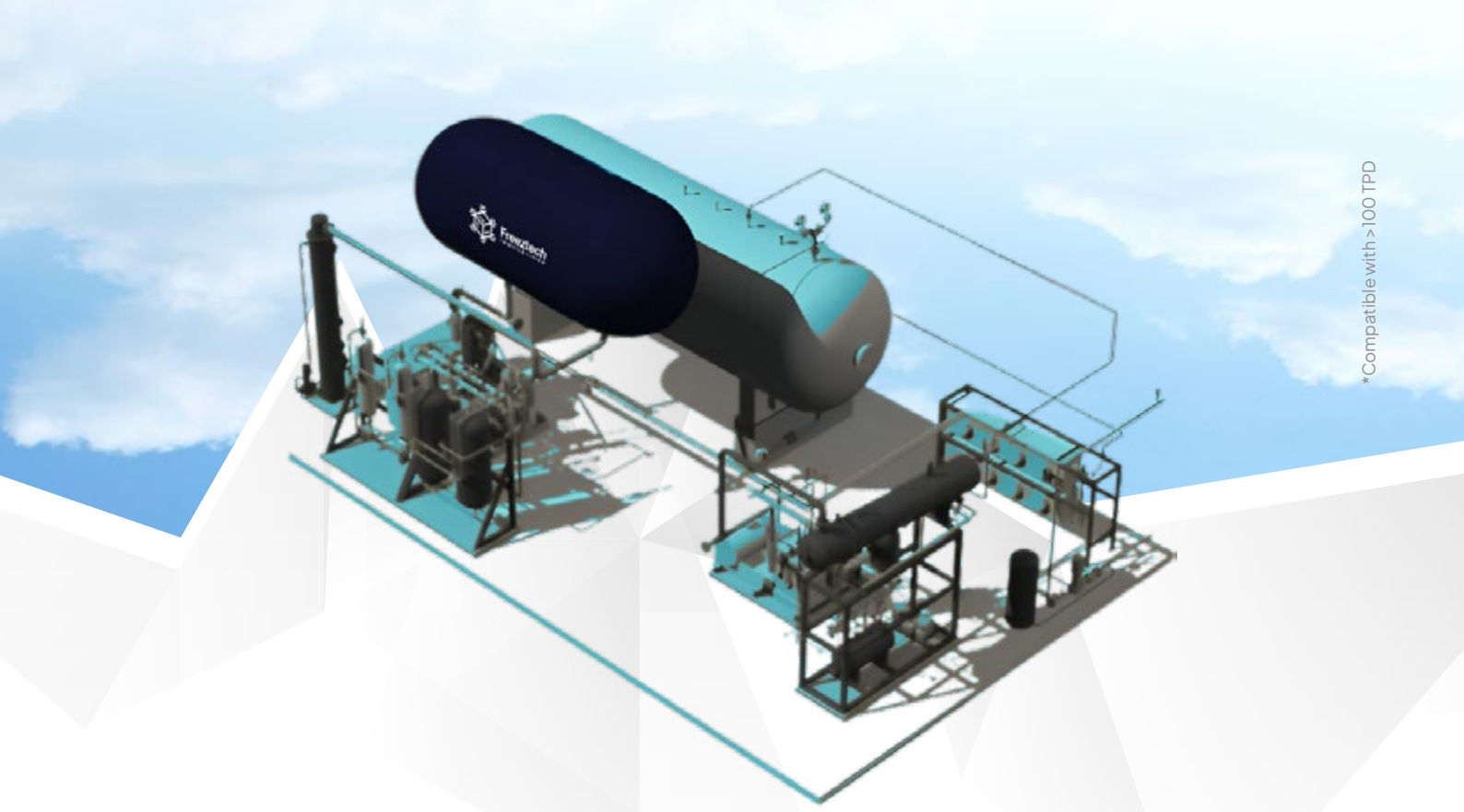
- Feasibility Studies
- Profitability Analyses
- Technical Design
- Front-end Engineering
- Procurement of Licenses
- Complex Logistics Handling

