

Catalysts CONNECT

VOLUME-38 ISSUE NO. 2

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application support

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process support

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MD's Desk

Munish Madaan
MANAGING DIRECTOR

Hello Friends,

As we step into the new financial year, I am delighted to share with you that we are beginning on a new high, buoyed by our outstanding performance as an organization in the past fiscal year 2022-23. We have achieved our highest sales figures ever, a testament to the dedication, hard work, and commitment of our entire team.

One of the key drivers of our success is the positive momentum in the Ethanol program in India. With the government's unwavering support and impetus to the Sugar & Distilling industry, we are witnessing a paradigm shift towards ethanol production. In June 2022, India achieved an average blending rate of 10% ethanol in petrol, and we are well on track to reach the ambitious target of 20% blending. This presents immense opportunities for us to contribute to the growth of the industry.

Speaking of growth, I am proud to say that we are growing rapidly, hand in hand with the industry. Our unwavering commitment to delivering unmatched products and services has earned us the trust of our clients, positioning us as 'India's No. 1 and most trusted biotech company in Distilling, Sugar, and Brewing industries'. It is through our team's expertise, dedication, and relentless pursuit of excellence that we have achieved this milestone.

Talking of milestones, we recently celebrated Catalysts' 20th Annual Day - AAGHAZ 2023 - with our families. It was a joyous occasion filled with laughter, camaraderie, and a sense of pride in our collective achievements. Such events not only strengthen our bonds as a team but also remind us of the importance of celebrating our successes together.

As we embark on this new financial year, let us carry forward the spirit of success, growth, and celebration. Together, we will continue to innovate, excel, and make a positive impact on the Distilling, Sugar, and Brewing industries, contributing to the 'Make in India' initiative.

Here's to a promising year ahead!

Warm regards,

Munish Madaan

India's No. 1 and Most Trusted



company in Sugar, Distilling and Brewing industries

We are

- Customized Products & Solutions provider in biotech space
- Offering a wide range of enzyme-based eco-friendly solutions
- Catering to various industry verticals across the globe

We have

- Provided customized enzyme-based solutions of worth >1500 crores ₹
- Saved losses and created benefits
 - Of >6000 crores ₹
 - To 700+ clients in 18+ countries
- Facilitated our clients to generate additional average profit of ~2 to 20 crores ₹

Our Industry Verticals

- Sugarcane Processing
- Distilling – Cane Syrup / Molasses
- Distilling – Grain
- Malt & Brewing
 - Malt Extraction
 - Industrial Brewing
 - Craft Brewing

Maximizing clients' profitability through innovative Products & Solutions since 20+ yrs.



State-of-the-art
DSIR accredited lab



Technically qualified
Customer Support Team



Quality certified
(FSSC 22000, Halal, Kosher)
formulation facility



Channel partnership with
world's top companies

Our Expertise

Customer Centric Approach

Technically qualified Application Scientists addressing customer challenges with sophisticated portable instruments

- **Lab-scale** application support
- **Lab to Plant level** scale-up
- **On-site** process **support**
- **Data mining** and troubleshooting
- Process and Product **Optimization**

Research & Development

Team comprises of 18 experienced Scientists and Industry Experts

- State-of-the-art R&D Lab
 - **DSIR (Govt. of India) recognised in-house R&D center**
- Well-defined process for developing & launching customizable solutions
 - Detailed raw material analysis by process experts
- Well-equipped QA & QC laboratories
- Certified processes, products, and services



From Good to Great

How Customer Support Elevates Business



Contributed by
Awadhesh Nath Tiwari
Marketing

Customer support refers to the assistance provided by a company to its customers before, during, and after a purchase. The importance of customer support lies in its ability to build customer loyalty, which in turn helps drive business growth.

Implementing exceptional customer support can be a challenging task for companies, especially those that are new to the concept. Some of the biggest challenges they may face are:

- **Limited Resources:** Companies may struggle to provide exceptional customer support if they have limited resources, including budget, staff, and technology.
- **Inadequate Training:** Companies may struggle to provide excellent customer support if their staff does not have the proper training. It is essential to train customer support representatives on communication skills, problem-solving, and empathy.
- **High Turnover:** High turnover rates can lead to a lack of consistency in customer support. It can also lead to the loss of knowledge and experience,

making it difficult for new employees to provide exceptional customer support.

- **Complex Systems:** Companies may face challenges in providing exceptional customer support if they have complex systems in place. This can make it difficult for representatives to access customer information and resolve issues quickly and efficiently.
- **Limited Customer Insight:** Without access to customer data and insights, it can be challenging to provide personalized customer support that meets the needs and preferences of individual customers.
- **Changing Customer Expectations:** As customer expectations continue to evolve, companies may struggle to keep up with new trends and demands. This can lead to a decline in customer satisfaction and loyalty.
- **Integration with Other Departments:** Exceptional customer support requires collaboration and integration with other departments, including sales, marketing, supply chain, and product development. If departments operate in silos, it can be challenging to provide seamless customer experiences.

Catalysts' Customer Support Expertise

To overcome these challenges, The Catalysts Group invest in the right resources, such as technology, staff, and training. We also prioritize customer insights and integrate customer support with other departments to provide exceptional experiences.

Our motto – customer first – plays a crucial role in a company's success. It helps build trust and loyalty with customers, which leads to increased customer satisfaction, retention, and ultimately, revenue. We are one of the few biotech organisations, in the Industrial Enzymes segment, providing unmatched customer support resulting in high customers retention and benefit from word-of-mouth referrals.

Catalysts' Effective Customer Support Team

Our customer support representatives possess essential traits such as empathy, technical expertise, communication skills, and problem-solving abilities. Empathy helps representatives connect with customers and technical expertise aids in understanding their needs, while communication skills ensure that customers are heard and understood. Problem-solving abilities enable representatives to provide solutions to customers' issues promptly.

Studies have shown that companies having effective customer support outperforms -

- Their competition by 147%
- Sales growth of their competitors by 85%

Our Customer Support Strategies

Personalization or Customization and Proactive Support are two effective strategies deployed by us for building customer loyalty through customer support. Personalization involves tailoring interactions with customers to meet their specific needs, while proactive support involves anticipating and addressing

customer issues before they become problems.

We have successfully built customer loyalty through our customer support efforts. Catalysts offers proactive support through features like one-click or one-call ordering and further provides personalized customer support by giving representatives the freedom to engage with customers on a one-to-one level.

72% of B2B buyers point to real-time & always-on customer service as one of the key factors in boosting customer loyalty.

Catalysts' Best Practices for Customer Support

To improve customer support, we follow several best practices such as responding promptly to customer inquiries, providing personalized support, and offering on-site support with self-service options. We also measure customer support effectiveness regularly, thus, identifying areas for improvement.

