

GrindManage Profile Grinding Analysis System

The *GrindManage* software package, developed by ZETA-TECH Associates, Inc., is a Rail Profile Grinding management tool used to optimize rail grinding maintenance techniques that extend rail life and reduce rail costs.

GrindManage is a production rail grinding management tool that uses inputs profiles taken by optical rail profile measuring systems and calculates the production grinding requirements for a given territory or entire rail network. This includes grinding patterns, grinding speeds, and number of grinding passes required to achieve the desired rail profiles.

The software provides a reporting capability with two reports. The first is a comprehensive grinding plan for a territory, which provides recommended grinding including the patterns and speeds on a segment by segment basis. The second report is an exception report which shows grinding segments that did not meet a desired profile listed segment-by-segment. These reports are stored to a user defined file name and can be edited and printed as necessary.

In addition to the grinding information, representative profiles for each grinding segment (left and right rail, pre- and post- ground) are stored in the database and can be retrieved for a grinding segment simply by clicking on that segment.

GrindManage calculates a dynamic difference profile (amount of rail head to be ground), using a library of desired rail head profiles (templates) which are stored

within the system. *GrindManage* analyzes the input rail profiles using sophisticated algorithms to match the profiles to the standard rail templates. The templates for each rail are based on degree and direction of a curve. The obtained information is used to determine:

1. Best Pattern to use for grinding
2. Number of Grinding Passes in order to achieve a predefined acceptance envelope
3. Speed at which to grind

GrindManage allows the user to review rail profile data and adjust parameters in order to evaluate changes in grinding philosophy. In order to achieve this, the system saves the captured rail profile data along with input location data such as

milepost, curve data, grinding speed, patterns used, etc.

The *GrindManage* system provides the grinding operations manager with the ability to effectively plan and define a grinding program, monitor the grinding program, and adjust that program accordingly based on actual data collected. Utilizing the actual profiles collected, *GrindManage* determines the appropriate patterns and speed to be used for as many passes required to achieve the predefined template within an acceptable range.

The *GrindManage* system was developed as a 32 bit native Windows™ application to be run on Windows 95 or higher. The graphical user interface provides the user with intuitive and easy to understand information requiring a minimum of interaction.

