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## DR. ROGER KUMAR

Managing Director  
Case Group

Roger Kumar's journey experience,  
story of success, inspiration & motivation

Dr Roger Kumar is a visionary entrepreneur and the founder of CASE Group, a pioneering industrial conglomerate that has achieved remarkable growth and innovation since its inception in January 1993. A mechanical engineering graduate from NIT Kurukshetra, Dr Roger Kumar has exhibited unparalleled leadership, transforming CASE Group into a trailblazing manufacturer and provider of cutting-edge industrial solutions.

CASE Group's journey began with the development and marketing of Scale-Ban, a revolutionary non-chemical water treatment equipment and water cooling towers. Under Dr Roger Kumar's dynamic leadership, the company swiftly ascended from its humble beginnings to become a prominent player in the non-chemical water treatment equipment and cooling tower industry.

Dr Roger Kumar's strategic acumen and unwavering commitment to excellence have led CASE Group to expand its offerings. In 2013, the company diversified into air pollution control equipment, introducing high-quality solutions like baghouses and multi-cyclones. This expansion was characterised by exceptional quality, efficient delivery, impeccable workmanship and outstanding performance.

One of the pivotal moments in CASE Group's evolution came in 2008, when Dr Roger Kumar steered the incorporation of coal gasification into the company's portfolio. Initially importing major equipment from China, CASE Group swiftly progressed to manufacturing various types of gasifiers—Fixed Bed Gasifiers, Circulating Fluidised Bed Gasifiers and Entrained Flow Gasifiers—at its state-of-the-art facilities in Bahadurgarh, Haryana.

Today, CASE Group stands as an industrial giant renowned for its expertise in non-chemical water treatment, water cooling towers, air pollution control equipment and coal gasification. The company's achievements are attributed to its dedication to design, manufacturing, installation and exceptional performance across its diverse product lines.

With advanced manufacturing facilities in Bahadurgarh and a corporate office in Surajkund, Haryana, CASE Group continues to innovate. The company has embarked on projects related to Green and Brown Hydrogen, Carbon Capture and Plasma Gasification, reflecting its commitment to environmentally responsible solutions.

Beyond his role as an industrial magnate, Dr Roger Kumar's altruism shines through his establishment of the education brand Extraminds. What began as a thought to give back to society has blossomed into a leading platform offering free education to students from 7th to 12th grade. The classroom lectures, available on Extraminds' YouTube channel, exemplify Dr Roger Kumar's dedication to making a positive impact on education and society at large. He is also an Independent Director (ID) certified by the Indian Institution of Corporate Affairs (IICA) under the Aegis of the Ministry of Corporate Affairs, Government of India with expertise in ESG (Environmental, Social and Governance)

Dr Roger Kumar is Conferred with a Doctorate in Transformational Leadership and Education. He has recently been nominated as International President of the World Human Rights Protection Commission with head office in New York, USA. He has also been recently nominated as South Delhi District head of PB News.

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# Unlocking the Power of Cooling Towers: Revolutionising Industrial Cooling Systems



In the realm of industrial processes, efficiency and sustainability are paramount concerns. Among the many components that contribute to the smooth functioning of industrial facilities, cooling towers stand out as crucial elements in maintaining optimal operating conditions. These towering structures play a pivotal role in dissipating heat generated by industrial processes, ensuring equipment longevity, operational stability and environmental responsibility.

## Understanding Cooling Towers

Cooling towers are ingeniously designed heat rejection devices that transfer excess heat to the atmosphere through the process of evaporation. They find extensive applications across various industries, including power generation, manufacturing, petrochemicals, HVAC (Heating, Ventilation and Air Conditioning) and more.

The fundamental principle behind cooling towers is simple yet effective. Hot water or process fluid is circulated through the tower, where it is exposed to ambient air. As the water evaporates, it absorbs latent

heat, thereby cooling the remaining water. This cooled water is then recirculated back into the industrial process, completing the cycle.

## Types of Cooling Towers

Cooling towers come in various configurations, each tailored to meet specific industrial requirements and environmental conditions. Some common types include:

1. **Natural Draft Cooling Towers:** These towering structures utilise the buoyancy of hot air to draw air through the tower. They are often employed in large-scale power plants and heavy industries due to their high capacity and efficiency.
2. **Mechanical Draft Cooling Towers:** Unlike natural draft towers, mechanical draft towers employ fans to force air through the tower, enhancing heat transfer. They offer greater control over airflow and are commonly used in commercial HVAC systems and smaller industrial applications.