Investing in customer support is critical for building customer loyalty and driving business growth. By providing effective customer support and implementing successful strategies, our endeavour is to improve customer satisfaction, retention rates, and ultimately, their bottom line.

Our customer-centric approach is evident in our expertise to provide customized-solutions to each of our clients and further ensuring not only the after-sales support but also Analytical and On-site support through our CRM & Customer Solutions team.



Customer Solutions Team: Your Secret Weapon for Thriving in a Competitive Market



Contributed by

Dharmender Pathak

Customer Solutions



In today's competitive business landscape, providing excellent customer service is key to success. Customers expect quick and efficient solutions to their problems and complaints. This is where a customer solutions team comes in. A well-functioning customer solutions team can help improve customer satisfaction, increase loyalty, and enhance brand image. In this article, we will explore the importance of a customer solutions team, the benefits of having one, how to build an effective team, common challenges faced, and solutions to overcome those challenges.

What is a Customer Solutions Team?

A customer solutions team is a group of employees responsible for handling customer inquiries, complaints, and issues. They act as the face of the company, providing support to customers and ensuring their needs are met. The team can consist of various roles, including customer service representatives, technical support staff, and account managers.

Roles and responsibilities of a customer solutions team can include:

- Handling customer inquiries and complaints
- Providing technical support and assistance
- Upselling and cross-selling products and services
- Analysing customer feedback and trends
- Collaborating with other departments to resolve issues
- Providing personalized solutions and recommendations to customers



Data Mining



Dosage Optimization



Process Troubleshooting



On-site Critical
Analysis using portable
instruments.

Benefits of having a Customer Solutions Team

1. Improved customer satisfaction

A well-trained customer solutions team can provide timely and effective solutions to customer inquiries and complaints, leading to increased customer satisfaction. Customers are more likely to do business with a company that provides excellent customer service.

2. Increased customer loyalty

When customers feel valued and heard, they are more likely to remain loyal to a company. An effective customer solutions team can build strong relationships with customers, leading to increased loyalty and repeat business.

3. Enhanced brand image

A positive customer service experience can enhance a company's brand image. Word-of-mouth marketing can also lead to increased brand recognition and new customers.

4. Positive impact on business revenue

Satisfied customers are more likely to make repeat purchases and recommend the company to others. This can lead to increased revenue and growth for the business.

5. Insights into customer needs and preferences

A customer solutions team can provide valuable insights into customer needs and preferences. This information can be used to improve products and services, leading to increased customer satisfaction and loyalty.

How to Build an Effective Customer Solutions Team

a. Hiring the right people

Hiring the right people for a customer solutions team is crucial. Look for candidates who possess strong communication and problem-solving skills. They should also have a positive attitude and be able to work well under pressure.

b. Providing adequate training and resources

It is important to provide adequate training and resources to ensure that team members have the knowledge and tools needed to provide excellent customer service. This includes product and service knowledge, as well as training on customer service skills and procedures.

c. Empowering the team to make decisions

Empowering team members to make decisions can improve efficiency and customer satisfaction. When team members have the authority to make decisions, they can provide faster solutions to customer inquiries and complaints.

d. Encouraging collaboration and communication

Encouraging collaboration and communication between team members can lead to improved teamwork and more effective solutions to customer issues. Regular team meetings and brainstorming sessions can help build a collaborative culture.

Challenges and Solutions

Common challenges faced by customer solutions teams include burnout and turnover, as well as a high volume of customer inquiries. To overcome these challenges, it is important to prioritize employee well-being and implement efficient customer support processes. Providing support and resources for team members can help prevent burnout and turnover. Implementing self-service options for customers can also help reduce the volume of inquiries handled by the team.

A well-functioning customer solutions team is essential for providing excellent customer service and building strong relationships with customers. By investing in hiring the right people, providing adequate training and resources, empowering the team

Catalysts' Customer Solutions Team

The Catalysts Group provides customized customer solutions to the Sugar, Distilling, and Brewing industries with over 20+ years of experience in the field. Our team of experts works closely with clients to identify their unique needs and challenges, and offer customized solutions to enhance efficiency, increase yields, and reduce costs.

1. Sugar Industry Solutions

For sugar mills, we offer process optimization to improve sugar quality, optimize processes, and reduce energy consumption. Our team provides technical expertise in analysing data, conducting trials, and implementing customized solutions to help our clients achieve their goals.

2. Distilling and Brewing Industry Solutions

The Catalysts Group provides customized solutions for fermentation, distillation, and maturation processes in the distilling and brewing industry. Our team of experts also provides advice on product development, sensory evaluation, and quality control to help clients meet their requirements and maintain the highest standards of quality.

Our Approach

At The Catalysts Group, we are committed to helping clients grow their business while maintaining the highest standards of quality and sustainability. Our team provides personalized solutions that are tailored to the specific needs of each client. We use a collaborative approach to identify the key areas for improvement and provide comprehensive solutions that meet our clients' objectives.

The Catalysts Group is a trusted partner for businesses in the Sugar, Distilling, and Brewing industries. Our team of experts provides technical expertise, process optimization, and customized solutions to help our clients achieve their goals. We are committed to maintaining the highest standards of quality and sustainability, and we work closely with our clients to provide personalized solutions that meet their specific needs."



CRM in B2B Business - Building Loyalty One Interaction at a Time

Contributed by

Aarati Gulabchand Ram

CRM



Customer relationship Management (CRM) is the foundation of any successful business, but it is particularly important in the B2B industry. In B2B business, companies work closely with their customers to understand their unique needs, goals, and challenges. Building strong and lasting relationships with customers is essential for driving business growth and success. In this article, we will explore the power of customer relationship in B2B business and provide tips and strategies for building strong customer relationships.

Building Strong Customer Relationships

One of the key elements of building strong customer relationships in B2B business is understanding the customer's needs and goals. B2B customers often have complex needs and unique challenges that require customized solutions. Companies that take the time to truly understand their customers' needs and goals are better equipped to provide them with the right solutions and build a strong and lasting relationship.

Another important aspect of building strong customer relationships in B2B business is communication and transparency. Regular communication and transparency are essential for building trust and maintaining a strong relationship with customers. Companies should provide clear and open communication channels, provide regular updates on projects and progress, and be transparent about any issues or challenges that arise.

Providing value-added services is also a great way to build strong customer relationships in B2B business. Companies that go above and beyond to provide added value to their customers, such as providing education and training, offering additional services, or providing personalized support, can help to build loyalty and trust.

Consistency in quality and delivery is another important aspect of building strong customer relationships in B2B business. Customers expect consistent quality and timely delivery of products and services. Companies that consistently deliver high-quality products and services on time are more likely to build strong and lasting relationships with their customers.

