A DERRY ENTERPRISES COMPANY

# Field
# Cost Reduction Services
## Through
## Technical Support

- **Fastener Consolidations**. Objective: Reduce the number of different fasteners in use.
    - Global : Create a database which identifies consolidation candidates.
    - Specific: This study focuses on a specific product line, assembly area or group of fasteners. In addition to the part characteristics, each application is reviewed for consolidation potential.
- **Print Reviews**. We recommend changes to improve the accuracy and clarity of the specifications by using standard fastener industry practices.
- **Assembly Line Review**. Field representatives observe every step in the assembly process to identify improvements in fastening techniques and methods. A report is submitted identifying current methods and recommendations for improvements.
- **Product Teardowns**. The product is disassembled with each application reviewed. Recommendations for cost reduction and quality improvement are identified and documented. This is most effective when done in conjunction with an assembly line review.
- **Failure Analysis**. An analysis of failed samples to identify the probable cause of the failure. Methods include evaluation of dimensional and metallurgical characteristics, evaluation of the fracture surface and other attribute and performance testing. Findings are submitted in a technical report.
- **New Design Review**. This is the best time to evaluate fasteners for lowering cost and improving product quality. The Field Team places emphasis on determining the optimum fastening methods.
- **Applications Problem Solving**. We identify specific problem areas for the Field Team to evaluate, conducts performance testing, develops recommendations with the supporting detail and review the report with Engineering. This is the most frequently requested service.

- **Consult on Assembly Equipment and Techniques**. Our experience in the feeding, orienting and installation of fasteners allows us to be a resource in this area. Services include recommendations making recommendations for the design of the mating parts and torque control methods.

- **Training**. We have provided training for shop floor assemblers as well as engineering professionals. The following some of the most frequently presented topics. Training is tailored to the specific needs of the audience.

  Torque Tension

  Provides definitions of torque and tension, the relationship between these two forces as they relate to fastening, some "hands-on" creation of a torque-tension curves and practical approaches to developing proper installation torque.

  The content of this seminar can be adjusted to meet the specific needs of audiences varying from shop floor assembly personnel to mechanical engineers.

  Basic Fastener Overview

  The training includes a review of the characteristics of threaded fasteners and discussion of the primary characteristics — fastener head styles, drive systems, thread styles, product types, materials and finishes. This will enable attendees to identify and describe fasteners more accurately. .

  Fastener Applications and Case Studies

  Actual case studies including a description of the problem, test results, and conclusions and recommendations. The actual applications will be used to supplement the written material. This is a great way to stimulate ideas for cost reduction.

  Thread Forming and Thread cutting Fasteners

  The principles of thread forming and cutting fasteners and the types available will be discussed. A practical approach to understanding of the use of thread forming screws including selection of hole size, thread type, recommended seating torque and other considerations will be discussed. It will include "hands-on" development of drive-to-fail ratios, recommended seating torque, safety margins and other pertinent information which should be developed prior to the use of any type of thread forming or cutting screws.

  Materials, Grades and Strengths

  We will discuss strength levels of various grades of fasteners, understanding the difference in grades and strengths and the method of accomplishing varying

strength levels. Discussion will include understanding fastener grades and their identification, characteristics of these different grades and metallurgical properties which are important in developing increased strength in fasteners.

Keeping Joints Tight

This seminar addresses the best ways to insure threaded fasteners stay tight and dispels the myths about many locking devices and practices. Topics include the different considerations for “hard” of “soft” joints and locking options with particular emphasis on consistency in joint preparation.

Rules of Thumb for Fasteners and Joint Design

There are many “Rules of thumb” used in the fastener industry, but not published or generally available. A review of this material provides the attendees with an understanding of topics including recommended tightening torque, length of thread engagement, thread forming and cutting screw considerations including hole size, drive to fail ratios and others. It is a useful tool for anyone involved in fastener and joint design.