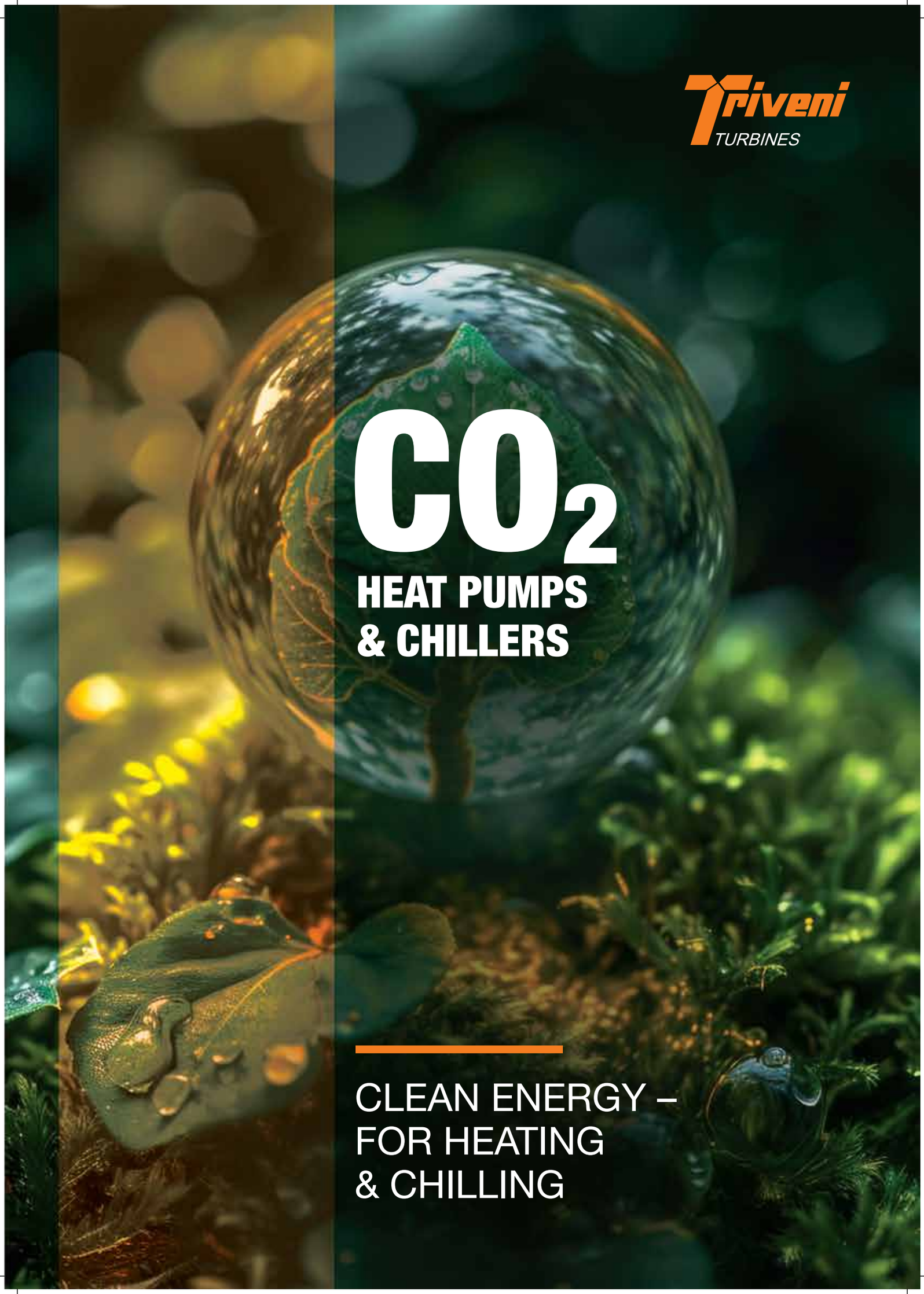
