

Process Monitoring

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Process Monitoring

Chapter 1

Introduction To Process Monitoring



Process Monitoring

Chapter Description

- Aims
 - Define the conceptual background of process monitoring.
- Expected Outcomes
 - Critically discuss the essentials and benefits of applying process monitoring system for ensuring smooth as well as safe industrial operability.
- Other related Information



Subtopics

1.1 Motivation

1.2 Objectives



Process Monitoring

1.1 Motivation

The ultimate aim of any production systems, in the context of chemical and process industries, is to produce maximum amount of consistently high quality products as per requested and specified by the customers.



Process Monitoring

1.1 Motivation

This is regarded as highly challenging due to the nature of the processes that always change over time and are also affected by various factors such as variations of raw materials as well as operating conditions, the presence of disturbances and also modification of the process technologies.



Process Monitoring

1.1 Motivation

In any of the situations, one of the main critical problems is to systematically manage and remove the occurrence of faulty or abnormal operating conditions in the routine process operation, and at the same time struggling to be consistent upon the prime objective.



Process Monitoring

1.2 Objectives

As far as the high quality product is concerned, therefore, the main tasks would be to identify the most important process variables which define the overall process quality, and at the same time, to ensure that those quality variables are operated under the pre-specified 'normal' circumstances: **PROCESS MONITORING.**



Process Monitoring

1.1 Objectives

- The primary aim of process monitoring: providing early warning by way of identification of possible faults, malfunctions or disturbances that might occur in the process.
- Types of monitoring schemes:
 - Individual-based monitoring => SPC
 - Multivariate-based monitoring => MSPM/MSPC



References

- **Mason, R.L., and Young, J.C., (2002). Multivariate Statistical Process Control with Industrial Applications. USA: ASA-SIAM.**
- **MacGregor, J. F., and Kourti, T. (1995). Statistical Process Control of Multivariate Processes. Control Engineering Practice, 3, 403 – 414.**



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