A personalized approach to customer service is also essential for building strong customer relationships in B2B business. Customers expect personalized attention and support, and companies that provide a personalized approach to customer service can help to build strong and lasting relationships. Companies should take the time to understand their customers' unique needs and preferences and provide customized solutions and support.

Benefits of Strong Customer Relationships

Strong customer relationships are a vital component of success in B2B businesses. Companies that invest in building strong customer relationships can reap numerous benefits, such as increased customer loyalty and retention, positive word-of-mouth marketing, opportunities for upselling and cross-selling, improved customer feedback and insights, and better long-term business planning and growth. By focusing on building strong customer relationships, B2B companies can create a sustainable competitive advantage that can help them thrive in the long run.

Challenges and Solutions in Building Strong Customer Relationships

Building strong customer relationships in B2B business is essential, but it can be challenging. Communication barriers, long sales cycles, individual customer needs, and technological advancements can all pose obstacles. However, overcoming these challenges can lead to increased customer loyalty, better business planning, and more opportunities for upselling and cross-selling. To overcome these challenges, B2B businesses can prioritize customer relationships in their company culture, leverage technology and data analytics, and develop personalized strategies to meet individual customer needs. By doing so, they can build strong customer relationships and drive long-term growth.

Building strong customer relationships is essential for success in B2B business. To achieve this, companies need to adopt best practices that focus on consistent communication, a personalized approach to customer service, providing value-added services, creating a company-wide customer-centric culture, and continuous improvement and adaptation.

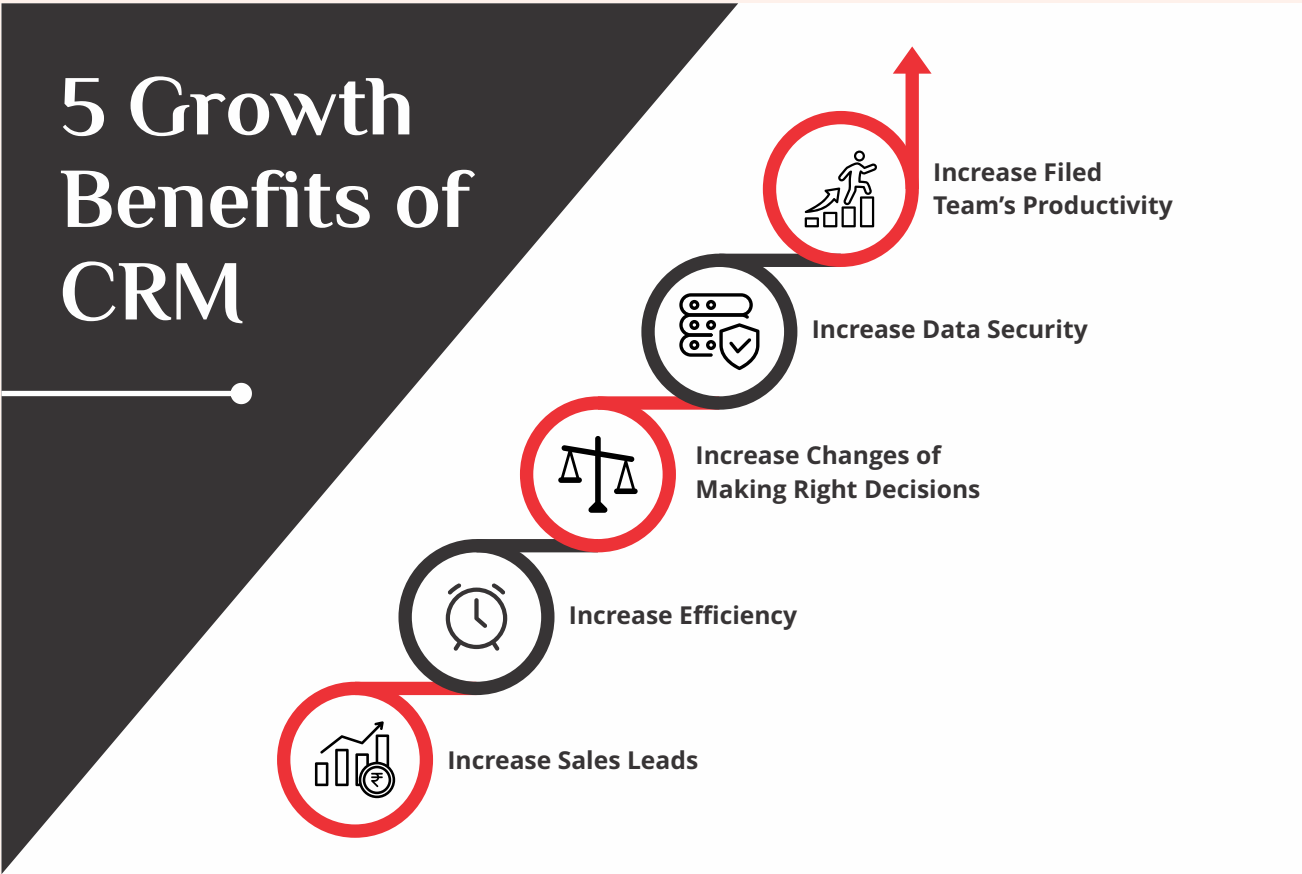
Consistent communication and follow-up are critical to building strong customer relationships. Companies

must maintain an ongoing dialogue with their customers and provide timely responses to their queries and concerns. Providing customized services and tailoring them to individual customer needs and preferences can help create a sense of trust and loyalty.

Value-added services such as after-sales support, training, and maintenance can also help build strong relationships with customers. Companies should aim to create a company-wide customer-centric culture by prioritizing customer needs and preferences across all business functions.

Finally, continuous improvement and adaptation are critical for building strong customer relationships in B2B business. Companies must constantly monitor customer feedback and adapt their strategies accordingly. By adopting these best practices, B2B businesses can build strong and lasting relationships with their customers, which will ultimately drive growth and success.

In conclusion, strong customer relationships are crucial for the long-term success of B2B businesses. By fostering customer loyalty and positive word-of-mouth marketing, businesses can increase revenue and growth opportunities. Overcoming communication barriers, managing complex sales cycles, addressing individual customer needs, and leveraging technology are some of the challenges businesses faces when building strong customer relationships. However, consistent communication and follow-up, personalized approach to customer service, value-added services, creating a company-wide customer-centric culture and continuous improvement and adaptation are some of the best practices that businesses can implement. It is important for companies to prioritize customer relationships in their strategy and culture to succeed in the competitive B2B market.



BEER *and what goes into it*

Contributed by
Ajay Yadav
Malt and Brewing



What is beer?

Beer is the product of the fermentation of an aqueous extract of malted or unmalted cereals by yeast. It is usually flavoured with hops or an extract of hops, and sometimes with herbs or fruits.

Beer is manufactured and sold in most developed countries of the world. Beer making is a big business.