Plant Services

- Revamps and Plant Modifications
- Spare Parts Supply
- Operational Support, Troubleshooting, and Immediate Repairs
- Long-term Service Contracts
- Expert Reviews for Plants, Operations, and Spare Part Inventory
- Operator Training

At Freeztech Innovations, we excel in plant engineering, commissioning, and a comprehensive range of plant services. From CO_2 recovery and production to adsorption and cryogenic plants, we ensure operational excellence and efficiency. Additionally, our expert services cover revamps, spare parts supply, operator training, and more. We are your trusted partner for sustainable solutions.

Trust Our Expertise: Freeztech Innovations



*Compatible with >100 TPD

CO_2 Recovery Plant

Distillery | Brewery | Others

(10 TPD to 100 TPD*)

Our Recovery Plants for Breweries (RBU) are meticulously engineered to extract CO_2 from the fermentation processes within breweries. Using advanced scrubbing, filtration, and separation technology, we ensure the recovered CO_2 meets the highest quality standards demanded by the market.

These modular-designed plants arrive as complete skids, pre-mounted, and rigorously tested in our workshop. This approach guarantees exceptional quality, facilitates flexible installation, and optimizes maintenance efficiency.

We offer comprehensive support during erection, installation, and commissioning, tailored to meet the specific needs of our clients. Additionally, Union Engineering can undertake the full erection and installation of the plant on a turn-key basis, ensuring a seamless process from start to finish.

Choose our CO_2 Recovery Plant solutions for unmatched quality, reliability, and efficiency in your brewery operations.

Furthermore, we provide a wide array of accessories to complement plant installations, including storage tanks, evaporators, truck, and cylinder filling equipment, along with energy-saving solutions.

Team up with the premierally in Carbon Capture

CO_2 Recovery Plant Process

Distillery | Brewery | Others

(10 TPD to 100 TPD*)

*Compatible with >100 TPD

01 After passing the foam trap the raw gas is washed in a water scrubber in order to remove any alcohols and sugar aerosols.

The gas is then compressed in two stages to approx. 05–18 bar(g) by the CO_2 compressor.

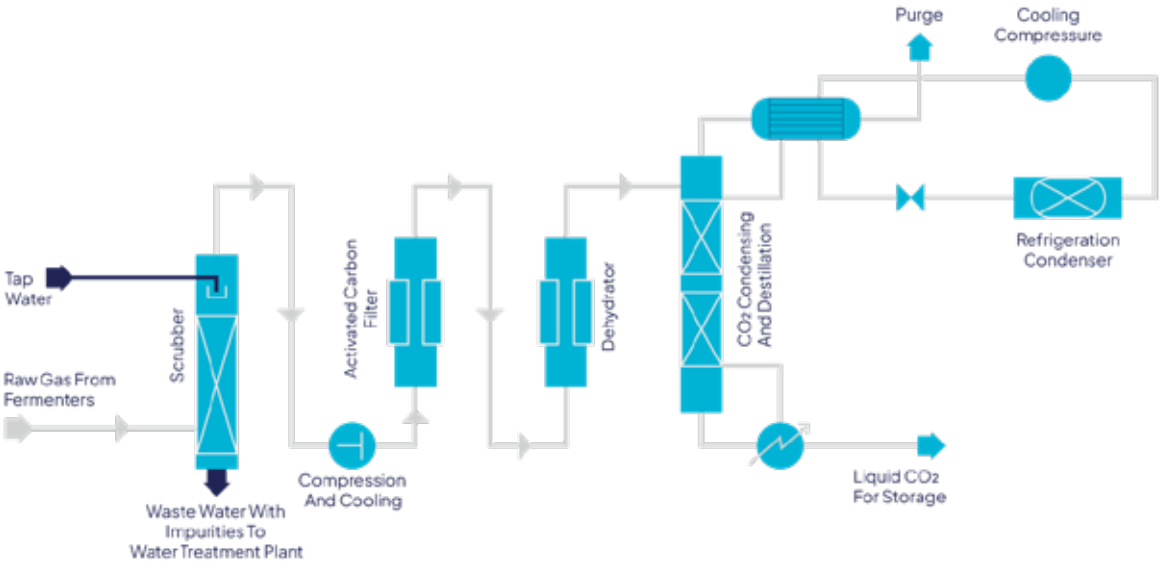
Hereafter the CO_2 gas passes through an activated carbon filter which absorbs any remaining alcohols, odors and aromatic hydro carbons from the CO_2 gas. Regeneration is done automatically by either steam or electrically heated air, subsequent venting and pressurization is done with dry purge gas from the CO_2 condenser.