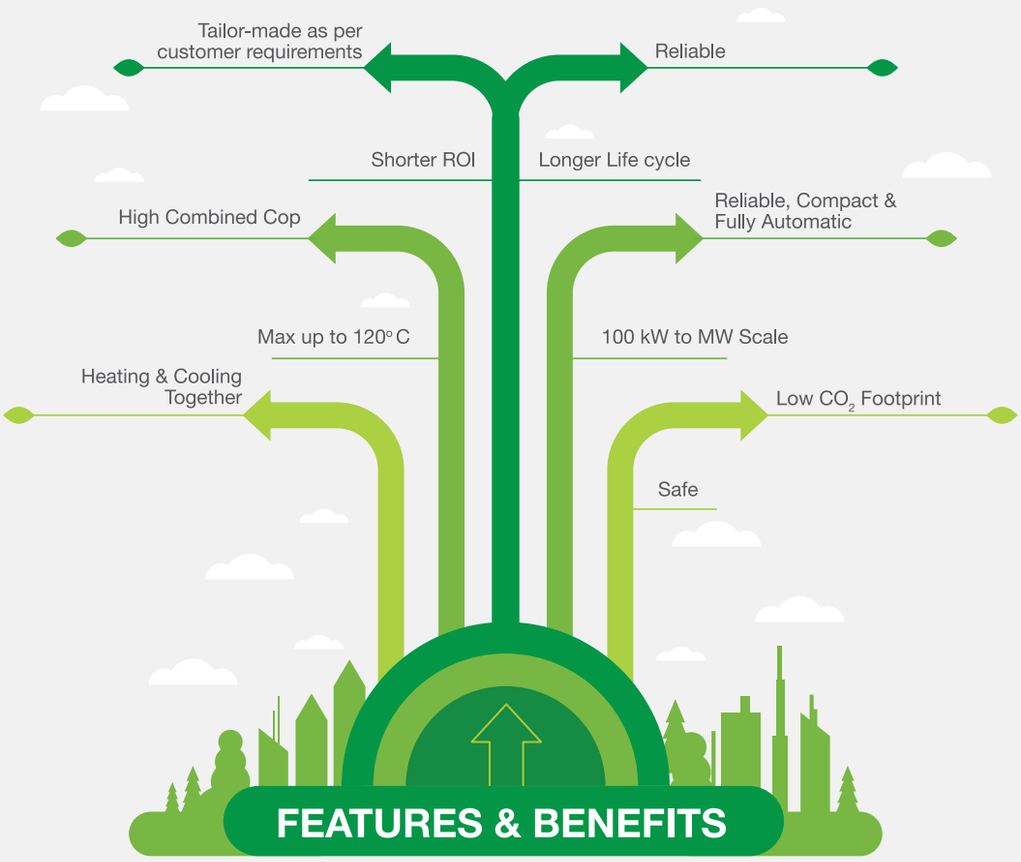