Ingredients for a good beer

Good quality raw materials are needed to make good beers. Unlike many beverages and food stuffs, beer is made with a surprisingly small number of ingredients.

For Pale lager beer, these are:

- Water
- Malted barley
- Other Cereals (Such as rice, maize and wheat)
- Hops
- Yeast

The skill of the brewer, and the power of nature, helps transform these simple ingredients into the complex product we know as beer.

Water

Beer usually contains 95 % water. Historically, Water quality has determined the type of beer that could be produced at a given location. This is the reason why the pale lager beers first brewed in Pilsen, in what is now the Czech Republic, enjoyed so much success, and why the ales of Burton-on-Trent in the UK earned a worldwide reputation.

Globally, the brewing industry produces about 1.4 *10¹¹ litres of beer per annum; worth about \$ 400 billion US\$.



In the case of Pilsen, soft water allowed good pale lager beers to be produced. In Burton-on-Trent, hard water made for fine ales. Today, many breweries remove much of the material in their water supplies, to produce a pure consistent supply with little regional identity.

They then add back various natural salts to produce a water that resembles that found in the locality best situated to making that kind of beer.

Malt

Malt provides the sugars from which the alcohol in beers is ultimately derived. It also provides nutrients that help nourish both brewer's yeast and beer consumers. And of course, it is malt that provides a great deal of the flavors in the beer, as well as providing materials that yeast can make into flavors.

Malt is made from partially germinated seeds of the barley plant. The most common type of malt is called pale malt, named because of its color.

Malts can be made from a whole range of different types of barley, some give a distinctive character of beers produced from them, and each has their favorites.

Brewers also use specialty malts, these are manufactured in a different way from pale malts. They usually receive more intense heat treatment during the kilning process. These provide both special color and distinctive flavor when it is required. Examples include chocolate malt, crystal malt and smoked malt.

Other cereals and Cereal derivatives

Many other cereals are also used as beer ingredients. Possibly the most famous of these is rice, a key ingredient of the world famous beer Budweiser. Maize (corn) is also common in many beers, as is wheat and cane sugar. Rye and oats are important in the brewing of some beer styles.

Often these cereals are not malted. The brewer's main cereal –barley–can be used in this form too. In fact, roasted barley is an important ingredient of another famous beer– Guinness.

Hops

Hops have been described as both the “Soul” and the “seasoning” of beer.

The flowers of this unusual plant give two things to beer. First of all they, make the beer bitter. In most other walks of life, bitterness is associated with something bad.

Medicines taste bitter, and who likes medicine? But in the case of beer, bitterness is one of the characters that makes it beery

Hops are the source of the bitter taste.

The second thing that hops give to beer is a unique aroma. Described as hoppy aroma, this smell is found nowhere else in nature, and cannot be copied with artificial flavorings. The aromas in hops come from oils found in the flowers of the plant.

They include flavor characters that can be described as floral, spicy, minty, piney and citrus-like.

Each brewer uses different blends of hops in their beer to get the right flavor effect. Many different varieties of hops are used to generate different flavors. They have marvelous-sounding names Cluster, Fuggles, Saaz, Perle and Hersbrucker are just a few.

Brewers Use two main types of hops:

1. Bitter hops.
2. Aroma hops.

Yeast

Yeast is the agent of fermentation. Without it, beer would contain no alcohol and little flavor. Brewers Use a variety of different yeast strains, and each one gives its own distinctive flavor character to beer.

There are two main types of yeast:

1. Top-fermenting yeasts (which rise to the top of the beer during Fermentation) - these are usually used to make ales.
2. Bottom-fermenting yeasts (which sink to the bottom of the beer during fermentation) - these are usually used for make lagers.

In addition to these two main types, some brewers use specialty strains of yeast to develop unique flavors in their beers. These include special ale yeasts which give a spicy clove-like and banana-like characters to wheat beers, and yeasts called Brettanomyces which give a smooth taste to some Stouts, and the unique flavor to Lambic beers.

What can you remember?

Test your knowledge about the ingredients used to make beer with these three

Questions:

What are the usual ingredients of beer?

Name two different types of hops.

How much water is usually found in beer?

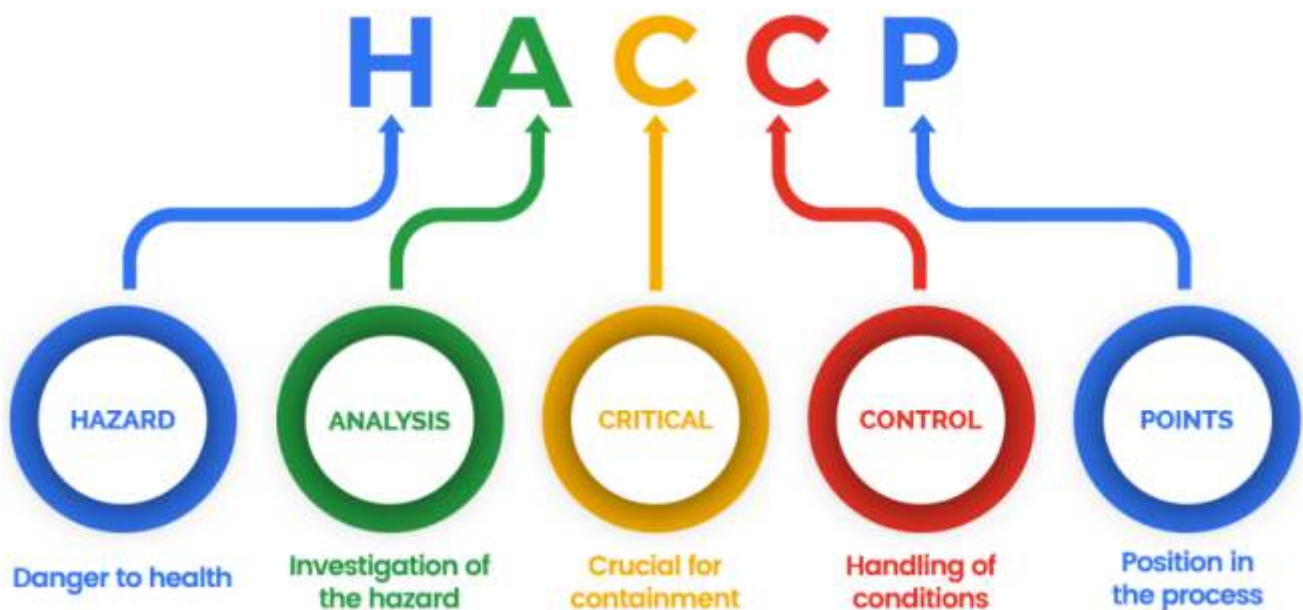
Next Information to be shared in the next article.

Have a break with chilled beer!



How do the Seven Principles and HACCP work?

