

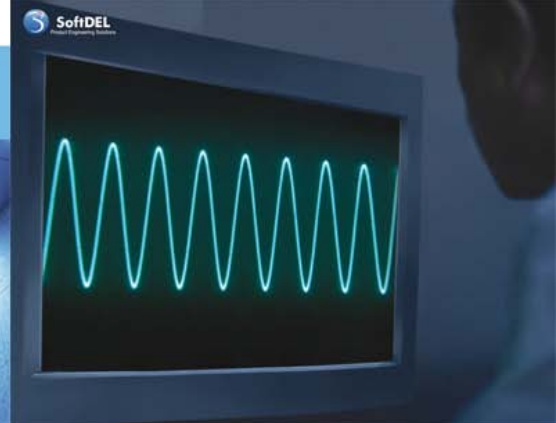


factory &
process automation
solutions

building automation
solutions



SoftDEL



test & measurement
solutions

Partner to global industrial product companies for control & connectivity based engineering solutions.

Operator Interface Re-engineering

The Customer

Customer is the premier provider of hardware and related software products for the industrial controls marketplace. The key-industries where their products are deployed include water/waste water, utility/power, oil/ petro-chemical, mining/quarrying, pulp/paper, food/beverage, material handling, bio pharmaceuticals and a variety of other industries

Customer Needs

The customer has a line of operator interface product that is nearing End of Life due to part obsolescence issues. Customer wants SoftDEL to review the complete design of the product and implement fixes to address the obsolescence and enhancement issues. The form and the fit of the product are to remain unchanged. The designed hardware is expected to meet the design standards required for UL and CE certifications

Product Overview

The product is an operator interface use in industrial automation domain. It can be configured to work with different set of PLCs. This is primarily a legacy product developed in the 90's. It has a robust and rugged design required for industrial automation applications.

SoftDEL Solution

Product Study

The product was diligently studied to understand its features and functionality in the current operating interface.

Reverse engineering

Complete source tree which is in Assembly language was studied and analyzed to find out design details which were documented. This information is useful to validate 100% feature-set coverage of the existing product.

Reengineering

The part obsolescence issue was addressed by evaluating different options for replacement of these parts. The hardware for this product was redesigned with use of the selected options for the parts that are getting obsolete. Future enhancements or facilities required for this product were taken into consideration while reengineering it to increase the shelf life of the product and minimize the development cost for feature enhancement and/or addition. The new hardware was designed keeping into consideration UL and CE certification required by the industry.

Migration

As part of this reengineering effort the existing assembly source code was migrated to C language code for modular design and ease of maintenance. This enhanced the reuse of some legacy code across the different set of products without any porting issues.

Design optimization

The reengineering of the hardware and software for this product provides numerous opportunities to optimize and enhance different features of this product. The system design phase has a special consideration for all the design optimizations that are possible with use of C language and advanced microcontrollers on offer for this reengineering. Also considering the new market trends and needs of the customer the product was designed to aid future feature upgradation with minimum efforts and fast time to market.

Development Platform

- IAR Workbench
- Microsoft Visio for reverse engineering of assembly source code.

Key Features

- **Exact replica:** The product is reengineered keeping the form and the fit exact as it is in the existing product. All the software and hardware features of the product were to remain the same to the end user who can continue to use these products seamlessly for their application.
- **Re-engineering of hardware and software:** The product is completely re-designed to resolve any hardware or software related issue to improve the product efficiency and ease of usage.
- **C-code:** Entire assembly source code is migrated to C language for better modularity and simple design.

- **Future enhancement and reuse of the code:** Reengineering of product is done considering the future enhancements that can be included in this product. Also the migration to C code increases the probability of reusing the legacy code across the platform.
- **Documentation:** As part of this reengineering complete documentation is generated to provide information related to different aspects of the product viz. hardware-software design, features and application details, major or minor enhancements done over the years in this type of legacy product. This provides a major support in maintaining the product.

Impact

- Increase in the shelf life of the product.
- Extendable design to accommodate future enhancements or addition of the features.
- Common platform to accommodate different legacy products thereby reducing the inventory cost.
- Easy maintenance with optimized design and documentation available.

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