History for Batch Process Simulation CM System

E. Kanniga and Akhil Varma

Abstract--- *Paint mixing is one type of batch production. Batch production also applies to products like inks and pharmaceuticals and is where there is a changeover between different products. The term batch production is distinguished from continuous production, where very long production runs are performed.*

Keywords--- *Batch Production, Data Logging, Run Out.*

I. INTRODUCTION

The manufacture of paint or coatings is a physical process that seldom involves significant chemical changes. Clear coatings, such as varnishes, are made by mixing specific ratios of resin binders with volatile solvents, which may include water. This is done using a mechanical agitator in a mixing tank. Once mixed, the batch is pumped through a filter and packaged for sale. Virtually all paint production employs the batch process, with continuous processing being quite rare.
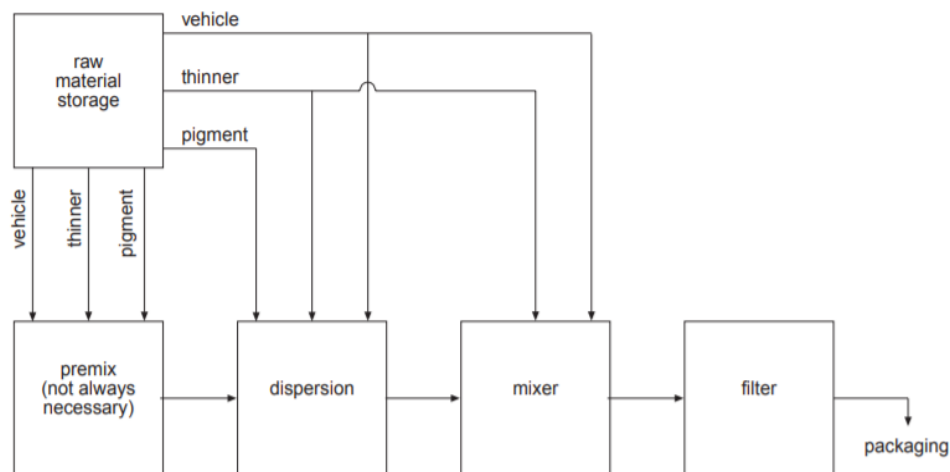

Figure 1: Paint manufacturing process

Figure 1.Shows the steps in the paint manufacturing process

Although the basic process is simple, its details must be carefully designed in order to produce each different paint product, to adapt the process to the characteristics of different ingredients, and to achieve the desired product performance. In order to obtain consistent performance from a product, procedures must be rigidly followed as batches are made.

A mathematical programming model for optimal scheduling of the operations of a batch processing chemical plant, capable to handle all possible deterministic and many stochastic variations in the set-up and operation times of

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the batch operations developed previously is applied to operations in a plant of a leading PAINT manufacturer. The plant focused on in this work is a multi-product, batch processing plant having a wide variety of products, competing for various process equipment on a production site. The plant under consideration operates with respect to an "order based" production policy. Thus, this application can be classified as a short term scheduling of a real case multi-product batch processing plant.

The DATA recorded(Data Logging) during the Batch process run can be later used for Analyzing to reduce processing flaws, improve production quality, increase efficiency, and save time and money. This recording and Historical availability of the data can also be extended to other Continuous processes in the manufacturing plant.

II. LITERATURE REVIEW

Batch process modeling:

The automation of batch process poses difficult issues mainly because it is necessary to concurrently operate with continuous and discrete models in this paper. We analyze how the hierarchical approach used in the field

Author: J.C. Pascal

Year:2017

Journal : IEEE

Optimal control of fed-batch reactor for enzymatic hydrolysis of lingo cellulosic feed stocks

lingo cellulosic(LC) feedstock is one of the potential renewable sources for producing ethanol (second generation bio fuel) However technological bottele necks and economic viability are of prime concern in producing ethanol from the LC feed stocks

Author: Suryanarayana Vegi ; Yogendra Shastri

Journal: IEEE

Deep residual networks for hyperspectral image classification

Deep neural networks can learn deep feature representation for hyperspectral image (HSI)interpretation and achieve high classification accuracy in different datasets However, counterintuitively, the classification performance of deep learning models degrades as their depth increases. Therefore we add identity mappings to convolutional neural networks for every two convolutional layers to build deep residual networks (RES Nets).