Contributed by
Joole Chauhan
R&D



Hazard Analysis Critical Control Point is a management system that focuses on product safety through the examination and management of biological, chemical, and physical risks from product manufacture and procurement through manufacturing, distribution, and use of the finished product. The objective of HACCP is to avoid and decrease the occurrence of food security dangers. It is based on the application of scientific standards to food processing and production.

Principles of HACCP:

HACCP is based on seven principles that represent the most important steps in developing a HACCP plan. The first two steps form the basis of the HACCP plan. The remaining five steps are the HACCP Plan Application Steps, which provide the structure for carrying out the work of the HACCP Plan at the processing facility.

Principle 1: Conduct a Hazard Analysis

Applying this principle requires enumerating the steps of the process and identifying where

significant hazards may occur. The HACCP team concentrates on risks that a HACCP plan can prevent, eliminate, or mitigate. Justifications for the inclusion or exclusion of hazards are provided and possible control measures are identified.

Principle 2: Determine Critical Control Points (CCPs)

A CCP is a point, phase, or process where controls can be used to avoid or reduce risks to acceptable levels for food safety. The HACCP team uses the CCP decision tree to identify critical control points within the process. A critical control point can control multiple food safety hazards. The number of CCPs required depends on the processing procedures and controls required to ensure food safety.

Principle 3: Establish Critical Limits

A Critical Limit (CL) is the maximum or minimum biological, chemical, or physical parameter that a CCP must control in order to reduce it to an acceptable level that prevents, eliminates, or reduces a food safety hazard. Level. Threshold values are usually measurements such as time, temperature, pH, weight water activity, or other measurements based on scientific literature and regulatory standards.



Principle 4: Establish Monitoring Procedures

At each critical control point, the HACCP team will define monitoring protocols to measure the critical limit. Monitoring protocols should define how the

measurement will be performed, when it will be done, who will be responsible for it, and how often it will be performed throughout the manufacturing process.

Principle 5: Establish Corrective Actions

Corrective actions are procedures to be followed when deviations from critical limits occur. The HACCP team will determine the steps that will be taken to prevent potentially hazardous food from entering the food chain and the steps needed to regulate the process. This often includes identifying problems and taking action to ensure the problem does not recur.

Principle 6: Establish Verification Procedures

These activities, in addition to monitoring, determine the validity of the HACCP plan and how the system is operating according to the plan. The HACCP team may define activities such as CCP inspection, record review, and review of previous shipments, instrument calibration, and product testing as part of the verification activity.

Principle 7: Establish Record-keeping and Documentation Procedures

An important part of a HACCP plan is to record information that can be used to demonstrate that food is produced safely. Records should also include information about the HACCP plan. The file must include information about the HACCP team, product description, diagrams, risk analysis, defined CCPs, critical limits, monitoring systems, corrective actions, storage procedures, and procedures.

References:-

- <https://hsewatch.com/haccp-system/>
- food-safety-brewery-haccp-stewart-murray
- food.unl.edu/article/haccp-seven-principles

What's Next, after Ethanol?

High Value Ethanol Derivatives....



Contributed by
Yogesh Grover
Business Development

Introduction:

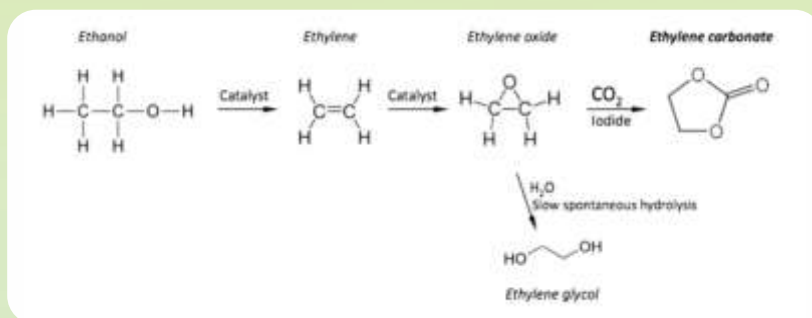
Ethanol, also known as ethyl alcohol, is a commonly produced organic chemical that has various industrial and consumer applications. From fuel to personal care products, the versatility of ethanol makes it a valuable commodity. However, the fermentation process used to produce ethanol has the potential to yield other derivatives with unique properties and applications.

One such derivative is ethylene carbonate, which is formed through the reaction of ethanol and carbon dioxide. Ethylene carbonate, along with other derivatives such as ABE (Acetone, Butanol, Ethanol) and others, can be produced through a variety of methods, including fermentation.

What is Ethylene Carbonate?

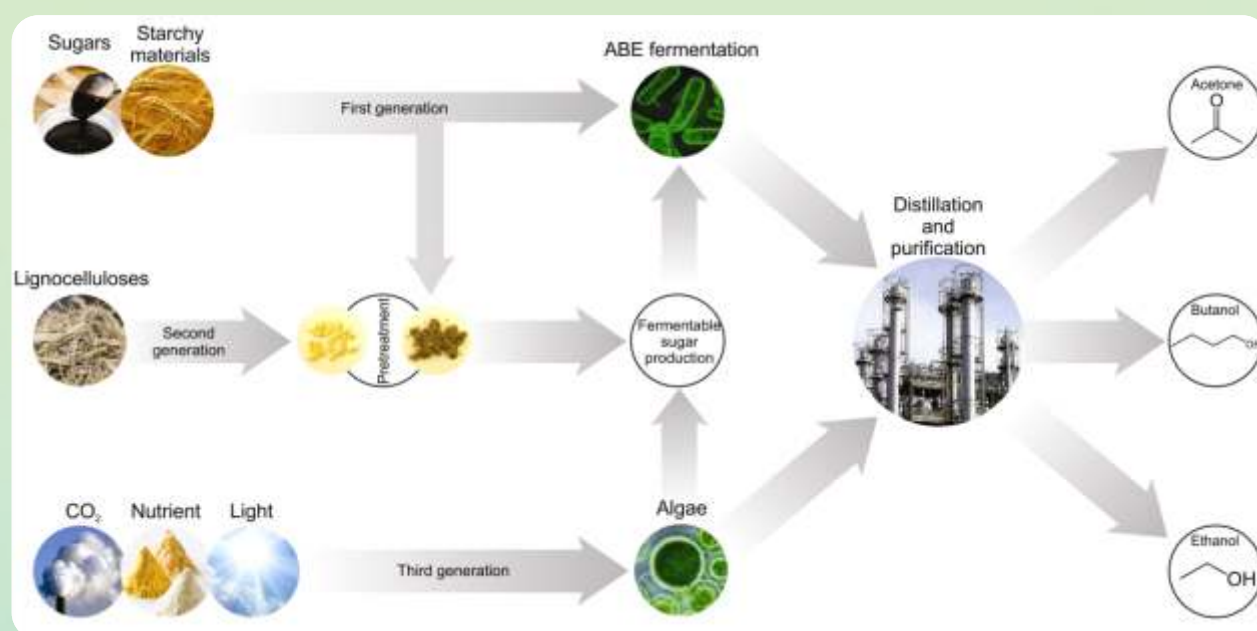
Ethylene carbonate is a colourless and odourless liquid that is commonly used as a solvent and as an electrolyte in batteries. This compound is synthesized through the reaction of ethanol and carbon dioxide and is an important intermediate in the production of many chemical products.

