Semi & Automated NDT Inspection System

- One Piece Flow Design
- Small Batch Flow Design
- Large Batch Flow Design
- Other Customized Design
Introduction to Automated FPI System

Fluorescent Penetrant Inspection System or in short, FPI System, is a form of non-destructive testing of mechanical components for defects. Parts to be tested are cleaned, dried and subjected to a series of processes using luminous dye penetrant as a medium to aid in the visual inspection of defective parts under ultraviolet light. Usually, the inspection is carried out in a darkened chamber. Typical industries which use FPI Systems includes aerospace, track and rail, gas turbine, etc.

Traditionally, because of the difficulties to meet the numerous standard operating practices or regulations laid down by the original equipment manufacturers and various governing bodies, the FPI process was carried out manually by many industries for many years. With the continual rise in labour cost and the need to improve efficiency and consistency, much research and development had been carried out by many players in the industry to automate the FPI process; but have not been very successful – until recently. The critical parameters associated with the control and application at different stages of the entire FPI process can now be individually set, programmed and accurately controlled for a fully automated FPI System. Since then, a host of other features and advantages had been discovered and implemented into the Auto FPI System. In a highly competitive business environment, there will be increasing urgency to improve productivity, consistency and efficiency of traditional FPI processes and the Auto FPI System offers a very viable solution to address these issues.

Long before this, Cyclosystem has recognised the problems associated with using traditional manual FPI System and the advantages of automating it. The company has invested much resources and time to achieve this goal and has since been one of the pioneers in the design and development of automated FPI Systems and other related processes in the region. Cyclosystem designs both standard as well as customized system and has a good track record for these equipment both locally and overseas. Cyclosystem’s equipment are not only renowned for their quality and reliability; but also for their aesthetically modern look, compactness, simple to operate and maintenance. Whether it is standard or customized solution, Cyclosystem FPI equipment specialists will study each of its clients’ requirement carefully before recommending the appropriate equipment or processes to meet their technical and commercial needs.

The range of standard FPI System which Cyclosystem manufactures include: One-piece-flow design, Small-batch-flow design and Large-batch-flow design. For non-regular production parts, Cyclosystem also designs and manufactures low cost semi-automated or manual FPI System to meet the production requirement.

Advantages of the Automated FPI System

- Eliminates manual monitoring and handling
- Saves on inter-stage process time and interruption
- Reduces overall process time significantly due to “buffering” of non-productive dwell time
- Increases efficiency and productivity
- Reduces operator fatigue and mishandling
- Improves output quality and consistency
- Allows operator to concentrate on other processes
- Minimises/ eliminates users’ exposure to hazardous chemical or solution
- Enables better control of contamination in process areas
- Much cleaner and neater workplace than traditional manual system
- Accurate and precise control of process parameters
- Fully programmable with option for manual over-ride
- Allows better production scheduling and planning
- Improves company image and increases customer confidence
- Improves operator morale
Automated FPI System - One Piece Flow Design

- Designed for one piece flow operation
- Very short through put time!
- Compact and Modular in design
- Removable side panels for easy all round access
- Quick coupling systems for connection to utilities
- User friendly, simple one button ON/OFF operation
- Front viewing window to monitor processes
- Sleek touch screen controller for flexible operation
- Seamless parts transfer from each stage
- Complete control of all necessary parameters of operation
- Built in inspection chamber with UV inspection light
- Post FPI aqueous cleaning system
- Built-in Carbon filtration system
- Easy access for maintenance

Automated FPI System - Small Batch Flow Design

- Designed for small batch flow operation
- Reduce process time by more than 50%!
- Slim, Compact and Modular in design
- Removable side panels for easy all round access
- Quick coupling systems for connection to utilities
- Can be used with both oil-based or water-based penetrant
- User friendly, simple one button ON/OFF operation
- Sleek touch screen controller for flexible operation
- Complete control of all necessary parameters of operation
- Easy access for maintenance

Automated FPI System - Large Batch Flow Design

- Designed for high capacity production
- Modern, Sleek, Compact and Modular in design
- Fully automated parts basket transfer system
- Seamless parts transfer from stage to stage
- Easy side access for servicing and maintenance of system
- Quick coupling systems for connection to utilities
- Can be used with both oil-based or water-based penetrant
- User friendly, simple one button ON/OFF operation
- Full viewing window around system to monitor processes
- Sleek touch screen controller for flexible operation
- Complete control of all necessary parameters of operation
Semi-automatic FPI System For Bulky Part

