



Pollution Control

Customer Success Story



Industry	Pollution Control
Application	Regenerative Thermal Oxidizer (RTO)
Location	Northeast US
NUTEC Products	MaxBlock® 2300 Modules, MaxWool® 2300 Blankets
Operating Temperature	1600°F (870°C)
Anchoring Method	H-Anchors, U-Anchors
Installation Technique	Unidirectional Construction with Single Batten Strips

Regenerative Thermal Oxidizers (RTOs) are required for many industrial processes in order to meet government set emission standards for volatile organic compounds (VOCs).

The basic operating principle of RTOs is that they use a catalyst bed to convert the chemical make-up of the emission airstream to a form which can be easily combusted into water vapor for release into the atmosphere.

Learn more at [nutec.com](https://www.nutec.com)

The Challenge

RTOs are manufactured in a variety of shapes and sizes. Often, the use of routinely available module sizes will not afford the best insulation package and may require multiple field cuts and/or batten strips. Typical insulation installation takes place at the location of the RTO steel fabricator, and may be performed by those not readily familiar with the installation for ceramic fiber modules.

Critical requirements that owner/operators of RTOs have for fiber lining replacement are:

- **Large Format Modules**

Larger module sizes result in faster installation and fewer joints in the lining system.

- **Installation Ease**

A lining system which is easy to install, and which employs symmetry and design considerations to keep the installation efficient and simple.

- **Thermal Efficiency**

The insulation system must provide adequate insulating value for overall performance to keep cold face temperatures at an acceptable level.

- **Weight**

Weight is to be minimized for ease of shipment and final installation at the end user's location.



Fig. 1 Typically, fiber installation takes place at the steel fabrication facility. **MaxBlock** modules provide a light weight insulation system which can be installed using unskilled labor.

Solutions

NUTEC has the capability to economically produce very large module sizes. To minimize the number of joints in the lining system, large format modules were used to span large sections of the RTO. Symmetry was used in the design to make the installation process simple and easy to follow.

The modules were supplied without any internal anchors. H-Anchors and U-Anchors were used to secure the modules into place. As each module was installed, these anchors were set into place and welded to the RTO casing plate. Special accommodations were made to work around lining openings, penetrations, and burners.



Fig. 2 **MaxBlock** Lining Systems are engineering to provide efficient and effective installation.



Fig. 3 The H-Anchor System allows for flexibility of anchor placement to accommodate lining penetrations such as burner blocks.

Results and Benefits

plication Engineering team was able to provide an insulation package that incorporated large format modules and minimized the number of seams in the lining system.

The H Anchor system afforded rapid installation and eliminated the need for predetermined anchor locations. Installation was easily accomplished at the steel fabricator's location with no need to use a third-party refractory installer.

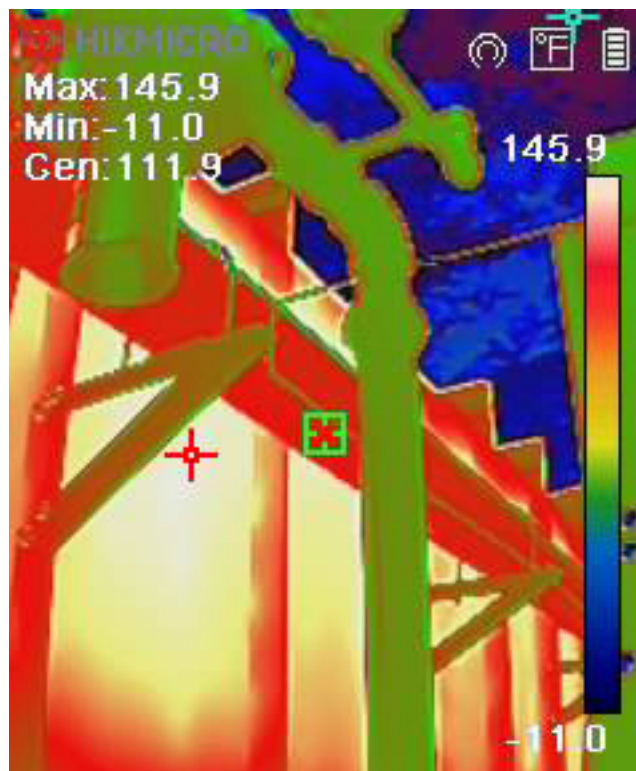
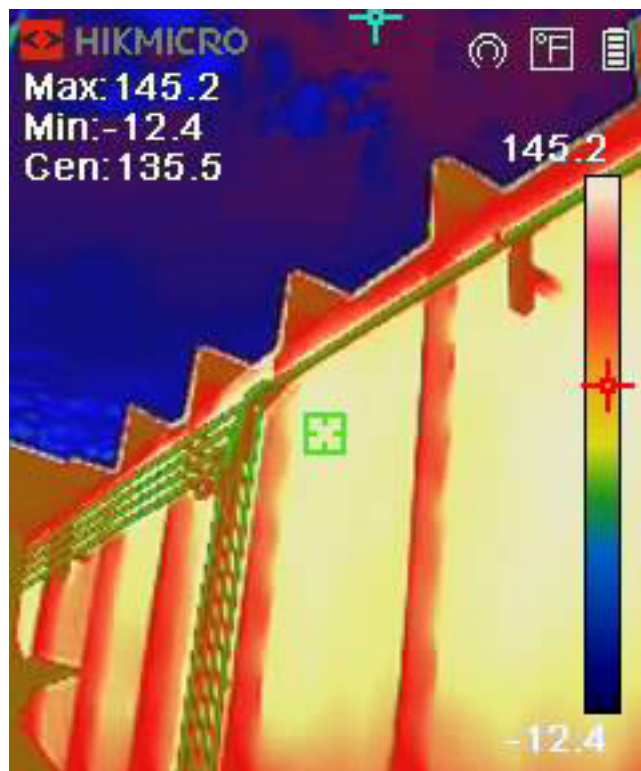


Fig.4 & 5 Larger module sizes in this application yield a highly uniform heat distribution across the oxidizer, as demonstrated in the thermal images. The measured cold face temperatures are slightly lower than those predicted by **NUTEC's** Application Engineering Department.



Fig.6 Since they are larger than most typical modules, **MaxBlock** modules in conjunction with the H-Anchor System install quickly and minimize seams throughout the insulation system.

The Takeaway

NUTEC listened and fully understood the customer's requirements around providing an insulation package that was comprehensive and easy to install.

A certain design standard/practice has been established for this client, which will be the basic blueprint for its future RTO construction.

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