NYC Buildings

NYC DEPARTMENT OF BUILDINGS' INNOVATION CHALLENGES

build safe | live safe

presented by

ALAN PRICE, P.E.

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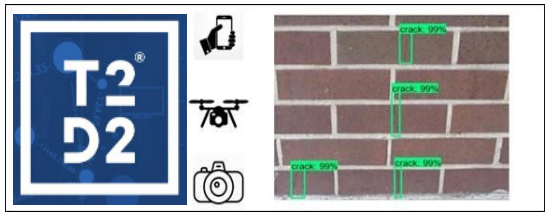
PRESENTATION DESCRIPTION

In this presentation, participants will learn about the Department's Innovation Challenges, which are aimed at fostering new ideas in sustainability, design and construction that help to improve the health, safety, and welfare of the public. The course will provide an overview of new Buildings Bulletins issued as a result of the 2020 Innovation Challenge competition. Such Bulletins cover the following topics: inspections of air circulating in elevators, new methods of façade inspections and increased heating efficiencies using nanofluids to achieve carbon neutrality.

2020 INNOVATION CHALLENGES: BY THE NUMBERS

- **2** sub-competitions: Hack the Building Code and Carbon Neutrality
- **100+** proposal submissions
- **20** finalists who presented to the panel of judges
- **8** Winners (4 from the Hack the Building Code competition, and 4 from the Carbon Neutrality competition)

HACK THE BUILDING CODE WINNERS



ELEVATOR CAB AIR CIRCULATING & TREATMENT SYSTEM

Winning Technology

STERILYFT
by CEC Elevator Cab Corp

CEC ELEVATOR CAB CORP.

STERILYFT

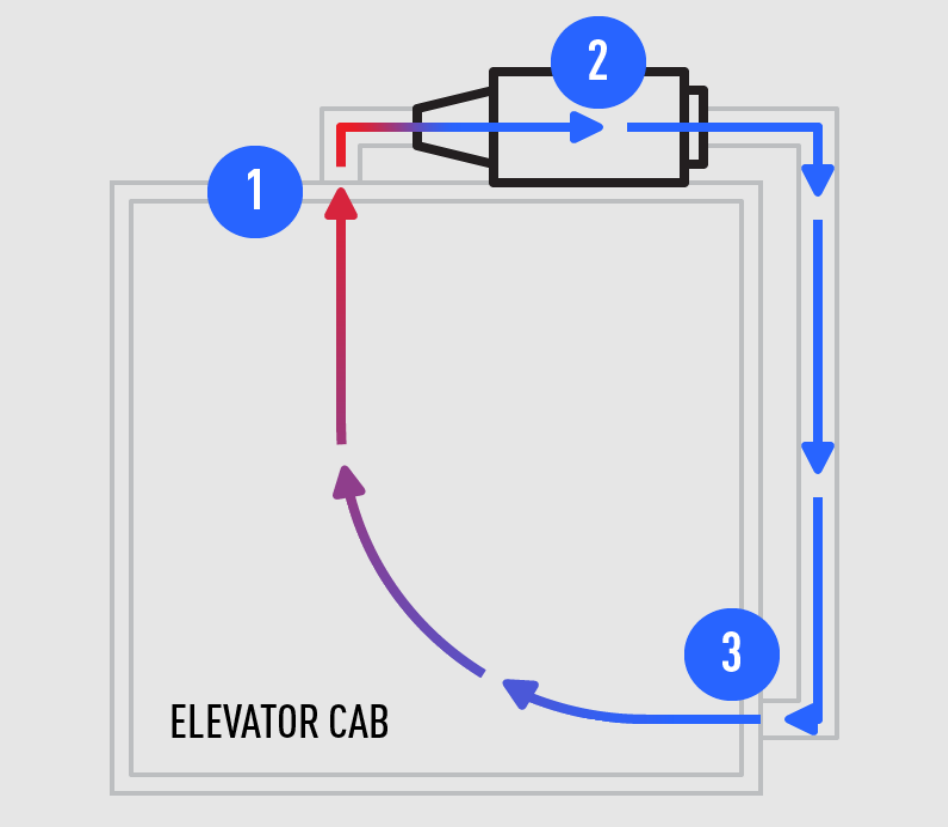
ELEVATOR CAB AIR CIRCULATING & TREATMENT SYSTEM

SOURCE: sterilyft.com

How it's used

- Air treatment system intended to remove air contaminants from elevator cab environments.
- Used in new elevator installations or retrofitted to existing passenger or freight elevators.

ELEVATOR CAB AIR CIRCULATING & TREATMENT SYSTEM



SOURCE: sterilyft.com

Description

Air treatment system employing HEPA filters and UV germicidal treatment technology. Additionally:

- The system is self-contained, semi-closed loop device installed at the outside wall or roof of an individual elevator cab.
- The system is housed in a sealed metal box which prevents UVC light exposure.
- Features double filtration (two MERV 13 filters), UV-C light treatment, and 710 CFM fan.