One of the unique properties of ethylene carbonate is its ability to dissolve a wide range of salts, making it an ideal solvent for various chemical reactions. This makes it an important ingredient in the production of batteries, where it is used as an electrolyte to help transport ions between the positive and negative electrodes.



ABE and other derivatives from Ethanol Fermentation:

The fermentation process used to produce ethanol has the potential to yield other derivatives that are important for various industrial and consumer applications. These derivatives include Acetone, Butanol, and Ethanol, also known as ABE.



Acetone is commonly used as a solvent for various products, such as paint, plastic, and adhesives. Butanol is used as a solvent in the production of rubber and synthetic fibres and as a fuel additive. Ethanol is widely used as a solvent, fuel, and in the production of alcoholic beverages.

In addition to ABE, other derivatives from the fermentation of ethanol include propanol, isopropanol, and n-propanol. These compounds are used as solvents in the production of various products, such as personal care products, paint, and cleaning solutions.

Conclusion:

In conclusion, ethanol fermentation has the potential to yield a wide range of derivatives with unique properties and applications. Ethylene carbonate, ABE, and other derivatives are important ingredients in the production of various chemical products and have numerous industrial and consumer applications. The versatility of ethanol and its derivatives makes them valuable commodities and highlights the importance of the fermentation process in the production of various chemicals.

How to **Protect Yourself** in this polluted era.

We are facing a huge environmental crisis. There is contamination in the air we breathe, the water we drink, and the food we eat. Pollution is a global problem, and it's getting worse every day.

There are many things we can do to protect ourselves from pollution. Some of them are simple and easy to do, while others require more effort. But regardless of how much effort we have to put in, it's important that we do something to save ourselves from this toxic environment.



Contributed by
Yograj Kaushal
CRM

Here are some things you can do to protect yourself from pollution:

1. Monitor Air Quality

Monitoring the air quality in your area is essential in protecting yourself from air pollution. You can check the air quality index (AQI) in your area using various mobile applications or websites. If the AQI is in the unhealthy range, limit your outdoor activities or wear an N95 mask if you must go outside. Keep the windows of your home and car closed during periods of high air pollution.

2. Reduce Your Carbon Footprint

Carbon emissions are one of the leading causes of air pollution. You can reduce your carbon footprint by taking public transportation, biking, or walking instead of driving your car. When you do drive, make sure your car is well-maintained and use eco-friendly fuel options like electric or hybrid cars. Planting trees, reducing meat consumption, and properly disposing of waste also help reduce carbon emissions.

3. Stay Hydrated with Clean Water

Water pollution is another major concern in this polluted era. Make sure you drink clean and purified water, and avoid drinking tap water that is not treated or purified. Use a water filtration system or boil water before drinking it to ensure it is free of pollutants and contaminants. Additionally, avoid using plastic water bottles as much as possible, as they contribute to plastic pollution.

4. Eat a Healthy Diet

A healthy diet is essential in protecting yourself from pollution. Eat a balanced diet that includes fresh fruits, vegetables, and whole grains. Avoid consuming processed foods and meats, as they may contain harmful chemicals and preservatives. Additionally, make sure to wash fruits and vegetables thoroughly before eating them to remove any residual pesticides.



5. Maintain a Clean Environment

Maintaining a clean environment is also essential in protecting yourself from pollution. Regularly clean your home and workplace to remove dust and other pollutants. Use natural cleaning products instead of harsh chemicals to minimize your exposure to toxins. Additionally, avoid smoking and keep indoor spaces well-ventilated.

6. Install an air purifier

An air purifier can help to remove some of the harmful particles from the air in your home. This can help to improve the quality of your air and make it easier to breathe.

7. Grow plants

Plants can help to filter out harmful particles from the air. So, if you have the space, try to grow some plants in your home.

8. Reduce your use of plastic

Plastic is one of the biggest pollutants. If you can, try to reduce your use of plastic. Use reusable bags when you go shopping, and avoid using disposable plastic products.

9. Save energy

Saving energy is not only good for the environment, but it can also help to reduce pollution. Turn off lights when you're not using them, and unplug electrical appliances when you're not using them.

10. Reduce, reuse, and recycle

One of the best ways to protect yourself from pollution is to reduce your own contribution to it. Reduce your use of single-use plastics, recycle whenever possible, and consider using eco-friendly products and packaging.

In conclusion, pollution is a serious threat to our health and well-being. However, by taking these simple steps, you can protect yourself from its harmful effects. Remember to monitor air quality, reduce your carbon footprint, drink clean water, eat a healthy diet, and maintain a clean environment. By doing so, you can reduce your exposure to pollution and live a healthier, happier life.

Microbial diversity in Paper and Pulp Industry



Contributed by
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Indian paper and pulp industry has witnessed a rapid growth over the last few decades in spite of several challenges such as shortage of raw material and high maintenance of the industry. Central Pulp & Paper Research Institute (CPPRI), in 2019-20 reported 526 operational mills out of a total of 826 in India with a total installed capacity of 27.15 million tonnes. According to a report by Research and Markets, the Paper industry market is projected to grow from USD 8.6 billion in 2018 to USD 13.4 billion by 2024. Indian paper mills have invested over Rs.25000 crore (US\$ 3.22 billion) in new capacity and clean-green technology during the last 5-7 years to manufacture eco-friendly paper and paperboards.

Use of the environmentally friendly processes is becoming more widespread, and biotechnological products are at the forefront of new research for an eco-friendly environment. Bacterial and fungal contamination needs to be addressed as it lead to slime formation and imposes high manufacturing costs, delays the process and renders the industry unprofitable.