Triveni
TURBINES
CO2
HEAT PUMPS
& CHILLERS
CLEAN ENERGY –
FOR HEATING
& CHILLING

CO_2 HEAT PUMP & CHILLER SOLUTIONS
FROM TRIVENI TURBINES

Heat Pumps & Cooling Solutions have evolved significantly in recent years posing serious challenges to traditional systems. HFCs - R410A, R407C, and R134A are commonly and widely used refrigerants for such applications currently. Today, owing to global climate change initiatives, R744 (CO_2) the natural and non-polluting refrigerant is gaining traction and bringing about a major shift in the Heat Pump & Cooling Systems Industry.

Triveni Turbine Limited (TTL); one of the largest steam turbine manufacturers globally up to 100 MWe capacity for several applications including Green power generation (Biomass Power, Waste to Energy); has ventured into GREEN Trans-critical CO_2 Heat Pumps & Chilling Solutions for the global market.

TTL has developed CO_2 Heat Pumps and Chilling Solutions in collaboration with the globally renowned Indian Institute of Science (IISc), Bangalore, a leader in advanced research and development of CO_2 technologies and solutions.



ROBUST & RELIABLE CO_2 HEAT PUMPS & CHILLERS

We design, manufacture, and supply industrial CO_2 Heat Pumps & Chillers with the flexibility to meet customer requirements for today and tomorrow.

Extensive Product Range

Triveni Turbines offers robust & reliable CO_2 Heat Pumps & Chillers that work across a wide range of pressure and flow applications, which can be tailored as per the customer's needs. When both combined, the single unit can give the maximum benefits and a high Coefficient of Performance (COP).



CO_2 skid built @ Triveni Turbine Ltd in partnership with IISc Bangalore for the Defense Sector

RANGE	Heating	Chilling
Capacity	100 kW to MW scale	
Water Outlet Temperature	Up to Maximum 120° C	Up to Minimum 6° C*

*Sub-zero temperatures possible using brine



APPLICATIONS

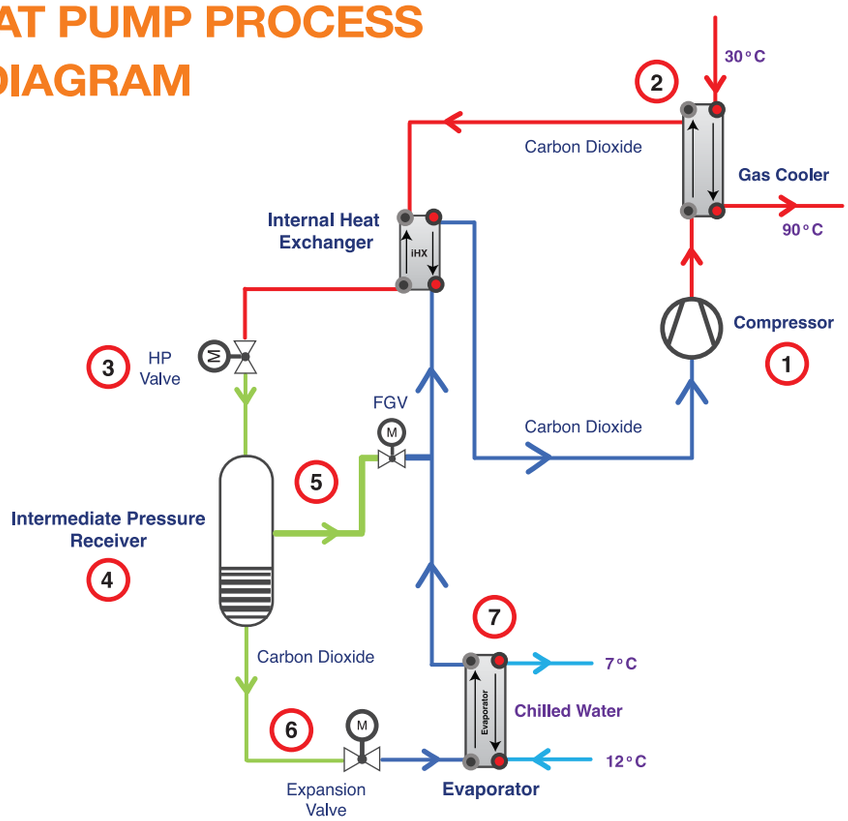
- Paper Industry
- Chemical and Pharma Industry
- Sugar Industry
- Public Institutions
- Automobile Industry
- Marine (Ships & Submarines)
- Dairy & Food Industry
- Distillery, Brewery & Malt Plants Industry
- Textile Industry
- Boiler Feed Water Heating & Plant Chilling

