INDUSTRY VISIT TO BIOCON

Bridging biology and technology: A learning experience at Biocon

Introduction

On **23rd December 2025**, students from Technology & Information System had attended an industry visit to **Biocon Sdn. Bhd., Johor**. The visit was organized in order to give students real-world exposure on how technology and information systems impact biotechnology and pharmaceutical industry.

Company Background

Biocon is a biopharmaceutical company primarily based in Bangalore, India and are specialized in bioproducts, especially insulin production. It plays a crucial role in supplying high-quality healthcare products that comply international standards. Biocon is also actively doing R&D related to cancer, diabetes, and other advanced medical solutions.

Source: https://www.biocon.com/more/biocon-malaysia/

Objectives of the visit

The main goal of the visit was to provide students with exposure to real-world biotechnology and pharmaceutical operations in an industrial environment. The visit focused to improve students' knowledge on computer-assisted manufacturing systems are used to support rigid biological processes. Furthermore, the visit allows student to see the flow on how laboratory research is transformed into real products and being marketed globally. Other key objective also include the integration of computing, networking, and biology, focusing on the importance of data management, machine maintenance, and system monitoring.

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GROUP MEMBERS

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2. NAQIBAH DINIYAH AHMAD (A25CS4018)
3. NUR FATIN NADHIRAH BINTI BADLI AIZI (A25CS0312)

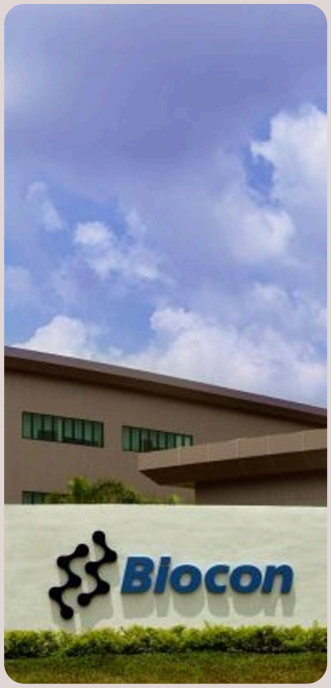
Biotechnology Operations Observed

The process of drug production is formulation, filling, visual inspection, and packing. The first step is formulation, the process of mixing the drug substance in powder form with liquid chemicals until it becomes a liquid solution. After that, they fill up the liquid solution into bottles, which is called the filling process. Visual inspection is carried out to determine whether there are bubbles or dirt inside the bottles. Lastly, the insulin is packed through a process that includes pen assembly and pen packing.

Visitors were not allowed to access areas from formulation to visual inspection due to restricted movement and strict dress code rules designed for safety purposes. Moreover, only clean water is permitted throughout the process to maintain hygiene standards. Any rejected insulin products are sent to the Department of Environment (DOE) for proper and environmentally responsible disposal.

Role of Computing and Information Systems

Computing and information system play an important role in supporting their manufacturing operations. Computer-assisted manufacturing such IMA and MERCHESIN which for insulin packing were used in this production. Resource planning system used to plan their production activities such as manage materials, schedule production runs to prevent delays. All the data were recorded to ensure the the quality of insulin. In addition the machine is equipped with monitoring system to track their performance to detected any breakdown while in operation The machine also used sensors to check the insulin properly placed and labelled and automation system allowed the machine to operate without human touch.



Source: https://m.casaciti.com/index.phpws=gallery&group=1741&cat=6127

Lab-to-Market Translation

At Biocon Johor, the laboratory research started with an upstream process, guided by Mr Jayasudh. Upstream processes focus on increasing product yield using fermentation method.Then, they using local network connected to server to update the fermentation process such as the fermentation process of methanol.

After that, they need to undergo downstream process, guided by Mr. Ang. This process uses a purification method to remove all impurities by enzyme reaction from the upstream process to get high-quality insulin. They connect them to a pc and storage system. All the data will be carefully backed up by IT department and the backup monthly will depends on frequency of experiment. The analytics and data process lead by Mr. Kar Mun conducts a quality check of products including PH measuring and sampling test. All the data will be recorded for safety, traceability and improvement in the future.

Integration of Computing, Networks, and Biology

The insulin production process requires integration between biological processes, computing systems, and networking. Biological processes such as fermentation and purification are connected to PC and servers, which allow these processes to be monitored through computing systems. Networking allows the production data to be transmitted and stored in database. This integration ensures consistency process, reduces human error, and supports large-scale insulin manufacturing.

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Key Learning Outcomes

During our visit to Biocon Malaysia, we gained a wealth of new knowledge regarding the biotechnology industry. It turns out that biotechnology also involves IT applications in insulin manifacturing. For example, IoT is used for real-time monitoring of manufacturing processes, ensuring efficiency and consistency in the production of insulin and other biopharmaceutical products. This creates a collaboration between IT, biology, and engineering that impacts today's industrial progress.

> ***"We do not discriminate against people who want to work in this company in terms of race, ethnicity, religion, clothing style or ideology, we accept and free everyone as long as they want to have a high work ethic and can be relied upon."***
>
> -Mr. Jayasudh

Skills and Knowledge Development

We believe soft skills are crucial to building a successful career and we conduct regular learning sessions covering subjects such as time management, stress management, emotional intelligence and interviewing skills. These initiatives are based on Biocon Malaysia's competency framework, covering interpersonal, strategic, operational and people-centric issues.

Relevance to Academic Studies & Career

Biocon Malaysia offers significant relevance to academic studies and strong career prospects for individuals interested in the biotechnology and biopharmaceutical sectors. The company actively collaborates with educational institutions to bridge the gap between academic knowledge and industry needs.

For instance, university visits to Biocon's facility in Johor expose students to advanced equipment, state-of-the-art facilities, and international compliance standards, which helps them understand real-world applications of their studies.

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Conclusion

In conclusion, the visit to Biocon Malaysia provided meaningful exposure to the biotechnology industry, especially in insulin manufacturing and the use of modern technology. It helped us understand real-world industrial practices and the importance of professional skills. Overall, the visit enhanced our learning and better prepared us for future careers.

Acknowledgement

Here, we would like to record our highest appreciation to Biocon Sdn Bhd who was kind enough to give us the opportunity to visit and explain the process of making insulin from the formulation to the distribution of final goods, not forgetting also appreciation to the lecturers, organizers and staff involved who succeeded in this industrial visit activity.

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