02 Prior to liquefaction, the gas is dried to a dew point of approx. -60°C (10 ppm v/v H_2O) in the dehydrator. Regeneration is done automatically by electrical heating and use of dry purge gas from the CO_2 condenser.

Traces of acetaldehyde are also removed in the dehydrator.

To remove the last non-condensable gases, the CO_2 gas first passes a distillation process in the purification column (type PUR-D). It is then condensed at a temperature of approx. -27°/-23°C in a CO_2 condenser, where the non-condensed gases are purged off.

Finally, the liquefied CO_2 is led to an insulated storage tank.



03 A refrigeration unit, that supplies the required refrigeration capacity will condense the vapourized & pressurised CO_2 and convert it into LCO_2. The condensed LCO_2 will then stored in the insulated storage tank by the force of gravity. The liquid CO_2 is stored under a pressure of approx. 15–18 bar(g) and a corresponding temperature of approx. -27°/-23°C.

During a non CO_2 production period, the refrigeration unit is able to operate independently of the rest of the CO_2 plant in order to maintain the correct CO_2 storage tank temperature/pressure.

04 The CO_2 produced has a minimum purity of 99.9% (v/v) and an oxygen content < 10 ppm (v/v) which fulfills the quality standards for breweries worldwide.

Team up with the premierally in Carbon Capture

CO_2 Production Plants Stack Gas/ Flue Gas:

(02 TPD to 60 TPD*)

We engineer CO_2 Production Plants to extract high-quality CO_2 from diverse sources like flue gas, diesel generators, and refineries. Our advanced technology employs gas pre-treating, filtration, and amine scrubbing to meet even the strictest market standards.

- Revolutionizing Industry Solutions for a Greener Tomorrow
- Discover the cutting-edge Freeztech CO_2 Production plants designed to transform stack gases and flue gases into a valuable resource.

With years of expertise and continuous innovation, Freeztech offers unparalleled solutions that not only benefit the environment but also your bottom line.

Tailored Support:

- We offer comprehensive support throughout your project, from erection and installation to commissioning, adapting to your specific needs. We can even handle the entire turn-key process.

Plug & Play Efficiency:

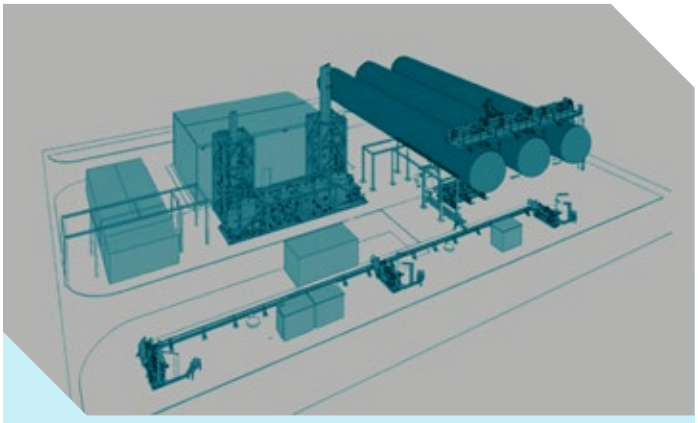
- Our plants arrive pre-assembled on skids, rigorously tested and ready to go. This modular design ensures exceptional quality, simplifies installation, and optimizes maintenance.