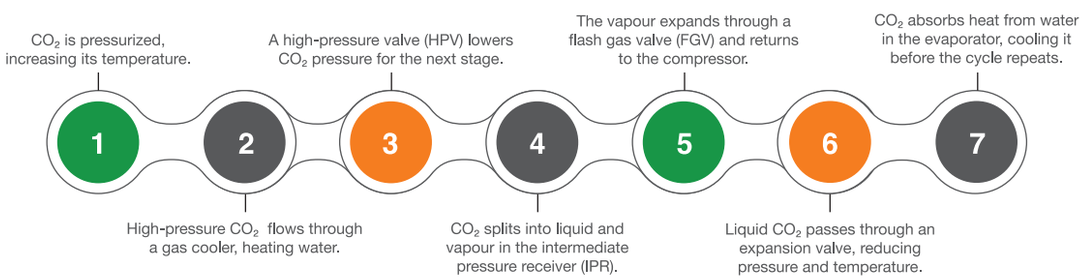
BENEFITS OF CO_2 HEAT PUMP & CHILLER SOLUTIONS:

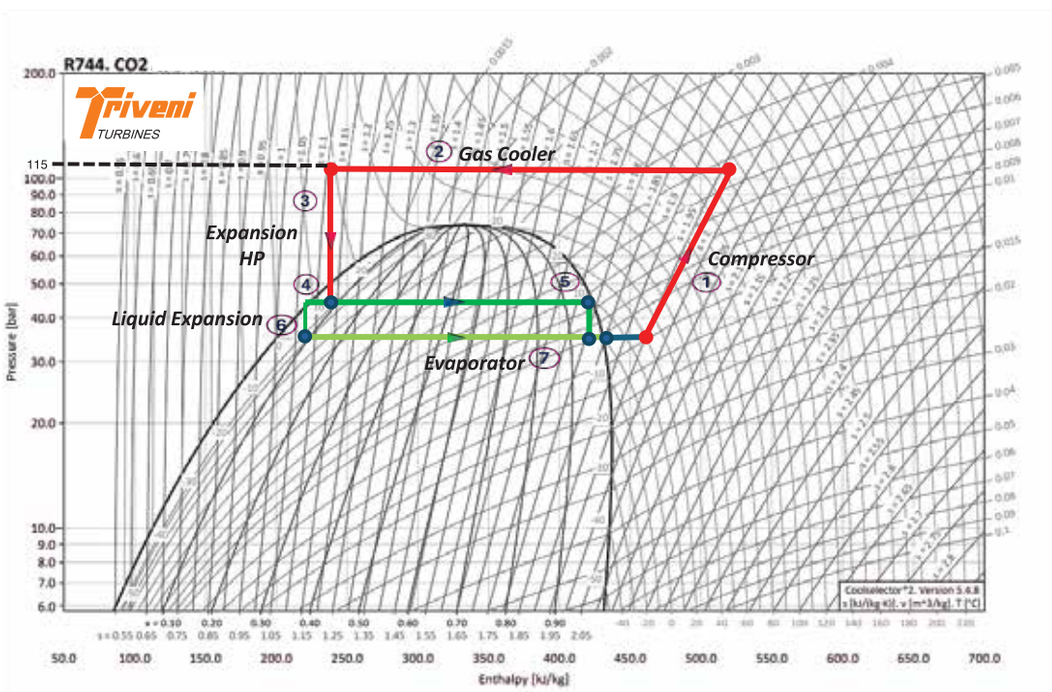
- CO_2 meets ESG & NET-ZERO 2030 Target: Global Warming Potential (GWP) is 1 (Traditional R134A GWP is at 1430)
- CO_2 has ZERO impact on Ozone Layer Depletion (ODP 0)
- CO_2 is a safe & natural refrigerant (non-flammable, non-explosive & non-corrosive) exempt from several regulatory requirements
- CO_2 based systems are eligible for incentives & subsidies in several countries of Europe & also the USA
- CO_2 is the cheapest refrigerant – inexpensive for recharge/top-ups
- Higher efficiencies feasible (Higher COPs) and hence higher energy savings
- Much higher profits/savings when combined, heating & chilling potential is realized for a single CO_2unit
- Compact footprint of the equipment owing to high vapor density of CO_2 - enables installation in restricted spaces



CO_2 HEAT PUMP PROCESS FLOW DIAGRAM







CO_2 HEAT PUMP & CHILLER PACKAGE

Chiller/Heat Pump Package may include the following: Heat pump, secondary water heater, mixing station with digital recirculating valve, buffer tank, flow and BTU meters, COP monitoring system, recirculation pump skid, secondary heat exchanger skid, heat pump housing, power and control panel, and more.

