Sharing The Knowledge
Partnership in Plastics

Volume 1

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Sharing The Knowledge
Introduction

In the plastics industry, nothing is moving faster than the rate of change.

New chemistries, new materials, new processes. It is a fast-paced environment where new information abounds and constant innovation prevails.

In this environment one of the greatest challenges is to assure that a solid foundation of knowledge is established within the industry. For without it, new technology cannot be maximized . . .

Because this foundation is so critical, GE Plastics has taken the lead and developed Sharing The Knowledge.

Sharing The Knowledge is an ambitious ten-part training course designed to teach the fundamentals of plastic materials technology. From basic polymer chemistry and material performance . . . through conversion processes . . . and part design, the program seeks to establish a common foundation of knowledge for the benefit of anyone working in the industry.

In essence, the program was devised to capture nuggets of basic technological information from various sources within GE Plastics, and combine them into a single dynamic educational program that will act as a foundation for more advanced understanding of materials and technology.

Consisting of a modular series of slide presentations and corresponding workbooks, the program is presented to participants over a series of weeks.

Modules One and Two discuss the basic characteristics of different classes of polymers and highlight the differences between the various groups. This is followed by more in-depth discussions of morphology with particular attention paid to

distinct differences between crystalline and amorphous materials.

In Modules Three and Four, Polymer Modification and Properties of Polymers respectively, discussions of basic material modification such as blending are followed by the use of modifiers to achieve desired property profiles. From there, Module Four covers basic property measurement with specific references to how these properties may be altered by the use of additives.

Module Five is an overview of the conversion processes used for thermoplastics. Beginning with the basics on extrusion and injection molding, the module also introduces newer processing alternatives such as industrial blow molding and compression molding.

Modules Six through Nine cover the mechanics of fabricating polymers into finished parts. Beginning with an overview of drying and problems related to drying, the program then moves into discussions of heating, softening, and melting materials before conversion with a specific focus on both potential problems and differences related to the use of differing materials. This is followed by a review of the practical application of rheology and the subtleties involved in cooling parts.

The final module discusses part design from both the point of view of part design to assure performance as well as discussions of advanced computer-aided design.

Although detailed in scope, the program is designed to build sequentially, allowing concepts to become increasingly sophisticated. Presentation format for each of the modules consists of a 60 - 90 minute interactive program led by a certified

instructor. To become certified, individuals must successfully complete a 60 hour performance based course.

Taken as a whole, the program is a broad-based introduction to the entire world of engineering plastics. Yet, because of the organizational framework, the program offers a high degree of flexibility for customization.

For example, even though the course is designed to be sequential, each module can stand alone as a self-contained unit on a specific subject. This allows training personnel to customize programs to highlight only those issues required under a given set of circumstances.

Further, when more advanced training is required in any one area, experts in that aspect of technology can use the basic modules as the foundation for more advanced presentations and discussions.

Sharing The Knowledge can be one component of an integrated productivity program to improve on the job performance leading to increased productivity and quality. The modules can be supplemented by performance based experiences targeted towards desired corporate results.

For those now entering the plastics industry, the program will serve as a comprehensive introduction to the subtleties of materials technology . . . while veterans of the industry will find an avenue for consolidating information learned over the course of a career.