Author: Zilong Zhong; Jonathan Li

Year: 2017

Journal; IEEE

A resource allocation architecture with support for interactive sessions in utility Grids

Utility Grids implement a virtualization architecture and allow for sharing of infrastructure for improved return on investment(ROI) We consider extending the existing Grid infrastructure to support interactive sessions in an enterprise setting. This would allow users to remotely execute interactive applications in the Grid.

Author: V.Talwar ; B. Agarwalla ; S.Basu ;

Year: 2004

Journal: IEEE

Optimal motion and structure estimation

The problems of estimating motion and a structure of a rigid scene for two perspective monocular views studied. The optimization approach presented and motivated by the following observations of following algorithms (1) for certain types of motion, even pixel-level perturbations (such as digitization noise) may override the information characterized by a epi polar constraint, (2) existing linear algorithm do not use the constraints in the essential parameters matrix E in solving for this matrix.

Author: J. Wein; N. Ahuja; T S. Huang

Journal: IEEE

An intelligent control system for Thermal Processing of Biomaterials

An intelligent control system for thermal processing of natural biomaterials, based on machine vision, sensor fusion and neural network was developed. Experiments with ginseng drying showed advantages of machine vision for real-time imaging of morphological, color and texture attributes, providing sufficient discriminatory information about biomaterial moisture and quality in the range of 3.2-0.1 g/g and temperatures from 30 to 50degC. Both moisture and quality was estimated by using neural network models: moisture with 6-8% error and quality with 10-16% error.

Author: Alex I. Martynenko; Simon X. Yang

Journal: IEEE

Rapid Micro-Nano-Integration of single Silicon Nanowires in 2D-sensor Arrays using Automated Software Tools

Nano sensors based on single silicon nanowire field-effect-transistors (FETs) represent a promising approach for biomedical and biochemical research and diagnosis. However, integration in particular of bottom-up-grown silicon nanowires is a major challenge as existing integration processes are not sufficiently deterministic in terms of 2D-positioning on a device substrate. In order to overcome this, we have developed a rapid micro-nano-integration process that is intended to integrate silicon nanowires

Author: Michael M. Roos ; Thomas Huffert ; Anouk Puchinger ;

Year:2007

Journal: IEEE

Tongue shape classification integrating image preprocessing and Convolution Neural Network

Tongue diagnosis is one of the most important parts in "inspection diagnosis" of Traditional Chinese Medicine (TCM). Observing tongue shape can help to understand the changes in human body and thereby to estimate the illness. This paper presents a method of recognizing tongue shapes based on Convolution Neural Network. The proposed method enhances the features of tongue images with preprocessing to ensure the data suitable for tongue shape binary classification.

Author: Chun-Mei Huo ; Hong Zheng ; Hong-Yi Su ; Zhao-Liang Sun

Journal: IEEE

Sustainable Green Engineering Modeling Methods, Notations & Examples

During this analytical green engineering methods series we are going to review green engineering system and process modeling, system analysis and design following sustainable lean six sigma principles. These principles are well established in quality circles and they apply in a very positive way to our sustainable green engineering effort. The goal of this tutorial is to offer an introduction overview of sustainable green engineering related systems and process modeling methods, explain the reasons why we have to follow process modeling methods and standards.

Author: Paul Ranky

Year: 2010

The Emerging Paradigm of the Social Internet of Things

All market and technology studies forecast an explosive growth in the number of things which will be connected to the Internet. The resulting network is what is commonly known as the 'Internet of Things' (IoT). The IoT poses completely new challenges when compared to the traditional Internet which cannot be faced if the involved objects are just traditional smart objects. In fact, the extremely high complexity (huge number of nodes, extreme heterogeneity of their resources and capabilities, uncertainty on their trustworthiness, etc.)

Author: Antonio Iera ; Giacomo Morabito ; Luigi Atzori

Year: 2016

III. CONCLUSION

Repeated jobs are done fast in batch systems without user interaction. The proposed work doesn't need special hardware and system support to input data in batch systems. Best for large organizations but small organizations can also benefit from it. It generally has lower capital costs. It has the flexibility to produce a variety of different product variations, or different products. It works well when small production runs are needed

ACKNOWLEDGEMENT

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