

COILWORLD

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Ship & Shore Environmental Supplies Thermal Oxidizers for VOC Control

By Jim Kuzara, Ship & Shore Environmental Inc.

Consumer and industrial markets are constantly challenging coil coating paint finishing operations with coating specifications to provide maximum durability and finish appearance. The coil coating industry is also challenged to deliver these finishes in an environmentally friendly fashion to minimize impact to local surroundings and the air we breathe.

Why do we control these emissions? Solvent emissions that enter the atmosphere, combine with nitrogen oxides and UV rays (sun light) to form smog that's been proven to cause cancer and respiratory health problems.

Emissions from coil coating operations that utilize solvent based finish materials are regulated by Federal, State, and Local authorities by guidelines established through the Clean Air Act. In general, these regula-

tions limit the amount of VOCs (Volatile Organic Compounds) or solvent emissions that can be emitted by a coating operation as a single solvent or as a solvent mixture. They are generally quantified in tons of emissions (allowable) and can differ across locations.

The goal of any well-designed air pollution control system is to minimize the impact of coating emissions in a cost effective way to meet these established regulatory requirements.

Ship & Shore Environmental, Inc. is a leading supplier of VOC abatement equipment based out of Signal Hill, CA. Ship & Shore has complete designs and build capabilities. They can assist in all aspects of equipment design, regulatory permitting, ductwork collection system design, and complete service and repair capabilities after the sale. They can even recover rebate incentives

available through local natural gas and electric utility providers for the purchase of thermal efficient control equipment.

Solvent emissions are emitted to atmosphere in a variety of ways from a coil coating paint operation.

1. At the paint application site
2. In quiet (low air movement) flash off areas
3. Curing or bake oven tunnels (majority of emissions found here)
4. Paint storage areas
5. Paint mix areas

Generally, thermal oxidizers are used to destroy the solvent emissions within the industry. VOCs are combusted at approximately 1450 to 1500 degrees F to convert VOCs to carbon dioxide and water (also other very minor products of combustion depending on inlet constituents).

Thermal Oxidizers come in a variety of arrangements that have subtle effect on destruction efficiency, operating costs, and thermal efficiency (the amount of energy that can be recovered from the combustion process). Regenerative Thermal Oxidizers and Recuperative Thermal Oxidizers are two of the most prevalent technologies used to combust regulated emissions within the coil coating industry.

Recuperative Thermal Oxidizer can achieve +99% destruction efficiency. They are also able to recover up to 60% of the thermal energy expended in the

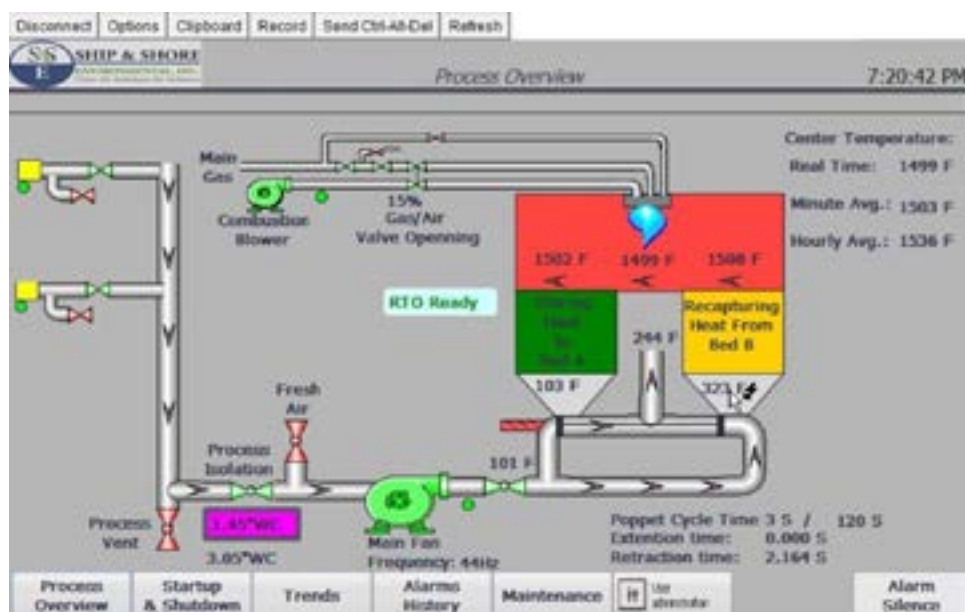
combustion chamber via an integrated heat exchanger within the unit. In general, cost is considered lower to purchase and install. Based on solvent concentration contained in the exhaust stream, operation could be expensive.

Regenerative Thermal Oxidizer (RTO) features destruction efficiency to 98% - 99% and thermal efficiency up to 97%. RTOs tend to exhibit high flexibility in most applications due to their excellent destruction and thermal efficiency properties. RTOs tend to be popular because they can effectively control very high volumes of air with low to moderate solvent concentrations. The downside to RTO technology is it tends to be more expensive to purchase and install. But these capital costs can be offset over shorter periods of time due to lower cost of operation (lowest natural gas consumption). And RTOs qualify for rebate incentives (where available) from utility provider programs. In matching painting process to VOC control equipment options, oxidizer systems must be reliable, durable, and easy to maintain. PLC controlled with touch screen HMI interface are all hallmarks of Ship and Shore oxidizer design.

Adding Value to Your Thermal Oxidizer Purchase.

Ship & Shore is an engineering and fabrication company that demonstrates the ability to best match oxidizer technology to your specific application. The key to a successful equipment implementation starts with your individual process and the ability of your thermal oxidizer company to understand your goals and objectives. This allows for maximum value throughout the entire equipment selection process.

The decision to control VOC emissions with a



thermal oxidizer, whether mandated by regulation or voluntarily, comes with a price. These are usually manifested in dollars and time across your organization – Manpower, capital purchase, added energy costs, regulatory permitting challenges, and facility design changes (concrete, ductwork, piping and wiring).

As a basic service, Ship and Shore provides Value Added Benefits to minimize your project's exposure. Keys to getting best project value:

- Understanding the paint process to maximize abatement equipment potential.
- Minimizing air flow to the oxidizer while enhancing fuel to the unit.
- Working with your environmental engineers and or consultant to achieve regulatory compliance. Assistance in filing for air quality permits.
- Researching possible secondary process heat recovery opportunities to maximize energy recovery for overall lower operating costs.
- Incorporating design provisions in the system anticipating future potential process changes.
- Knowledge, experience, and relationships to take advantage of new construction incentive rebates available thru natural gas and electric utility enti-



ties. These are very lucrative returns available primarily thru RTO purchases.

Ship & Shore experienced personnel are hands on, and understand the core principles of manufacturing processes. Alongside plant personnel, Ship & Shore baselines, designs, and integrates environmental control technology for leaner capital outlays and cost effective operation.

In all of these ways, Ship & Shore places a customer in a position of success. They focus on your abatement needs while you manage the challenging business environment. Better air quality, energy efficiency, maximum profitability, Ship & Shore assists coil coating operations to grow and expand their businesses through the addition of well thought out environmental controls. 🌐

Media Contact:

Beatriz Arana

34 634 691 473

Beatriz.arana@energiacommunications.com