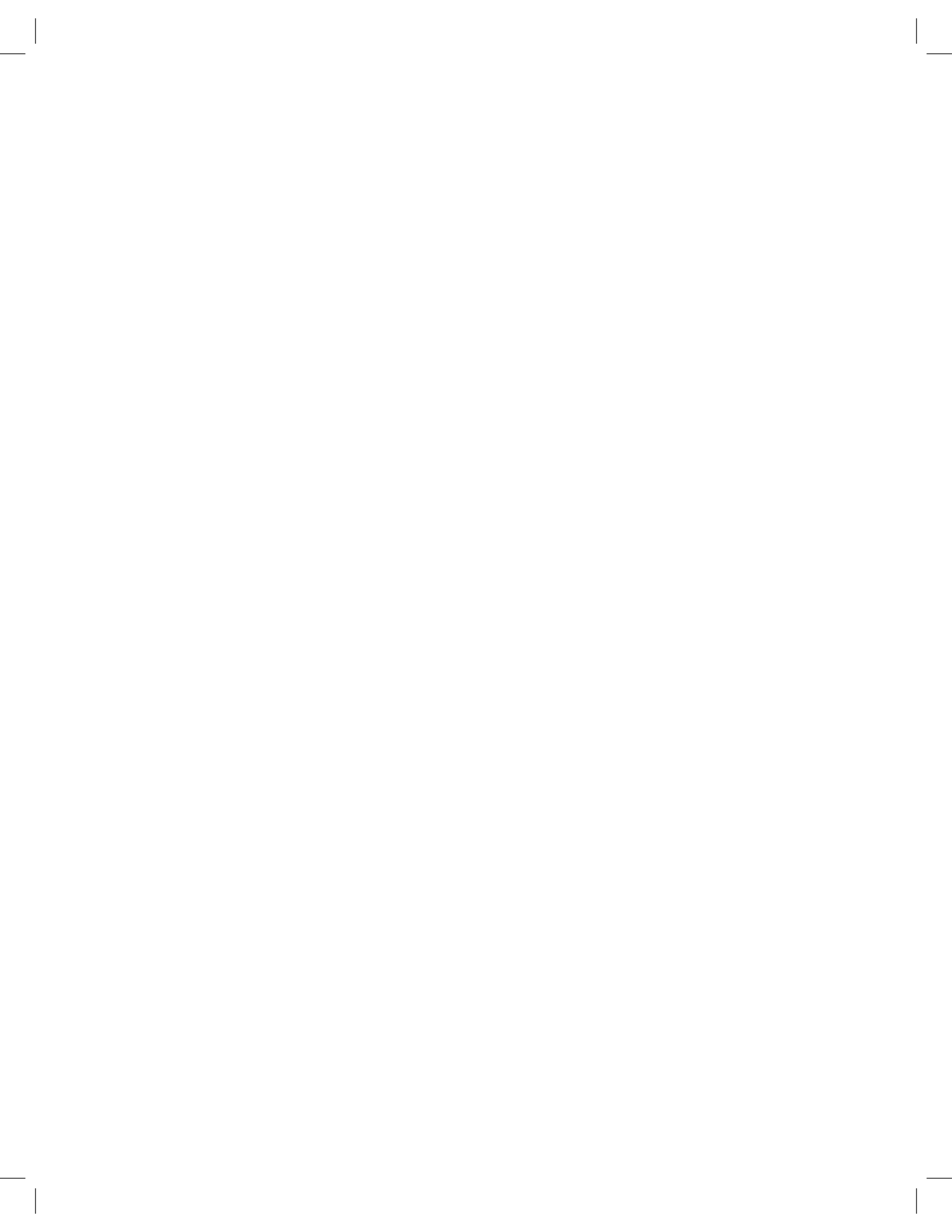


Alarm Management for Process Control



Alarm Management for Process Control

A Best-Practice Guide for
Design, Implementation,
and Use of Industrial
Alarm Systems

Second Edition

DOUGLAS H. ROTHENBERG



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Second Edition Preface

This 2nd edition recognizes that alarm management is an essential operations tool for safe and efficient industrial production. The worldwide acceptance of the first edition is humbling, gratifying, and appreciated. The more we understand and implement proper alarm systems, the safer the industrial world becomes. To be sure, alarm management is now a mature discipline. We know that we need to have a proper alarm system in place. We know how to design it and get it there. And we understand how to keep it functioning properly. It is precisely due to this very broad acceptance that we now have more to do to refresh its design and revisit earlier designs to ensure its many benefits are realized.

This revision is not a major overhaul. Rather, its value is in the many areas that have been refreshed to take into account a changing world. The first edition has been validated by you, the many, many, practitioners and leaders in the work. In addition, the out-in-front-of-the-field leading topics including permission-to-operate, extension to batch and discrete manufacturing, how to use process dynamics and remediation complexity to set alarm activation points, and the importance of notifications to supplement an efficient alarm system are now mainstream in the field.

The next challenge, and it is a vital one, is to recognize the need to reverse how we approach the whole alarm management thing. The up-until-now approach is first a plant is designed and then second the proper alarms are added. The sustainable approach is to design plants with the understanding that the abnormal aspects of operation are the most important. We are reversing the approach to alarms by starting with the consideration of how to design for adequate protection against abnormal operation. No plant ever gets into trouble because it operates the way we initially thought it needed to be designed. Not at all. It gets into trouble because the initial design spent too much effort on assuming it was a proper design, and not enough effort on design decisions that naturally ensured good operation. The new approach will focus the design engineering process on robust decisions that design in compensation mechanisms for the abnormal operational tendencies and safeguards for those that can escalate to real trouble. Now the controls engineer carefully considers how all disturbances are managed to minimize propagation and maximize their shift to places where they are damped out. The operations engineer diligently works to ensure that the operator is able to locate all necessary indications of operational drift from normal to near normal to abnormal. Sure, the alarm

system will still inform about all of those that can be known in advance to require intervention. It is the rest that we must show the operator.

Thus, we must see alarm management requirements become part of the technology of not only control engineering and operations management, but also back into the root technical development programs for chemical engineering, mining engineering, food and pharmaceutical manufacturing design, and the rest of the support disciplines of industrial processes. We are looking for safe by design.

Douglas Rothenberg

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