3. **Crossflow Cooling Towers:** In crossflow towers, air flows horizontally across the falling water stream. This design promotes efficient heat transfer and is suitable for a wide range of applications.
4. **Counterflow Cooling Towers:** In counterflow towers, air flows vertically upwards, countering the downward flow of water. This design maximises heat exchange efficiency and is often preferred for its compact footprint and energy efficiency.

### Benefits of Cooling Towers

The widespread adoption of cooling towers can be attributed to their numerous benefits, including:

1. **Energy Efficiency:** By harnessing the natural process of evaporation, cooling towers offer a cost-effective and energy-efficient method of heat rejection compared to traditional methods like air-cooled heat exchangers.
2. **Water Conservation:** Cooling towers facilitate the reuse of water, reducing the overall water consumption of industrial processes. Advanced designs incorporate water treatment systems to maintain water quality and minimise environmental impact.
3. **Process Optimisation:** Maintaining optimal operating temperatures is crucial for the efficiency and reliability of industrial equipment. Cooling towers play a vital role in regulating process temperatures, ensuring consistent performance and prolonging equipment lifespan.
4. **Environmental Sustainability:** By dissipating heat into the atmosphere through evaporation, cooling towers minimise thermal pollution of water bodies and reduce the ecological impact of industrial operations.

### Innovations in Cooling Tower Technology

The evolution of cooling tower technology continues to drive advancements in efficiency, reliability and environmental sustainability. Some notable innovations include:

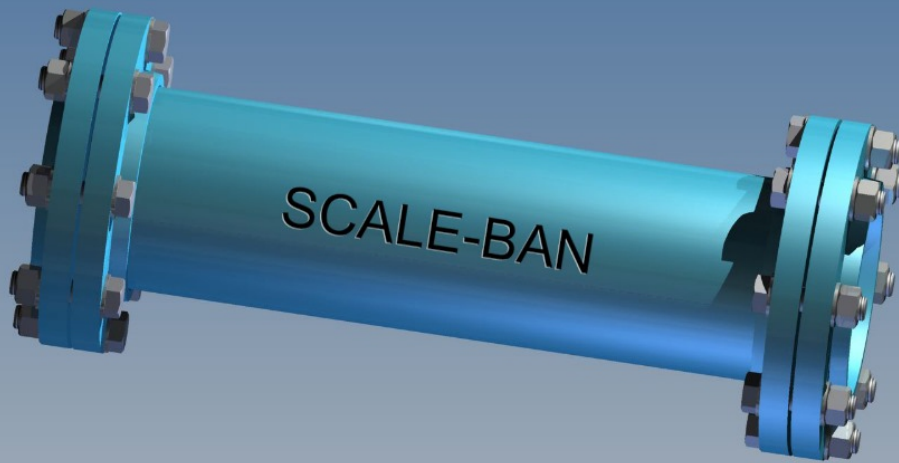
1. **Smart Monitoring and Control Systems:** Integration of sensors, IoT (Internet of Things) connectivity and predictive analytics enables real-time monitoring of cooling tower performance, facilitating proactive maintenance and optimisation.
2. **Material and Design Enhancements:** Advanced materials such as fiber-reinforced plastics and corrosion-resistant alloys enhance the durability and longevity of cooling towers, even in harsh industrial environments.
3. **Hybrid Cooling Systems:** Combining the benefits of evaporative cooling with other heat rejection methods, such as dry cooling or adiabatic cooling, hybrid systems offer versatility and improved efficiency across varying operating conditions.
4. **Water Treatment Technologies:** Innovations in water treatment technologies, such as ozone treatment, UV disinfection and chemical-free purification systems, ensure water quality compliance and minimise the risk of microbial contamination.

### Conclusion

Cooling towers represent a cornerstone of modern industrial cooling systems, offering a perfect blend of efficiency, reliability and environmental responsibility. As industries strive to optimise their processes and reduce their environmental footprint, the role of cooling towers will continue to be indispensable. With ongoing technological innovations and a commitment to sustainability, cooling towers are poised to shape the future of industrial cooling, ensuring a harmonious balance between industrial progress and environmental stewardship.

CASE has been manufacturing Cooling Towers for the last three decades. The technology adapted is both counterflow and Crossflow designs, with an approach up to 3°C, which is commercially viable. CASE manufactures these Cooling Towers using materials such as FRP, PVC, SS-304 and SS 202.

