

# Transfer to

# Thermal

## New System Replaces Silk Screening to Reduce Labor & Wastes

**A** new, innovative identification marking technology is now available for transition to Department of Defense (DoD) installations wherever inks and paints are used for the labeling of parts or equipment. It's called the Thermal Transfer Printing System.

Maintenance facilities and repair Depots across DoD use traditional marking methods to track and identify parts and components within their facilities. These traditional methods

include stamping, silk screening and stenciling that require conventional inks and paint formulations containing solvents to provide desirable properties, such as reduced viscosity for easier applications. However, the liquid and solid wastes generated as a result of these paint formulations and inks contain high volatile organic compounds (VOC). VOCs are considered hazardous and are subject to increasing environmental regulations. In addition to the increased operating costs imposed by these regulations, traditional marking methods:

- Require intensive labor to complete,
- Have the potential to produce illegible results,

- Allow for operator error when entering number strings, and

- May be associated with potential health issues.

The Joint Group on Pollution Prevention (JG-PP), whose mission is to reduce or eliminate hazardous materials or processes within the acquisition and sustainment communities, partnered with the Environmental Security Technology Certification Program (ESTCP) and led a project to identify and qualify low-VOC inks and labels used for identification (ID) marking. The objective of this project was to:

- Reduce or eliminate the use of VOCs (specifically methyl ethyl ketone and toluene),
- Reduce hazardous waste generation (rags, inks and solvents), and
- Reduce resulting waste management costs associated with conventional products.

Based on stakeholder requirements documented in the joint test protocol (JTP), two inks and three label systems were qualified for use. Test results can be viewed on the JG-PP website at [www.jgpp.com/projects/id\\_marking/current\\_activity.html](http://www.jgpp.com/projects/id_marking/current_activity.html).

At the Naval Air Depot Jacksonville, FL (NADEP Jacksonville), personnel from the Graphic Arts Shop perform a



ABOVE: Exposing the image to screen emulsion.

RIGHT: Applying the ink to the silk screen.



large portion of the ID marking for the base. Workload consists of preparing inspection stickers, equipment labels and warning signs on vinyl material using a silk screening process. This labor intensive and multi-step process has the following steps:

- Step 1: A negative image of the marking on the screen is developed.
- Step 2: The screen is then placed onto the area where the marking will be applied.
- Step 3: Ink is then mixed and poured into the screen.
- Step 4: A felt covered board is run back and forth across the screen to force the ink through the negative leaving the marking on the part.
- Step 5: Finally, the artwork is placed on a drying rack.

This process requires the use of solvents and rags for cleaning the screens. The soiled rags are then disposed of as hazardous waste.

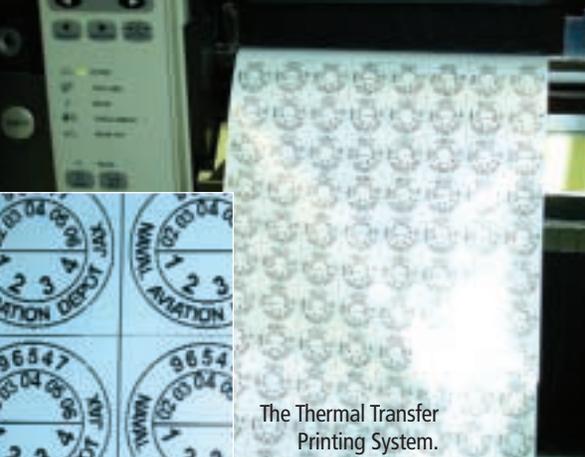
NADEP Jacksonville has implemented the thermal transfer printing system to replace the silk-screening process.

Now with the push of the "print" button, the job is complete. This system uses clear, white, or metallized polyester label material and a special in-coated ribbon to create self-adhesive labels. And no cleanup is required.

Switching to the thermal transfer printing system has greatly reduced labor hours required to produce labels and provides a faster turnaround time as compared to silk screening. For example, 5,000 small inspection decals were printed in less than ten minutes. Zero flaws were found.

Furthermore, the thermal transfer printing system has eliminated the need to create and clean frames used for silk screening. The need to purchase, handle and dispose of cleaning solvents has also been eliminated, as has the waste stream of rags, solvents, and spent ink and other spent products.

Since April 2002, NADEP Jacksonville has transferred approximately 90 percent of its label printing from the silk screening process to the thermal



The Thermal Transfer Printing System.



Sample of inspection decals printed during demonstration phase.

transfer printing system. Several hundred labels per year (affixed to aircraft parts, avionics equipment, cabinets, racks and instrument panels or used as warning signs) are now produced using the thermal transfer printing system. To date, this has resulted in the elimination of two gallons of ink and nearly 200 pounds of high VOC solvent used for the year.

This innovative joint technology solution is available for transition to other DoD installations wherever inks and paints are used for labeling of parts or equipment. To learn more, check out the JG-PP website at [http://www.jgpp.com/projects/id\\_marking/current\\_activity.html](http://www.jgpp.com/projects/id_marking/current_activity.html) or contact your JG-PP Working Group Representative. ↴



ABOVE: Adhering the emulsion to the screen frame.



RIGHT: Artwork drying in the dry racks.

## CONTACTS

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