Beyond the Plant:

- Our solutions extend beyond the CO_2 plant itself. We offer a wide range of complementary accessories like storage tanks, evaporators, and filling equipment, all designed to seamlessly integrate with your operations.

Choose Us for:

- Unmatched CO_2 purity and quality
- Plug & Play efficiency and flexibility
- Tailored support and complete solutions
- Wide range of complementary equipment
- Contact us today to capture the value in your flue gas!



*Compatible with >60 TPD

Unlock Profitable Sustainability with Freeztech

CO_2 Production Plants Stack Gas/ Flue Gas:

(02 TPD to 60 TPD*)

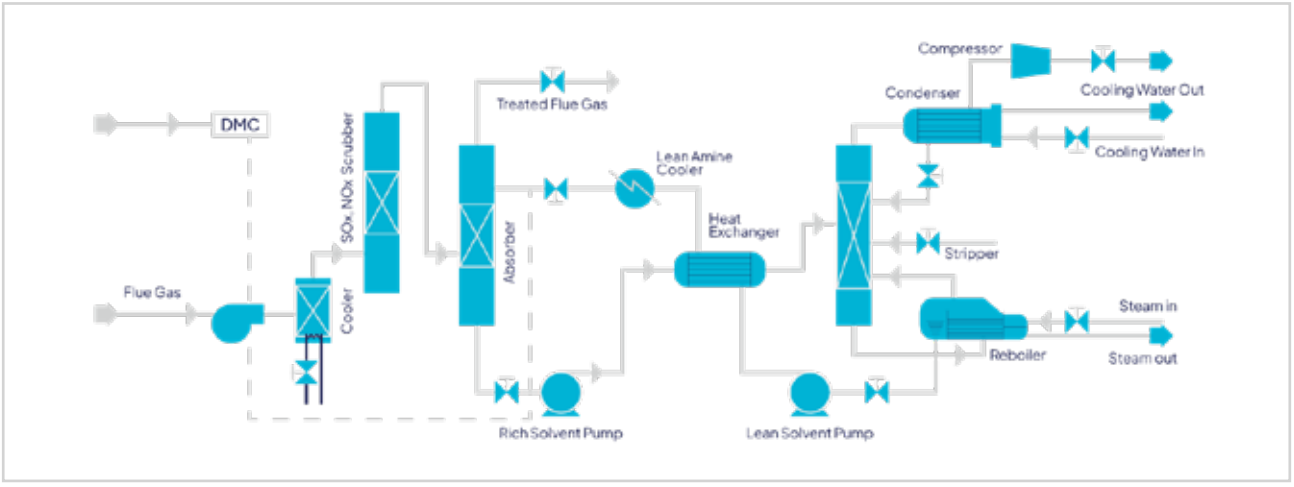
The flue gas undergoes crucial treatment to remove undesirable components before entering the CO_2 production cycle.

Flue Gas Cooling and SO_2 Scrubbing:

The hot flue gas passes through an flue gas cooler/SO_2 scrubber.Cooling addresses temperature concerns and serves as a prelude to further treatment.

Directed to SOx Towers for Sulfur Trace Removal:

Treated flue gas is directed to SOx towers.
SOx towers remove sulfur traces, ensuring compliance with environmental standards and mitigating sulfur compound release, a common byproduct of coal combustion.



Integration into the Overall Process:

- Treated flue gas, devoid of sulfur traces and excess moisture, flows into the CO_2 absorption stage.
- This ensures subsequent stages receive a cleaner raw material for CO_2 production, including compression, purification, and liquefaction.

CO_2 Purification:

- CO_2 undergoes Pura-fill wash and activated carbon filtration for impurity removal.
- Final purification occurs via a two-stage compressor.

Compression:

- CO_2 is compressed in a compact, water-cooled, two-stage compressor.
- High-pressure CO_2 undergoes final purification through an activated carbon filter.

Pre-Cooling and Drying:

- CO_2 is pre-cooled and dried using molecular sieve drier batteries.
- A refrigerated moisture separator eliminates any remaining moisture.

