

The History of Batch - BBB (Borrow)

Batch Control Systems: Design, Application, and Implementation by Thomas Fisher

Computer Control of BATCH Processes by William Shaw

Reviewed by Nick Sands

Before the S88 standard, there were few resources on the batch control. In 1982 William T Shaw published *Computer Control of BATCH Processes* through EMC controls and in 1990 Thomas Fisher published *Batch Control Systems* through ISA. While the computer technology discussed in both books is obsolete, and some terminology may have changed, the authors do provide excellent insight into batch control methods. Both books, especially *Batch Control Systems* have some very good material.

Dr Shaw has over 28 years of experience at several companies, including Swantech, Hathaway Corp, EMC Controls, Texas Instruments and the Foxboro Corporation. Shaw holds a B.S. Electrical & Computer Engineering from University of Michigan, a M.S. Engineering Science from Loyola College, and a PhD Computer Science from Kennedy-Western University.

Thomas Fisher, who was widely regarded as the father of batch automation, passed away in 2001 at the age of 60, sadly within a month of retiring from Lubrizol after 34 years. Fisher had BS in Chemical Engineering from Grove City College and a MS in Chemical Engineering from WVU. Fisher was an ISA Fellow, and served as an officer in ISA and chairman of SP88. Fisher was a leader in the World Batch Forum, which awarded him the Dr. Guido Carlo-Stella award. Control Engineering Magazine awarded him Engineer of the Year award in 1997.

Shaw starts by stating that steps and phases are the same, a reflection on the terminology of the time and the progress made since S88 was issued. He covers batch basics, the basics of computer control, the requirements for a batch computer control system, how to specify a system, the many considerations of installing a computer for control, and finally the development and documentation of batch sequence logic. The book is easy to read with many graphics and a nice example problem in appendix A. Shaw covers a number of topics related to batch and computer control such as grounding and back-up power.

Fisher covers even more ground, with many references to papers, the state of S88 at the time, and to Shaw's book. Of course he starts with the basics of terminology and batch process characteristics and then covers the models and control structures that were later formalized in S88. Fisher highlights considerations for regulatory control in batch processes as well as alarms and interlocks. There is a large chapter that compares various techniques for documenting sequence control logic, one of the highlights of the book, followed by a discussion of the layers above the actual control like batch and recipe management. The implementation chapters cover the PLC and PC capabilities circa 1990 in great detail. A variety of topics, including justification, reliability, communications and database management are the focus of the final sections. Fisher's writing style makes the book more of a collection of lists than topical paragraphs.

While these books are not current, there are very few affordable books on batch control available. Reading them is a great way to increase your understanding of batch control and the history of batch automation. Because the books are out of date, Shaw refers to printers as typers and Fisher predicts that all systems will use MAP and not ethernet, they can only be rated borrow (BBB). But for many years Fisher's book would have been considered a bonus (BBBBB). Both books are out of print, so prices vary with current availability but *Computer Control of BATCH Process* was available for under \$12 while *Batch Control Systems* was about \$60. A new batch control book is due out from ISA later this year.