

# POLLUTION PREVENTION

## IN RHODE ISLAND

Case studies of the Rhode Island On-Site Technical Assistance Program

### Boat Builder VOC's

**Fiberglass boat-builder uses a pressure fed roller instead of an air atomized spray gun for laminating applications and reduces volatile compound (VOC) emissions while increasing consistency of parts produced.**

#### **Industry \ Contact**

SIC Code: 3732 Fiberglass Boat Builder, Rhode Island

Contact: RI Port Authority Marine Trade Pollution Prevention Research Project

Client #5

#### **Technology Description**

The Company manufactures fiberglass sail boats from 20' to 45' long. The Company has 1 part-time and 30 full-time employees.

Conventional air spray equipment is used to laminate hulls, decks, and parts. Resin transfer efficiency varies significantly, as shown by widely ranging weights for similar parts (+/- 5 to 10%). The VOC emissions factor is about 0.11 for the spray process, and the glass to resin ratio is about 30% to 70%.

A pressure fed roller is now used on some large, flat, uncomplicated parts such as hulls and decks. The VOC emissions are lessened due to a 30% lower emissions factor (0.075). Similar parts vary less than 2% by weight, and have a better glass to resin ratio than conventional spray methods (about 40% to 60%).

#### **Feedstock Materials**

34 % styrene content polyester laminating resin emitting up to 3.75 % VOCs per amount of resin used.

#### **Costs**

ARJAY Technologies pressure fed roller (now marketed by *Binks*) cost \$2,000.

### **Operation \ Maintenance**

Clean up and maintenance issues for conventional spray guns and pressure fed rollers are similar. The Company reports that the model of roller used has some internal seals that are not compatible with some high flashpoint acetone replacement solvents. The Company has not attained production levels with the pressure fed roller due to this problem.

### **Savings**

The conventional spray process generates approximately 3.75% VOCs per amount of resin used vs. the pressure fed roller producing about 2.6% per amount of resin used.

The Company estimates that up to 15% less resin is used per part manufactured with the pressure fed roller as opposed to conventional spray methods.

A theoretical examination of the change in glass to resin ratio shows that 0.8 pounds less resin would be required per pound of glass when using the pressure fed roller as opposed to conventional spray methods.

### **Impact**

Rhode Island is implementing a flat fee for facilities that produce less than ten tons of VOCs per year. There is an incrementally higher fee for facilities producing in excess of ten tons, which provides an incentive for facilities nearing the ten ton plateau to employ technologies which produce less VOCs.

Resin savings, once production levels are reached, would justify the expenditure for the change in laminating technologies.