# Revolutionising Water Treatment with SCALE BAN: A Breakthrough Solution for Scale Prevention



In the realm of water treatment and industrial maintenance, the detrimental effects of scale buildup are all too familiar. Scaling, caused by the precipitation of minerals such as calcium, magnesium and silica, can wreak havoc on equipment, piping systems and heat exchangers, leading to reduced efficiency, increased maintenance costs and even system failure. Fortunately, innovative solutions like SCALE BAN have emerged to tackle this persistent problem head-on, offering a sustainable and cost-effective approach to scale prevention and water conditioning. Let's explore the transformative potential of SCALE BAN and its role in revolutionising water treatment practices.

## Understanding SCALE BAN

SCALE BAN is a cutting-edge water treatment technology developed to combat scale formation and corrosion in industrial and commercial water systems. Unlike traditional chemical treatments, which often involve the use of harsh chemicals and costly maintenance procedures, SCALE BAN employs advanced electrochemical principles to alter the physical properties of water and inhibit scale deposition effectively.

At the heart of SCALE BAN technology lies a proprietary electrode assembly that generates a low-voltage electric field within the water stream passing

through the treatment unit. This electric field induces a series of electrochemical reactions that prevent the formation of scale crystals and promote the dispersion of existing scale deposits, thereby maintaining system efficiency and prolonging equipment lifespan.

## Key Benefits of SCALE BAN

SCALE BAN offers a multitude of benefits that make it an attractive solution for scale prevention and water conditioning across various industries:

- Scale Prevention:** By disrupting the nucleation and growth of scale crystals, SCALE BAN effectively prevents the formation of scale deposits on surfaces such as heat exchanger tubes, piping systems and equipment internals. This proactive approach mitigates the risk of scale-related issues, including reduced heat transfer efficiency and equipment downtime.
- Corrosion Protection:** In addition to scale prevention, SCALE BAN provides corrosion protection by forming a protective film on metal surfaces exposed to water. This film acts as a barrier against corrosive agents, prolonging the service life of equipment and infrastructure and reducing the need for costly repairs and replacements.

- 3 **Energy Efficiency:** By maintaining clean and scale-free heat exchange surfaces, SCALE BAN helps optimise energy transfer and improve system efficiency. This leads to reduced energy consumption, lower operating costs and enhanced overall process performance.
- 4 **Environmentally Friendly:** Unlike traditional chemical treatments that rely on the use of hazardous chemicals and produce harmful by-products, SCALE BAN is environmentally friendly and sustainable. It does not introduce any chemicals into the water supply, eliminating the risk of pollution and minimising environmental impact.
- 5 **Low Maintenance:** SCALE BAN units require minimal maintenance and operational oversight, offering hassle-free scalability and ease of integration into existing water treatment systems. This translates to reduced downtime, lower maintenance costs and increased operational reliability.

### Applications of SCALE BAN

SCALE BAN finds diverse applications across a wide range of industries and water treatment applications, including:

- **Industrial Cooling Systems:** SCALE BAN is highly effective in preventing scale buildup and corrosion in cooling towers, evaporative condensers and chillers, ensuring optimal heat transfer efficiency and system performance.
- **Boiler Water Treatment:** In boiler systems, SCALE BAN helps prevent scale formation on

boiler tubes and internal surfaces, reducing the risk of overheating, boiler fouling and costly downtime.

- **Process Water Treatment:** SCALE BAN can be employed in various industrial processes, including manufacturing, food and beverage production and wastewater treatment, to prevent scale deposition and maintain process efficiency.
- **Commercial and Residential Water Treatment:** SCALE BAN units are also suitable for commercial and residential applications, such as hotels, apartment complexes and condominiums, where scale buildup can lead to plumbing issues and reduced appliance efficiency.

### Conclusion

SCALE BAN represents a paradigm shift in water treatment technology, offering a sustainable, cost-effective and environmentally friendly solution for scale prevention and water conditioning. By harnessing the power of electrochemical principles, SCALE BAN provides effective scale control and corrosion protection across a wide range of industrial and commercial applications, ensuring optimal system performance, energy efficiency and equipment longevity. As industries continue to prioritise sustainability and operational efficiency, SCALE BAN stands out as a transformative solution, paving the way towards a cleaner, more efficient future in water treatment.

CASE has been manufacturing SCALE-BAN for more than three decades and this product has been associated with Mr Roger Kumar for over 35 years.

# Unlocking the Potential of Coal to Chemicals: A Sustainable Pathway for Industrial Transformation



In the ever-evolving landscape of energy and chemical production, coal has emerged as a valuable feedstock for the synthesis of a wide range of chemicals, fuels and materials. Coal to chemicals (CTC) processes encompass a diverse array of technologies that convert coal-derived synthesis gas (syngas) into various chemical products through catalytic reactions. This innovative approach not only diversifies the utilisation of coal resources but also offers a sustainable pathway towards meeting the growing demand for chemicals while reducing reliance on traditional fossil fuel sources. Let's explore the transformative potential of coal to chemicals and its role in shaping a more sustainable future.

