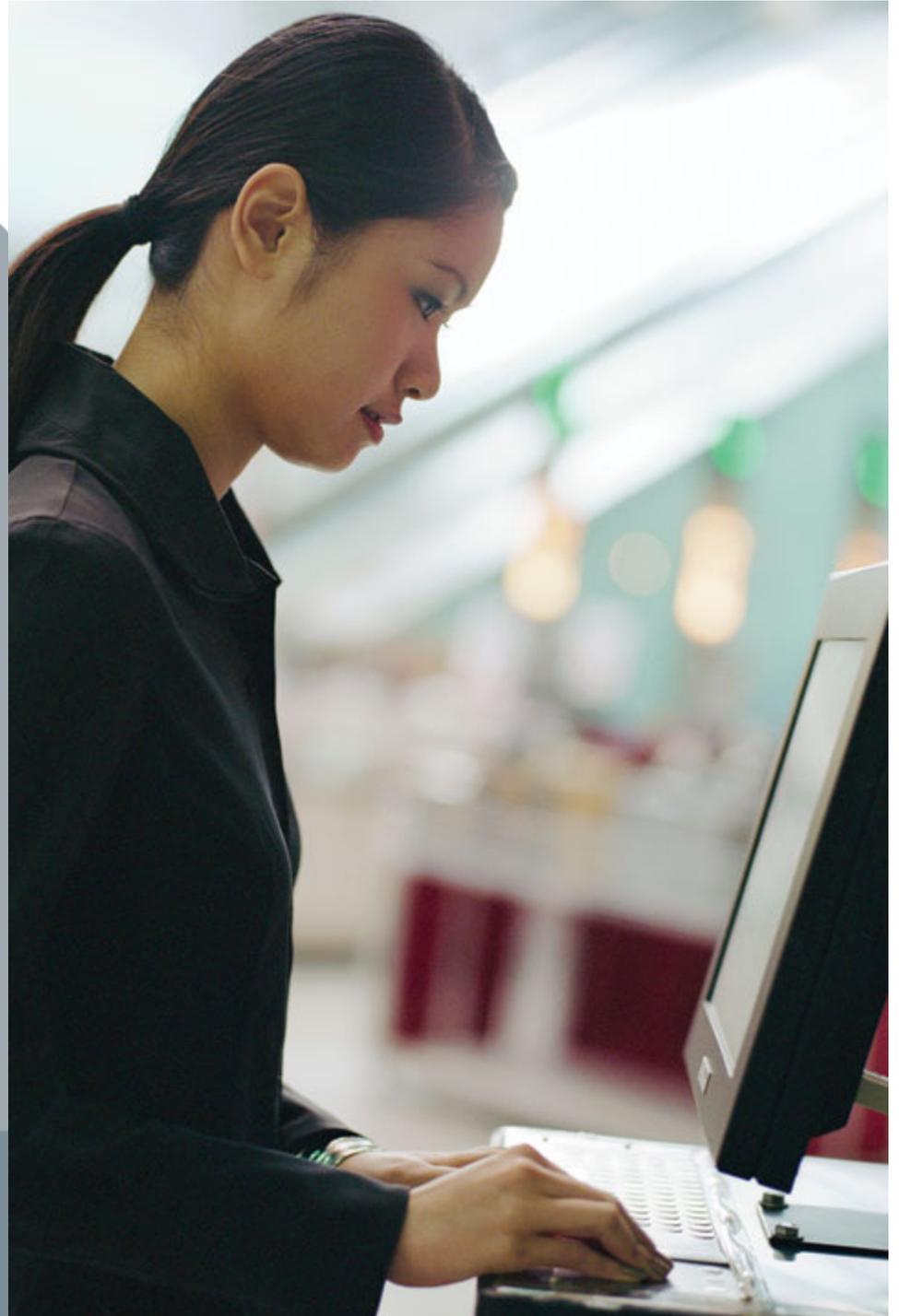


Inspection Management System (IMS)

A Welding – NDE Management Program
for Fabricated Piping Systems



General Information

Overview

IMS is a comprehensive software program for managing welding and non-destructive examination (NDE) data generated during fabrication of engineered piping systems. It is a project oriented program designed to provide assurances that all welding and NDE performed on piping lines conform to project specifications.

IMS is pre-loaded with Welder and Inspector qualifications, Drawing Lists, Project Specifications, Line Classifications and Material Specifications. This pre-loading gives IMS the ability to cross reference fabrication information and NDE reports with known values and evaluate the data's validity. Data entry automation techniques are utilized anywhere possible to decrease the amount of data entry points and reduce the amount of data entry errors. Daily entry into the IMS system automatically builds the Lots for inspection and maintains the status of those Lots after random picking of inspection welds.

Highlights

- Customize Project Preferences
- Detailed Piping Specifications
- Welder Qualification Records
- Inspector Qualifications
- Verification of Welder Qualifications
- Welder Lots Automated
- NDE Requirements Monitored
- Automatic Clearance of Welds & ISO's
- Discrepancies Automatically Logged
- Hydro-test Pack Clearance Automated
- Real-time Reports and Charts
- Electronic Import of Contractor Data
- Security Features
- Multiple Projects in single database

When Should IMS be Used?