Microorganisms can develop at any location of the water systems of a paper machine because of the suitable temperature (30–50 °C) and pH (4–10), and nutrient rich conditions suitable for slime and bacterial growth. The microbial flora identified in the papermaking process include aerobic spore-forming bacteria (*Bacillus*), aerobic non-sporulating bacteria (e.g., *Acinetobacter*, *Alcaligenes*, *Klebsiella*, *Flavobacterium*, *Micrococcus*, *Pseudomonas*, and *Staphylococcus*), anaerobic bacteria (e.g., *Desulfovibrio*), molds (e.g., *Aspergillus*) and yeasts. (Bajpai, Pratima, 2015)

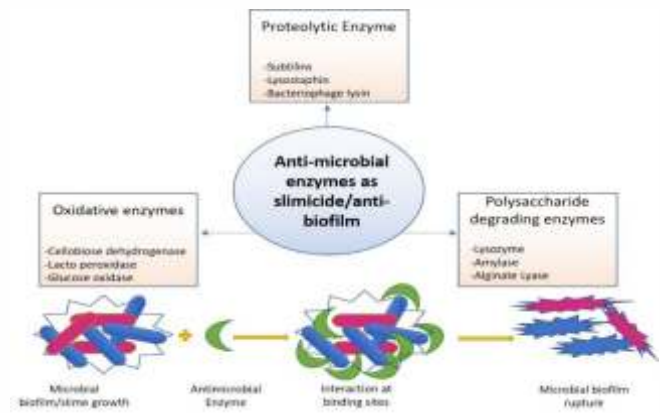
The most commonly found soft and gelatinous slime-producing bacteria is non-sporing motile rod *Aerobacter aerogenes* in the paper mill which requires mechanical support of a network of paper fibers for its adhesion on paper

machines. A slime film gradually increases in thickness with time and finally tears off in the form of small greyish scales.

Most common fungal species found in slime are *Penicillium*, *Aspergillus*, and *Cephalosporium*. (Pathak, Puneet et al., 2021) The thermo tolerant fungi synergistically with bacteria form fibrous mat on which hard slimes accumulate that are very difficult to control.

A study reported that the Indian paper mills are mostly contaminated by *Bacillus alvei* and *A. aerogenes* (Chaudhary et. al, 1992). Microbial contamination needs to be controlled in order to prevent attachment of the primary-colonizing bacteria than to control the growth of secondary communities, which are sheltered by exopolysaccharide slime layers.

Chemical based biocides and eco-friendly enzymes can be used to destroy the targeted source of slime in paper mill. QACs and several hydrolytic enzymes are effective for desirable microbial control. To adopt sustainability, enzyme based solutions are preferable and recommended for use by the industry. Hydrolytic enzymes are helpful in destructing the slime film which comprises of Alpha-2, 6-linked polymer of fructose.



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Sugar Mills at a glance



Contributed by
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R&D

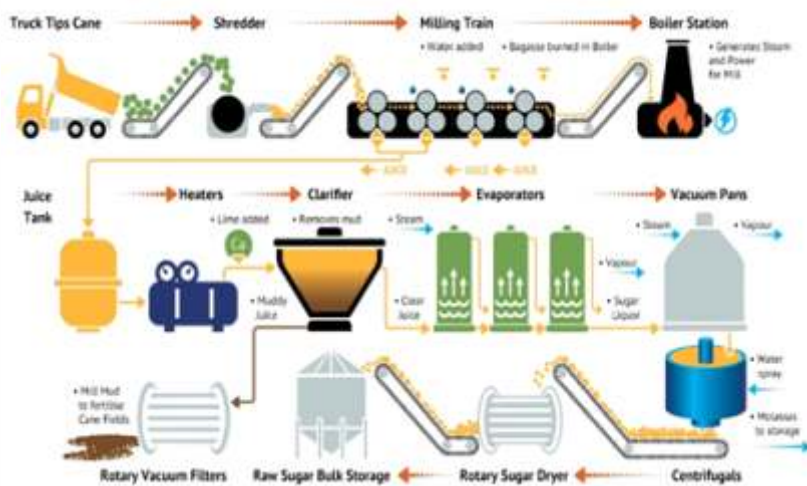
In India, the sugar industry is a multibillion-dollar industry. Sugarcane farming employs approximately 50 million farmers and millions more workers. There were 732 sugar factories established around the nation, with a crushing capacity of 339 lakh MT. The capacity is split almost evenly between units in the private and cooperative sectors.

Having a comprehensive understanding of the procedure is essential for being a solution provider company for sugar. The journey of raw sugar from



cane involves several stages, first and most important operation in the raw sugar manufacturing process is the harvest of sugarcane and transportation to the sugar factory is yet another crucial step. The goal of sugarcane harvesting is to produce high-quality sugarcane stalks. Physical damage to the cane, a large amount of trash, and a delay in cane transport all reduce the quality of the cane. The removal of tops is critical in any harvesting operation. Trash content is reduced to less than 5% when cane is stripped by hand. A machine cuts the cane at the base with revolving knives and removes the tops with another set of revolving blades in mechanical harvesting. Mechanical harvesting necessitates the removal of soil and other foreign matter. As a result, an enormous amount of water is used. Hence, manual harvesting is preferable because it removes much of the trash and soil from sugarcane. From cutting to crushing one must reduce the timing so that contamination of *Leuconostoc* spp. can be reduced. To overcome this issue catalysts has a wonderful product "Caneguard". This product has greater efficiency on hindering the growth of bacteria that resides just after cutting the sugarcane.

Another crucial step is "sanitation". It is momentous for every unit, from mills to conveyors, to keep it clean. To control the growth of contamination going in upcoming stages, high-quality mill sanitation chemicals should be used at the recommended dose. Our process based enzyme formulation products like Bactosafe I, Bactosafe II, Bactosafe DF and Sweetreat which aid in inhibiting the growth of other bacteria. The next stage is "juice extraction". This could be accomplished in two ways: milling or diffusion). In the milling process, four or five stages (sets of mills) are followed for juice extraction. According to that, the system is known as a 5-Milling Tandem or a 4-Milling Tandem. Hot water is used in the milling tandem to extract the most juice from prepared cane. Following that, juice was purified by removing suspended solids, specifically mud, waxes, and fibre. Increased dextran level is the major problem that sugar industries are facing. Already formed dextran ultimately increase the viscosity of the syrup and due to this syrup takes more time and energy to evaporate in further stages. Because of this dextran problem sugar industries eventually facing bagging loss. To overcome this issue, during the milling process at different stages our products Enzydex and Enzylase (thermo-stable) work



The figure depicts the entire journey from sugarcane to raw sugar

well in hydrolysing the dextran and starch respectively.

“Defecation” occurs after the juice from sugar cane is extracted using milling or diffuser technology. This procedure involves adding lime to neutralise the raw juice (add in the form of Milk of lime). The limed juice, deficient juice, or treated juice is heated to 102°C to 103°C before being sent to a clarifier for settling and further filtration. The purpose of a juice clarifier is to separate insoluble solids in limed juice (Defecated juice) that are in “flocs” by settling and allowing the clear juice to pass through. The muddy juice which contain insoluble particles also have thermo-tolerant bacteria. To combat such bacteria and prevent it from spreading further, our in-house product Bactoshield demonstrated significant results in sugar mills.