Item Description

1. Semi-hermetic compressors suitable for CO_2 Chiller/Heat pump application
2. Variable speed drive for compressors
3. Brazed-type Plate Heat Exchangers for Gas cooler and Evaporator
4. Intermediate Pressure (IP) Receiver to hold CO_2 liquid charge
5. Oil Separator to separate oil from CO_2
6. Oil Reservoir of suitable capacity to facilitate store and supply of oil to the Compressor
7. First charge CO_2 refrigerant, and compressor oil (for Indian projects only on specific request)
8. HP, LP Switches, Pressure Transmitters, Temperature Transmitters, Filter drier core
9. Control panel with Controllers and with ancillary components, digital display etc. to monitor, control, and protect the CO_2 system
10. Electrical Power Panel with incoming and outgoing feeders for the plant
11. Power and control cabling between our panel(s) to components within battery limits
12. Control/Expansion valves such as:
    HP Control Valve (HPV)
    Flash Gas Bypass Valve (FGV)
    Electronic Expansion valve for Evaporator (EEV) with dedicated controller





GLOBAL NETWORK

INDIA

SALES, SERVICE AND MANUFACTURING FACILITY

- Triveni Turbine Limited
  12-A, Peenya Industrial Area,
  Bengaluru - 560 058, Karnataka, India.
  Phone: +91 80 22164000, Fax: +91 80 22164100
  www.triveniturbines.com

- Triveni Turbine Limited
  Plot No.491, Sompura 2nd Stage,
  KIADB Sompura Industrial Area,
  Nelamangala Taluk, Bengaluru Rural - 562 123

THAILAND

MARKETING AND SERVICE OFFICE

- Triveni Turbines DMCC, 571 RSU Tower, Unit 903,
  9th Floor, Sukhumvit 31 Road, Klong Ton Nua,
  Wattana, Bangkok 10110, Thailand
  Phone: +66 2 117 9575, Fax: +66 2 662 3416

UNITED KINGDOM

REGISTERED OFFICE

- Triveni Turbines Europe Private Ltd
  C/O Vistra UK (3rd Floor),
  11-12 St James's Square, London,
  SW1Y 4LB, United Kingdom.
  Phone: +44 203 872 7310, Fax: +44 203 872 7311

SOUTH AFRICA

MARKETING AND SERVICE OFFICE

- Triveni Turbines Africa (Pty) Ltd.
  9, 5th Street, Linden, Johannesburg,
  Gauteng, 2195, South Africa.
  Phone: +27 11 782 3777
  www.turbosystems.co.za
  sales.tse@triveniturbines.com

UAE

SALES AND SERVICE OFFICE

- Triveni Turbines DMCC
  Unit No: 4502-016, Mazaya Business Avenue BB2,
  Jumeirah Lakes Towers, Dubai,
  United Arab Emirates.
  Phone: +971-4567 0752

USA

SALES AND SERVICE OFFICE

- Triveni Turbines Americas Inc,
  11927 A FM 529, Houston, Texas, 77041
  Phone: +1 832 8507990
  www.triveniturbines.us
  americas@triveniturbines.com

Triveni
TURBINES

E-mail: mktg@triveniturbines.com

VISIT WEBSITE

© Copyright February 2025 Triveni Turbine Ltd.
All rights reserved. No part of this brochure may be reproduced, copied, translated, adapted and so on or stored in a retrieval system, tapes, discs, microfilms and so on or transmitted in any form or by any means of electronic, mechanical, photocopies, recording or otherwise, without the written permission of Triveni Turbine Limited