Choosing the Right ERP Software – Process vs Discrete

Process vs Discrete

When looking for an Enterprise Resource Planning (ERP) software for a business, understanding the difference between process and discrete manufacturing is crucial. The focus should be to identify the type of manufacturing involved by outlining the business requirements.

Most of the companies aim to optimize their costs by purchasing a generic ERP software without thinking about the manufacturing needs. Having limited information on these two significant processes may lead to making the wrong call, and purchasing the inaccurate software system comes with certain drawbacks – the company may have to change the manufacturing process to fit the purchased software or it has to pay for additional modifications for the ERP system to work. This will result in waste of resources, both financially and operationally.

So, it is better to avoid any such pitfalls and get knowledge on the two types of the manufacturing process to ensure choosing the right tools to enhance productivity.

Understanding the differences between the process and discrete is challenging for businesses as they both are similar in various aspects. However, both the operations are diverse in their own ways and fit with different types of software. This whitepaper covers every detail through an end-to-end comparison of process and discrete manufacturing, and also enables companies to make the right decision while selecting an ERP software.

Understanding Process and Discrete Manufacturing

Process Manufacturing

According to the APICS (American Production and Inventory Control Society), process manufacturing is the production that involves one or more processes such as blending, separating, forming, performing

chemical reactions etc – done either in batches or continuous mode. Some products manufactured using this mode are food, dietary supplements, beverages, chemicals, paints, and pharmaceuticals. The products cannot be broken to make something else. It is an irreversible process.

Discrete Manufacturing

The APICS says discrete manufacturing is a mode of production of items like appliances, computers, or automobiles. It involves mass production or manages project-oriented deals well. A discrete package cannot successfully manufacture food or accommodate formulas and/or recipes. The products manufactured using discrete processes can be disassembled to make a new or different product. It is characterized by the production of units, such as units produced with low volume and high complexity, like computers or aircraft, or units produced with high volume and low complexity, like bolts, screws, or nuts.

Comparison of Process and Discrete manufacturing

The two manufacturing types, process and discrete, have distinct features that can be scaled for clear comparison. From the type of industry, product type, unit of measurement to the routing process, production yields, quality control, storage, and inventory system, every aspect is typically relevant while choosing the right software system.

Industry

Industries applicable for process manufacturing are pharma, food & beverages, cosmetic, chemical, and paint. On the contrary, discreet manufacturing applies to industries like automotive, aerospace & defense, industrial components, electronics, hi-tech appliances, etc.

Production

While process manufacturing deals in batch production and is in a continuous flow, discrete deals in the production of a single product (units) that is mass-produced upon demand.

For example, a company manufacturing food products like biscuits, jam, or produces drugs, will follow a continuous flow as such products are in regular need in the market. Now considering the electronic companies making mobile phones, refrigerators, or furniture industry producing chairs, tables, etc, the production period is limited based on the current demand in the market.

Order type and trackability

Both process and discrete manufacturers produce Make to Order (MTO) and Make to Stock (MTS) orders – the former referring to customized production and the latter is based on the anticipation of consumer demand.

The difference in order type between the two processes is that process manufacturers get orders in batches and these are repetitive, whereas discrete manufacturers follow Assemble to Order (ATO), where the product is assembled upon receiving the order and Engineer to Order (ETO), where they start the developing and designing a product upon receiving the order.

Trackability is much easier in the discrete mode of manufacturing than the other type, where the production is in bulk. One discretely manufactured product can be identical from another. However, this doesn’t resonate with process manufacturing.

Input Extraction

By no way can the input materials of products manufactured by the processing system can be extracted, but the ones that undergo discrete manufacturing can. So, the latter needs reverse assembly, and the extracted raw material needs restocking. In the case of process manufacturing, there's no need for restocking or reverse assembly.

Instructions for routing

Process manufacturers access detailed production instructions in form of formulas or recipes. The execution is carried out in batches by combining ingredients together, eliminating the need for critical routing. On the contrary, discrete manufacturers access in-detail production instruction in Bills Of Materials (BOM), which makes routing of production essential as it follows a specific path. It requires the input material, machines, manpower, or other resources to be defined by the work Centre.

Units of Measurement (UOM)

In process manufacturing, the ingredients used in a particular product are measured in units like weight and volume and displayed in a grid on the packaging. Some ingredients are denoted by percentage (%) as it gets challenging to measure weights and volume in decimals.

Raw materials of BOM used in discrete manufacturing are measured in "each" or any single unit of measurement. The materials involved in the production are denoted using absolute quantities (whole units) without any concern of categorizing them in decimals.

Influence of process and discrete on ERP selection

Brief: In this section, the user/reader will get all the information on how their knowledge of process and discrete manufacturing will help them in selecting an accurate ERP software solution based on the below-mentioned parameters.

- Specification
- Percentage formulation
- Ingredient formulation
- Scheduling
- Batch processing Vs Route processing

- Quality control
- Inventory optimization
- Lot traceability
- Costing

Conclusion

Process and Discrete manufacturing are very different from one another in terms of requirements, processes, terminologies, regulatory compliance, order type, etc. Buying an ERP software solution for process manufacturing that favors discrete is not a efficient choice and vice versa. After understanding the core differences and their influence on choosing a software solution, companies can easily figure out the right pick for their specific manufacturing type. It reduces the implementation time and also cuts down on the modification costs.

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