- Design for non-regular production parts
- Simple and modular in design
- User friendly and easy maintenance

Manual FPI System For Small Part

Supporting Equipment

Post Cleaning Ultrasonic System

Compact Inspection Booth

Carbon Filtration System

Coalescing Filtration System

Compact Waste Water Treatment System

Current Development

- Automatic Inspection System
- Waste water recycling
- Process improvement

NOTE: As we continuously strive to upgrade our machines, pictures, features and technical data given herein are preliminary and may be subjected to changes. Cyclosystem Pte Ltd reserves the rights to change these data without prior notification.
Pre-Cleaning Line:
- Start
- Pre-Washing (By ultrasonic, immersion or spray)
- Pre-Rinsing (By ultrasonic, immersion or spray)
- Drying (By blow dry and hot air circulation)
- End

FPI Line:
- Start
- Penetrant (By immersion, spray or manual application)
- Pre-Wash* Spray Clean with option for coalescing filtration system
- Emulsifier* (By immersion and agitation)
- Post Wash Spray Rinse with option for carbon filtration system
- Drying (By blow dry and hot air circulation)
- Dry Developer (By air purging)
- Inspection (Manual)
- End

Post Clean Line:
- Start
- Pre-Washing (By ultrasonic, immersion or spray)
- Pre-Rinsing (By ultrasonic, immersion or spray)
- Drying (By blow dry and hot air circulation)
- End

* Optional Process
About The Company

Cyclosystem has been in the business of designing and manufacturing of industrial cleaning machines and other related process equipment for many years. The cleaning equipment which the company designs involves the use of different technologies and covers a wide variety of industrial applications with most of them focused on using non-ozone depleting agent as its cleaning medium. Some of the industries which the company is currently involved in include Aerospace, Electronics, Disk Drives, Metal Stamping, Rail & Transportation and Manufacturing.

Cyclosystem designs and manufactures both standard as well as customized machines for its clients. The company also collaborates with many designers and manufacturers overseas for the sales and distribution of their line of equipment which complements and supports Cyclosystem's business. With its design capabilities, experiences and wide array of standard as well as supporting equipment available, Cyclosystem is able to effectively recommend and integrate a complete process line for its client within a short notice. The key to Cyclosystem’s success lies in its ability to offer its clients a practical and cost effective solution.

Most of the machines developed by Cyclosystem not only meets its basic intent but is simple, practical, reliable and aesthetically pleasant. The high level of technical competence and stringent quality control enables Cyclosystem to meet the high demands and expectation of its clients worldwide.

Cyclosystem’s products and services are grouped into the following categories:

**CYCOJET**
- High pressure jet spray cleaning
- Automatic operation and recycling
- Single or multiple stage process
- Compact and modular in design with many supporting options
- Cabinet or conveyor type design
- Stainless steel construction
- Available in many standard or customized machines

**CYCLOHEAT**
- Circulation or vacuum drying ovens for wash parts
- Batch or conveyorized design
- Stainless steel option
- Standard and customized design

**AUTO/MANUAL FPI SYSTEM**
- Automatic or manual dye penetrant inspection of parts
- Fully integrated process
- Options: Compact and modular in design
- Standard machine comes in One-piece-flow
- Small batch flow and Large batch flow machines

**CYCLOSonic**
- High efficiency ultrasonic cleaning technology using newly patented tubular resonators
- Manual or automatic cleaning process
- Single or multiple tank design
- Compact and modular in design with many supporting options
- Vapor degreaser
- Special in-line ultrasonic cleaner for wires, tapes and other profiles
- Many other standard and customized machines available

**CYCLOBLAST**
- Grit/shot blasting technology
- Manual or automatic machines
- Compact and aesthetic in design
- Automatic recycling option
- Standard or customized machines

**CYCLOTREAT**
- Compact waste water treatment plant
- Recycling option
- Compact and modular in design
- Full control and monitoring
- Standard or customized machines available

**CYCLOCLEAN**
- Cycloclean is a collective name for an array of cleaning agent/detergent suitable for the cleaning of wash part(s) in all Cyclosystem machines

**OTHER SERVICES**
- Consultancy and contracting
- Project management
- Contract cleaning services
- Other automatic system design, etc

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