CO_2 Liquefaction:

- An NH_3-based liquefying system cools CO_2 vapor, transforming it into liquid CO_2.

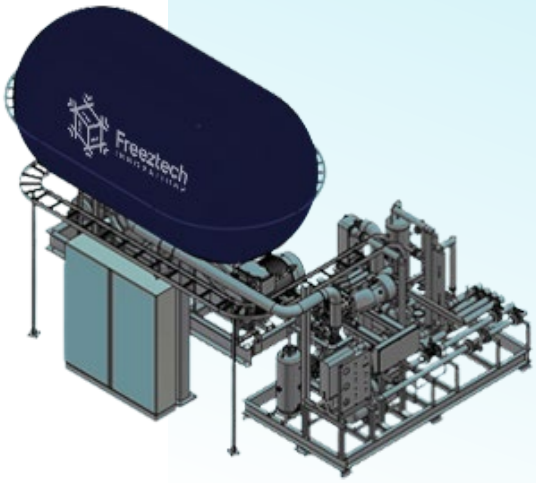
Significance of Flue Gas Treatment:

- Before advancing to later stages of CO_2 production, flue gas requires purification to eliminate water, sulfur traces, and other contaminants.
- The dual action of cooling and SO_2 scrubbing not only primes the environment for effective CO_2 absorption but also ensures compliance with environmental regulations by reducing the emission of harmful pollutants.

*Compatible with >60 TPD

Unlock Profitable Sustainability with Freeztech

CO_2 Revert Recovery System



Process Overview:

The Dry Ice Block Machine utilizes a closed-loop system with the CO_2 Revert System.

The CO_2 Revert Recovery System begins by collecting the excess vent CO_2 gas during the dry ice production process. This gas, which is traditionally released or vented, is captured for recycling.

Collection of CO_2 Gas: Captures traditionally vented CO_2 gas generated during dry ice production.

Compression: Utilizes a specialized 2-stage compressor for efficient gas compression.

Cooling: Transforms compressed CO_2 gas into a liquid state through a refrigeration loop.

Storage in Liquid CO_2 Tank: Stores re-liquefied CO_2 in tank for reuse in the dry ice production.(Quote on need basis)

Integration with Dry Ice Block Making Machine: Seamlessly integrates with desired capacity dry ice block making machine for synchronized operation.

PLC-Based Control: Ensures automated and precise control over the entire process for optimal resource utilization.

Safety Features: Advanced sensors and safety measures guarantee a secure operational environment.

Maintenance and Support: Designed for ease of maintenance with ongoing technical support and periodic check-ups.

Installation Assistance: Our technical team provides comprehensive support for seamless integration.

Training Programs: Operator training programs ensure optimal system functionality.

Technical Support: Ongoing technical support and periodic system check-ups are provided.

Advantages of CO_2 Revert Recovery Systems:

Cost Reduction: Drastically reduces dry ice production costs, potentially up to 50%.

Automatic (PLC) Operation: Ensures seamless and efficient operation through automated control.

Compact and Efficient Design: Features a heavy-duty, compact structure for optimal efficiency.

Packaged, Prewired, and Pre-Piped: Facilitates timely installation with a ready-to-install design.

