

REVIEW: Statistical Process Control in Injection Molding (SPCIM)

I have reviewed the SPCIM interactive training program and find it to be both an excellent review of the injection molding process and standard techniques as well as an introduction to some new techniques that I was not familiar with. The program consists of a CD-ROM, several instruction sheets and a book “SPC-Statistical Process Control in Injection Molding and Extrusion” by Chris Rauwendaal (Hanser).

The program is structured as nine sessions in a PowerPoint presentation format and is extremely easy to use. After opening it, you register and your results are automatically recorded on an excel spreadsheet. The lessons follow the chapters in the book except for the extrusion material which is omitted in this program.

The approach taken by the reviewer was to read the appropriate chapter (actually twice—once for organization/structure and then for content) which will take 1–1½ hours and then do the corresponding lesson. The lessons can all be completed in less than one hour.

The lessons are neither too easy nor too difficult and offer sufficient challenge to keep them interesting. The questions themselves are interspersed with an instructional narrative discussing the topic of the subsequent group of questions. The narrative is good but the book is really needed to achieve the best value from the program.

This program is most appropriate for process and quality engineers, technicians and setup personnel (and **supervisors!**). This is certainly an economical way to train and upgrade personnel with new knowledge, or to refresh partially forgotten skills. This is also a good way to satisfy ISO training requirements through its internal documentation.

Of particular interest was the section “Other Tools to Improve Process Control” wherein two techniques were described which were unfamiliar to the reviewer and probably most of the industry. The first was the Shainin Methodology for DOE. This technique reduces the size of a DOE to a much more manageable level by intelligently analyzing the process through several low cost but effective procedures before attempting a DOE. These procedures may provide sufficient insight so as to eliminate the need for an extensive DOE or eliminate the DOE entirely.

This reviewer has observed over many years that the size of a proposed DOE is inversely proportional to the knowledge and experience of the perpetrator. This technique is discussed in great detail but it would really need another whole book to allow someone to employ it properly.

In contrast, the second technique called Precontrol presents a remarkably simple and much lower cost alternative to the standard control chart procedures. It consists of a simple sampling/plotting technique that provides for almost all the molders operational needs in a way that is simple to setup, simple to do, simple to understand, requires no special software (or a least a very minimum), is inexpensive to implement and provides the operator with problem indications and the correct responses to the problems. Because of the simplicity of this technique, the discussion in the book is sufficient to implement and evaluate it as an alternative to the much more complex control chart techniques.

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