IMS can be used for projects of any size and complexity where control of welding and NDE is important. The Program is designed to provide users with the ability to select features applicable to the most demanding projects, e.g. welding conformance. Documentation records maintained by the program produce detailed welder performance, quality assurance and production reports (and charts) for the project team. Upon completion of the project, the program can be compiled into read only version. To provide electronic documentation for archival purposes, or to be handed over to the client.

Program Concept

IMS processes welding and NDE information submitted by contractors to document work performed. The Program is pre-loaded with project design data – ISO drawings, material lists, piping line specifications (including NDE requirements), weld numbers and welder qualification records. When contractor information is entered in the Program, it is automatically reviewed and verified to be in conformance to requirements. Discrepancies are immediately logged in a register for clearance. Welds, spools, ISO sections and piping lines are automatically cleared by the Program when total conformance to requirements is completed.



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Program Features

IMS is designed with a multitude of unique features; including, automatic creation of welder lots during fabrication and their closing when NDE requirements have been satisfied; verification of welder qualifications for each weld; automatic control of the amount of NDE performed; discrepancy alerts to show when non-conforming data is entered; clearance of ISO's and piping lines when requirements have been satisfied; and, real-time reporting

Master Library

IMS contains a Master Library where technical specifications, welding procedures and company practices are stored for use by the Program on individual projects. For example, the Piping Line Classification tables are used for calculations within the Program. The library of welding procedures can be referenced when setting up a project and selecting those applicable to the project. Preferred terminology used by a company can be stated in the library and will be used in drop-down box selections within the Program. The Master Library provides a company with the means to 'customize' the Program for their use.

Piping Line Specifications (Classifications)

Piping Line Classifications are identified for each ISO drawing when data is uploaded or entered. Specifications for each line classification must be entered into IMS. Each line classification is applicable for certain design conditions (temperature and pressure) and specific fluid codes. Some piping line classifications for the project may require material traceability and this can be specified. Each piping line classification is applicable to a set of weld joints. NDE requirements to be used for each of type weld joint are defined along with the percentage of welds in the piping line to be examined. NDE Requirements will vary with pipe size (both diameter and wall thickness). The specifications define P-numbers for piping material and the fill processes to be employed. The Program recognizes welding processes and NDE to be employed are dependent upon pipe size (diameter and wall thickness). When welding and NDE data is entered in Pipe Welding form, the Program performs automatic verification that all defined elements of the piping specification are adhered to. In addition, NDE tables are created where the percentage of welds that have been examined and accepted are automatically accepted. This provides assurance that piping line requirements have been satisfied.

Welder Qualification Records

Detailed welder qualification records are stored in IMS. The Program references these records as fabrication data provided by contractors is entered in the Program. The Program verifies, at the Users option, numerous variables to verify qualification, e.g. is a qualification record current, is the welder qualified for the P-number or process? When discrepancies occur, the Program provides an immediate alert.

Lots / NDE Requirements Monitored

IMS, can automatically create welder lots and line class lots. Appropriately selecting the Production RT welds when required. The Program maintains careful monitoring of the lots, to inform the User when they are closed (specified size has been reached) and when they are cleared. Lots may also be manually closed or cleared at any time. So long as they meet the piping line class requirements. By maintaining close control of NDE. The Program knows the piping line classification for each weld and specified NDE requirements. It is very sensitive to the cost of performing excessive NDE; therefore, a detailed system of alerts is utilized throughout the Program to be assured that the proper amount of NDE is performed.



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Clearance of Welds and ISO's

The Pipe Welding is automatically populated from the drawings data. Each weld, spool, valve, and bolt-up is identified. Fabricators are required to provide information for each weld to document that welding conforms to project requirements. Fields for this information are identified by red circle with an exclamation. When data entry is made in a field the red circle disappears. A weld is considered fabricated when required information for the weld has been entered; however, the weld cannot be cleared until NDE required for the weld is cleared. Welds clear NDE when their assigned lots are cleared. The Program automatically up-dates the status of each weld. When all spools and field welds have been cleared the ISO is identified as being cleared. New welds can be assigned to an ISO manually; in fact, new ISO's can be created.

Discrepancies

When non-conforming data is entered into an Pipe Welding screen, the Program creates screen alerts and automatically makes an entry in the Discrepancy Log. Discrepancies include use of unqualified welders (six verifications performed) and improper heat numbers when material traceability is required. Users are to review the Discrepancy Log periodically and clear items whenever appropriate. .

Hydro-test Pack Clearance

Hydro-test packages prepared by project team members are entered in IMS to verify that all welds have been properly cleared. Entries can be made for an entire ISO or for selected welds in an ISO. When entry is complete, a verification report is created and any non-cleared welds are identified.

Security and Access

IMS is designed with a security system that controls access to the Program. Four (4) basic access levels are available: Administrator, Power User, Data Entry, and Guest. Guest access is on a read-only basis and can be granted to project team members and/or client representatives who have a need for access to reports and status. Access to the Program is on a password basis as granted by the Administrator.

Reports and Charts

Numerous reports and charts are built into IMS. They are automatically up-dated when data is entered. Users have the ability to control details of reports being viewed. Each report is setup so the User can select which portion of the report is to be viewed. For example, a complex report may have numerous portions selected for individual viewing.



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