Unlock Profitable Sustainability with Freeztech

Freeztech Complete solution

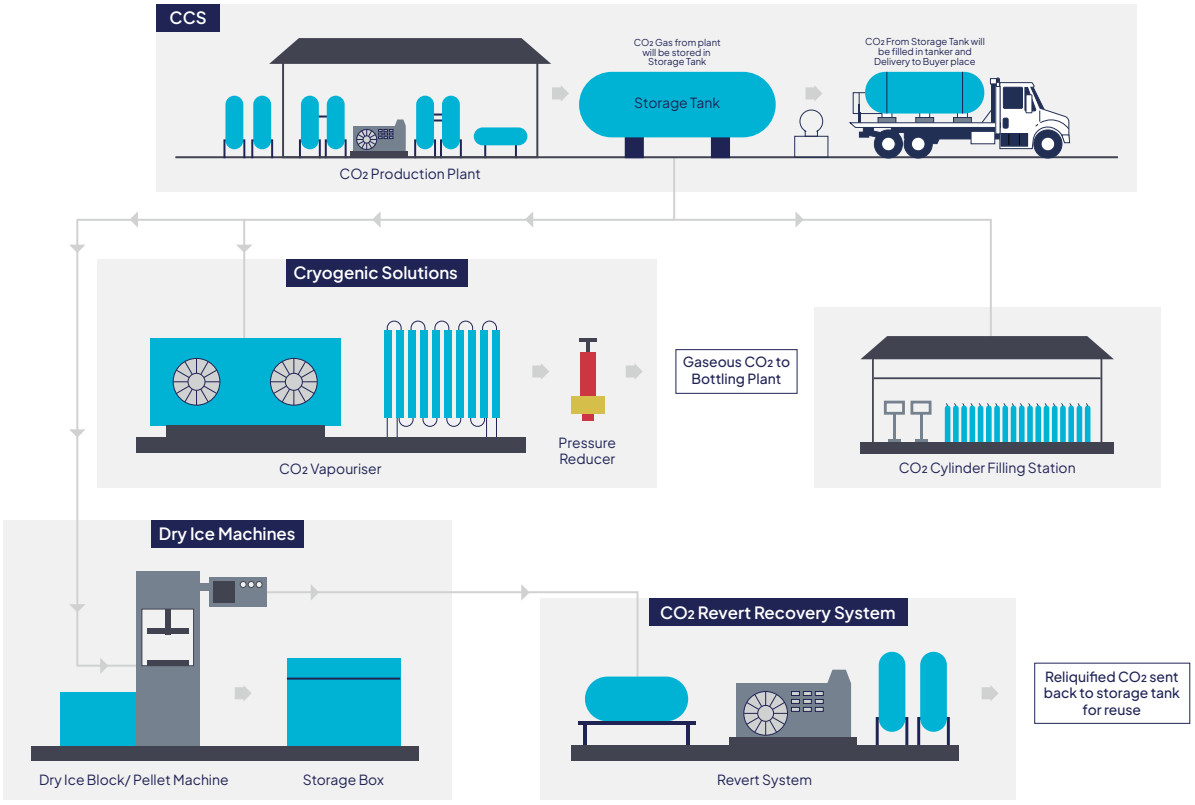
CO_2 Production Plant:

Cutting-edge CO_2 generation equipment offers customizable solutions for diverse production needs. Incorporating advanced technology ensures efficiency and quality output, supported by expert guidance for seamless setup and operation.

CO_2 Storage Tank:

Puff/Vaccum Insulated SS 304 construction ensures durability and corrosion resistance.

Vaccum insulation maintains CO_2 integrity and minimizes loss.



CO_2 Revert Recovery:

Recovery:Efficiently capture and recycle CO_2 emissions, minimizing waste and environmental impact. Enhance sustainability and reduce operating costs.

Stripper Column and Dryers:

Effectively remove moisture from CO_2 streams, enhancing purity and quality.

Ensure optimal performance and longevity of equipment.

Comprehensive Support:

- From CO_2 production or recovery plant setup to ongoing maintenance.
- Tailored solutions to meet specific requirements and industry standards.

Boost Potential: Our Versatile Accessories

Freeztech INNOVATIONS

OUR CLIENTELE

YOKOHAMA

JBM Group
Our milestones are touchstones

MRF

HONDA

SAMSUNG

Tamil Nadu Electricity Board
Powering the Progress of Tamil Nadu

bemi

JSW Steel

Tamil Nadu Transmission Corporation Limited

Our Factories at
Coimbatore | Perambalur | Cochin | Davanagere | Bagalkote

Our Group of Companies
Sri Venkateswara Carbonic Gases Pvt. Ltd. | Rasi Engineering Works | Swathi Air Products
Super Gas Co. | Vencar Speciality Gases & Equipment Pvt. Ltd

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