The settling process separates the treated juices into two layers: clear juice on top of the clarifier and mud on the bottom. The mud cake or press mud obtained from the rotary vacuum filter during clarification has many industrial applications, including fertiliser, chemical extraction, bio-sorbent, animal feed and cement manufacturing. Keeping an eye towards its utility, Catalysts' R&D team is working on press-mud preservation. The clarified juice is now routed to evaporator bodies in order to increase its solid concentration. It is known as syrup after evaporation. Since every country is now transitioning to second generation biofuel and ethanol blending in fuels is in

high demand, we are also working on syrup preservation with the future in mind.

The concentrated juice means that the syrup has been crystallised. The crystallisation process consists of syrup concentration and sugar crystal formation. Vacuum pans are used in this process. The sugar crystals are now separated from the mother liquor using centrifugal machines. After centrifugation, the raw sugar drying flowed through the hopper by blowing hot and cold air. Keep the bag temperature close to room temperature to avoid raw sugar caking.

With this journey of sugarcane to sugar that you all the consuming at home comes to an end and in this journey we 'the catalysts groups' are with sugar industries at every point of time.

We are Catalystians and we are making things happen!!

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Contributed by
Awadhesh Nath Tiwari
Marketing

3 Horrible Mistakes

Distilling & Sugar Industry Are Making While Purchasing Yeast, Additive, and Enzyme-Based Products

The distilling and sugar industries play a crucial role in our economy, and their success relies heavily on the value offered by the product, its quality and efficiency of their production processes. However, there are common mistakes being made when purchasing yeast, additive solutions, and enzyme-based products that result in significant revenue loss for companies operating in these sectors. In this article, we will highlight three of these mistakes and present effective solutions offered by The Catalysts Group.

Common Mistakes in Purchasing Yeast, Additives, and Enzymes

Mistake 1: Neglecting the Importance of Premium Products offering greater Value

One of the most significant mistakes made by distilling and sugar industry professionals is neglecting the importance of premium product of much superior quality offering greater advantage over any other cheaper products in the market.

Oftentimes, the focus is solely on price, leading to the procurement of subpar products. These lower-quality products can hinder production processes, compromise end-product quality, and ultimately impact revenue generation. Neglecting quality can result in decreased yields, increased process losses, and potential damage to brand reputation.

Mistake 2: Lack of Customization

Another common mistake is the use of generic yeast, additives, and enzymes that do not cater to the specific needs of individual distilleries and sugar manufacturers. Every facility has unique raw materials, processes, and requirements, and relying on generic solutions often leads to suboptimal results.

Mistake 3: Insufficient Analytical Support and Troubleshooting

Distilleries and sugar manufacturers often overlook the importance of analytical support and troubleshooting when purchasing these products. Without expert guidance and assistance, companies may struggle to optimize the utilization of yeast, additives, and enzymes. Insufficient analytical support limits the ability to diagnose and address production issues promptly, resulting in prolonged inefficiencies and reduced profitability.

Mistakes #	Description	Impact on Revenue
Mistake 1	Neglecting the importance of premium products offering great value	Decreased yields, compromised end-product quality, potential damage to brand reputation
Mistake 2	Lack of customization	Inefficiencies, reduced yields, missed revenue opportunities
Mistake 3	Insufficient analytical support and troubleshooting	Process inefficiencies, lower yields, prolonged revenue loss

Solutions by The Catalysts Group

Recognizing the common mistakes made by the distilling and sugar industry, The Catalysts Group offers effective solutions to maximize revenue and overcome these challenges. Our comprehensive range of customized yeast, additive solutions, and enzyme-based products, coupled with exceptional support services, ensures optimal performance and revenue generation.

Solution 1: Emphasizing Value Proposition and Consistency

The Catalysts Group places a strong emphasis on the value offered, quality parameters and consistency of our products. Our solutions undergo rigorous testing in DSIR accredited labs, ensuring the highest standards are met. By choosing Catalysts' premium products, distilleries and sugar manufacturers can optimize fermentation processes, improve end-product purity, and generate higher revenue.

Solution 2: Customized Solutions for Enhanced Efficiency

Understanding the unique requirements of each facility, The Catalysts Group provides customized solutions tailored to the specific needs of distilleries and sugar manufacturers. By collaborating closely with clients, our team of experienced scientists and fermentation experts develop personalized strategies that maximize efficiency, enhance yields, and minimize process losses.

Solution 3: Comprehensive Analytical Support and Troubleshooting

The Catalysts Group offers comprehensive analytical support and troubleshooting services to address the challenges faced by distilleries and sugar manufacturers. We have DSIR accredited in-house R&D lab where our team of experienced scientists and industry experts provide accurate diagnosis of problems and recommend effective solutions based on raw materials and process conditions.

Solutions	Description	Benefits
Solution 1	Emphasizing value proposition and consistency	Optimized fermentation processes, improved end-product purity, increased product quality, higher revenue generation
Solution 2	Customized solutions for enhanced efficiency	Maximized efficiency, enhanced yields, minimized process losses, improved profitability
Solution 3	Comprehensive analytical support and troubleshooting	Accurate diagnosis of problems, effective solutions, optimal utilization of resources with increased revenue generation

In conclusion, the distilling and sugar industries must be cautious of the mistakes being made while purchasing yeast, additive, and enzyme-based products, as they can lead to significant revenue loss. By neglecting quality, relying on generic solutions, and overlooking analytical support, companies miss out on opportunities to enhance efficiency and maximize revenue. The Catalysts Group offers a range of customized solutions tailored to the unique needs of distilleries and sugar manufacturers. By partnering with Catalysts, companies can ensure the highest quality products, customized solutions, and expert support. By addressing these mistakes and implementing Catalysts' solutions, the distilling and sugar industries can optimize their processes, improve yields, and ultimately, maximize revenue generation.

This helps to increase average annual profit upto 20 crores, depending upon scale of the plant.

Want to know more, please call us on 9582963000

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23-Feb-23



Jatin Sharma
CS
13-Mar-23



Mrityunjay Kumar Verma
R&D
13-Mar-23



Dalpreet Kaur
CRM
29-Mar-23

Employee Engagement

Events & Celebrations



CSR Initiative,
January 2023

Silver Jubilee
Marriage Anniversary
Celebration of our MD
February 2023



TT Tournament
February 2023

Holi Celebration
March 2023



Annual Target
Celebration,
March 2023

Employee Engagement

Team Trainings & Meetings



Training on Managerial Skills, January 2023

Prevention of Sexual Harassment (POSH) workshop, February 2023



Annual Sales Strategy Meet, March 2023

First Aid & Fire Training, March 2023



Seminars & Conferences



SEIC, Chini Mandi Conference, Delhi – January 2023



XXXI ISSCT, Hyderabad – February 2023



II Brewers' World Conclave – February 2023



IPPTA Paper Presentation, Hyderabad – March 2023



In last 20 years, Catalysts provided benefits of worth
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