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# TELLKAMP SYSTEMS, INC.

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## Cost Effective Air Pollution Control Equipment Using Recirculation

**Santa Fe Springs, CA** – Typically, liquid paint finishing systems are used to coat a variety of products using spray booths equipped with automatic paint application equipment. Manual touch-up is sometimes required to apply the coatings to difficult to reach areas of the product. With multiple coats of finish (using automatic paint application with manual touch-up) most liquid paint systems require several large spray booths. Each large spray booth can have an exhaust rate of 12,000 to 15,000 cfm each. (Many paint lines with multiple booths exhaust well over 100,000 cfm of solvent laden fumes to atmosphere.)



Product Transferred by Conveyor Through Automatic Application Recirculating Spray Booth.

### • Air Pollution Control

When air pollution control equipment is required to minimize VOC (Volatile Organic Compounds) emissions, the cost of controlling large volumes of air can be staggering. Tellkamp Systems, Inc. specializes in designing air pollution control systems that significantly reduce the exhaust air volume that must be controlled, thereby reducing the capital cost as well as the operating costs of the control equipment. The techniques used for air volume reduction include spray booth recirculation, cascading of air flows, total enclosure techniques, and ultra fine filtration.

### • Overall Effect of Air Volume Reduction

The following table illustrates the benefits of a cost effective air pollution control design using spray booth recirculation and air volume reduction techniques. The incoming solvent acts as fuel in the Roxidizer® unit greatly reducing the hourly operating costs.

Cost Effective Pollution Control Equipment		
	Standard Design	Tellkamp Systems' Design
Automatic Booths (4)	60,000 cfm	16,000 cfm
Manual Booths (4)	48,000 cfm	0
Flash Areas	0	3,000 cfm
Cure Oven	4,000 cfm	4,000 cfm
Total Exhaust Flow	112,000 cfm	23,000 cfm
Annualized Operating Costs	\$176,000/yr	\$21,600/yr
Annualized Heated Air Make-up Cost Savings with Reduced Airflow		(\$37,000/yr)

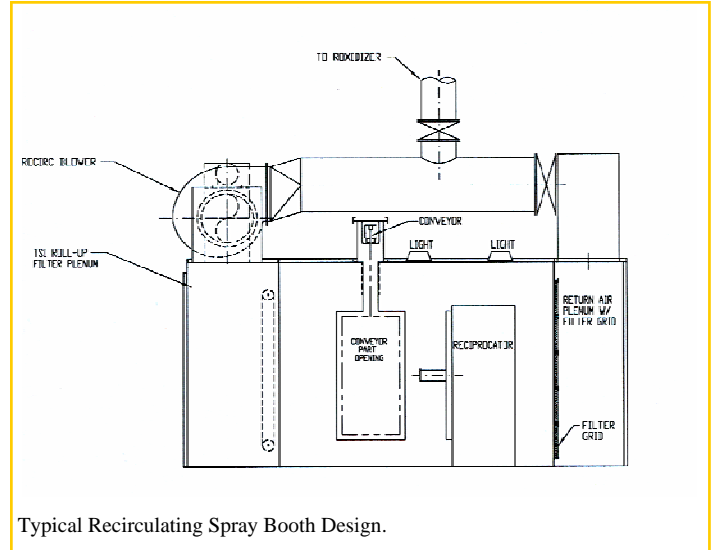
Based on \$0.06/KW, \$4.00 per MM BTU, 100lb/hr VOC, Heated air make-up required 60% of the year.

## Recent Business Announcements

- Alcoa Construction Products**  
**Yankton, SD** – Stainless Steel Vertical Washer Replacement
- C.R. Laurence Corporation**  
**Los Angeles, CA** – Powder Coating System
- LinEl Corporation**  
**Mooresville, IN** – Model 20 Roxidizer® RTO with Air Volume Reduction System
- Naugatuck Glass Company**  
**Naugatuck, CT** – Model 4 Roxidizer® RTO
- Stanley Electric U.S. Co., Inc.**  
**London, OH** – Model 7 & Model 20 Roxidizer® RTO Units

• Spray Booth Recirculation

A large reduction in exhaust air flow can be accomplished using spray booth recirculation techniques. Typically, existing booths can be modified to enclose the large face opening of the booth and recirculate the exhaust back through a new return air plenum. A special filtration system is required to remove all overspray particulates prior to recycling the exhaust air. Solvent level monitoring is used to insure safe levels of solvent are maintained in the spray booth. The recycled air is controlled to allow a small slipstream of exhaust air to be sent to the thermal oxidizer for VOC abatement.



Typical Recirculating Spray Booth Design.



Touch-up Opening for Manual Spray.

• Touch-up Openings

The Manual touch-up openings are made smaller to minimize the amount of exhaust air required to maintain a safe working environment for the touch-up painter. This exhaust air is typically cascaded to the recirculated spray booths to further concentrate the airstream and minimize the total airflow sent to the Roxidizer® RTO.

• Flash-



Lighted Flash Enclosure to Capture Evaporating Solvents.

off Area Enclosures

Solvent that normally evaporates in the flash areas can be captured and destroyed to increase the overall effectiveness of the air pollution control scheme. This technique also reduces worker exposure levels to solvent by eliminating the vapors from the plant environment.

• Reduced Heated Air Make-up Requirements

With a large reduction in exhausted airflow, a corresponding reduction in the need for heated air make-up is realized. Additional cost savings for heating make-up air can completely offset the cost of operating the Roxidizer® RTO unit.



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