## Understanding Coal to Chemicals

Coal to chemicals processes typically involve the following key steps:

1. **Gasification:** Coal is first converted into syngas through gasification, a thermochemical process that involves reacting coal with oxygen and steam at high temperatures. The resulting syngas consists primarily of hydrogen ( $H_2$ ) and carbon monoxide (CO), along with other gases such as carbon dioxide ( $CO_2$ ) and methane ( $CH_4$ ).
2. **Syngas Purification:** The raw syngas undergoes purification to remove impurities such as sulfur compounds, tar and particulate matter. This purification step is crucial to ensure the stability and quality of the syngas for downstream chemical synthesis.
3. **Chemical Synthesis:** The purified syngas serves as a versatile feedstock for the production of a wide range of chemicals and fuels through catalytic processes. Common chemical products synthesised from syngas include methanol, ammonia, olefins (ethylene and propylene), synthetic fuels and various other organic compounds.
4. **Product Separation and Refining:** The synthesised chemical products are separated and refined to obtain high-purity end products suitable for commercial use. Advanced separation techniques such as distillation, membrane separation and adsorption are employed to achieve precise product purification.

## Benefits of Coal to Chemicals

Coal to chemicals processes offer numerous advantages that make them an attractive option for chemical production and resource utilisation:

1. **Diversification of Feedstock:** By leveraging coal as a feedstock for chemical synthesis, coal to chemicals processes reduce reliance on traditional fossil fuel sources such as petroleum and natural gas, thereby enhancing energy security and resource diversification.
2. **Utilisation of Coal Resources:** Coal reserves are abundant and widely distributed geographically, making coal to chemical processes accessible to regions with abundant coal resources. This utilisation of coal resources helps optimise resource utilisation and extend the lifespan of coal reserves.
3. **Environmental Sustainability:** Compared to conventional coal combustion, coal to chemicals processes offer a cleaner and more environmentally friendly approach to coal utilisation. By converting coal into value-added chemicals and fuels, these processes reduce emissions of sulfur dioxide (SO<sub>2</sub>), nitrogen oxides (NO<sub>x</sub>) and particulate matter, thereby mitigating air pollution and environmental degradation.
4. **Process Efficiency:** Coal gasification processes used in coal to chemicals plants are highly efficient and can achieve high conversion rates of coal into syngas. Additionally, advanced catalytic technologies enable efficient conversion of syngas into target chemical products with high yields and selectivity.
5. **Product Versatility:** Syngas derived from coal can be tailored to produce a wide range of chemical products, allowing for flexibility in product portfolio and market responsiveness. This versatility enables coal to chemicals plants to adapt to changing market demands and optimise production based on product value and market dynamics.

## Innovations in Coal to Chemicals

Continual advancements in coal to chemicals

technology are driving improvements in efficiency, product quality and environmental performance. Some notable innovations include:

1. **Advanced Catalyst Development:** Novel catalyst materials and catalytic processes enable enhanced selectivity, activity and stability in coal to chemical reactions, leading to improved product yields and process efficiency.
2. **Integration of Process Units:** Integration of coal gasification, syngas purification and chemical synthesis units within a single plant facilitates process optimisation, energy integration and resource utilisation, resulting in overall cost reduction and improved sustainability.
3. **Carbon Capture and Utilisation (CCU):** Integration of carbon capture and utilisation technologies with coal to chemicals processes enables the capture and utilisation of CO<sub>2</sub> emissions as a feedstock for chemical synthesis, thereby reducing greenhouse gas emissions and enhancing process sustainability.
4. **Bio-Coal Co-Processing:** Co-processing of coal with biomass offers synergistic benefits, including improved product quality, reduced emissions and enhanced sustainability. This hybrid approach leverages the carbon-neutral properties of biomass to further reduce the environmental footprint of coal to chemical processes.

## Conclusion

Coal to chemicals processes represent a transformative approach to chemical production that capitalises on the abundance and versatility of coal resources while addressing environmental concerns and promoting sustainability. By converting coal into value-added chemicals and fuels through advanced gasification and catalytic technologies, coal to chemicals plants offer a sustainable pathway towards meeting the growing global demand for chemical products. As the world transitions towards a low-carbon economy, coal to chemicals processes stand out as a cornerstone of innovation, driving progress towards a cleaner, more sustainable future.