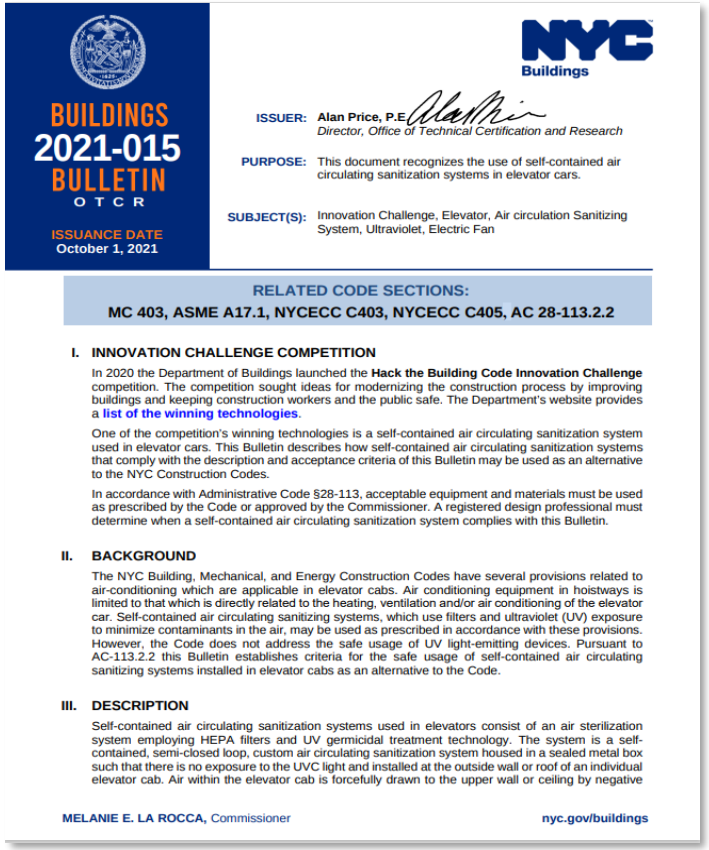
ELEVATOR CAB AIR CIRCULATING & TREATMENT SYSTEM

SOURCE: sterilyft.com

Benefits

- Treated air is reintroduced into the car without pulling in air directly from the elevator hoistway.
- The air changes per hour can be calibrated to far exceed the minimum required.
- No passenger exposure to harmful ultraviolet light since contained within system box.
- Existing elevators can be retrofitted with the system without major alterations.

ELEVATOR CAB AIR CIRCULATING & TREATMENT SYSTEM



BUILDINGS
2021-015
BULLETIN
OTCR

ISSUANCE DATE
October 1, 2021

NYC Buildings

ISSUER: Alan Price, P.E.
Director, Office of Technical Certification and Research

PURPOSE: This document recognizes the use of self-contained air circulating sanitization systems in elevator cars.

SUBJECT(S): Innovation Challenge, Elevator, Air circulation Sanitizing System, Ultraviolet, Electric Fan

RELATED CODE SECTIONS:
MC 403, ASME A17.1, NYCECC C403, NYCECC C405, AC 28-113.2.2

I. INNOVATION CHALLENGE COMPETITION

In 2020 the Department of Buildings launched the **Hack the Building Code Innovation Challenge** competition. The competition sought ideas for modernizing the construction process by improving buildings and keeping construction workers and the public safe. The Department's website provides a **list of the winning technologies**.

One of the competition's winning technologies is a self-contained air circulating sanitization system used in elevator cars. This Bulletin describes how self-contained air circulating sanitization systems that comply with the description and acceptance criteria of this Bulletin may be used as an alternative to the NYC Construction Codes.

In accordance with Administrative Code §28-113, acceptable equipment and materials must be used as prescribed by the Code or approved by the Commissioner. A registered design professional must determine when a self-contained air circulating sanitization system complies with this Bulletin.

II. BACKGROUND

The NYC Building, Mechanical, and Energy Construction Codes have several provisions related to air-conditioning which are applicable in elevator cabs. Air conditioning equipment in hoistways is limited to that which is directly related to the heating, ventilation and/or air conditioning of the elevator car. Self-contained air circulating sanitizing systems, which use filters and ultraviolet (UV) exposure to minimize contaminants in the air, may be used as prescribed in accordance with these provisions. However, the Code does not address the safe usage of UV light-emitting devices. Pursuant to AC-113.2.2 this Bulletin establishes criteria for the safe usage of self-contained air circulating sanitizing systems installed in elevator cabs as an alternative to the Code.

III. DESCRIPTION

Self-contained air circulating sanitization systems used in elevators consist of an air sterilization system employing HEPA filters and UV germicidal treatment technology. The system is a self-contained, semi-closed loop, custom air circulating sanitization system housed in a sealed metal box such that there is no exposure to the UVC light and installed at the outside wall or roof of an individual elevator cab. Air within the elevator cab is forcefully drawn to the upper wall or ceiling by negative

MELANIE E. LA ROCCA, Commissioner nyc.gov/buildings

BB 2021-015

Establishes acceptance criteria for self-contained air circulating treatment systems in elevator cars.

- Air conditioning for elevator cabs prescribed in the Code.
- Establishes listing requirement to UL 507 for UV use.
- Must comply with the NYC Energy Code for motor efficiency, de-energizes ventilation fans, max power consumption.
- Does not address efficacy.

IMAGING ROBOTS FOR FAÇADE INSPECTIONS

Winning Technology

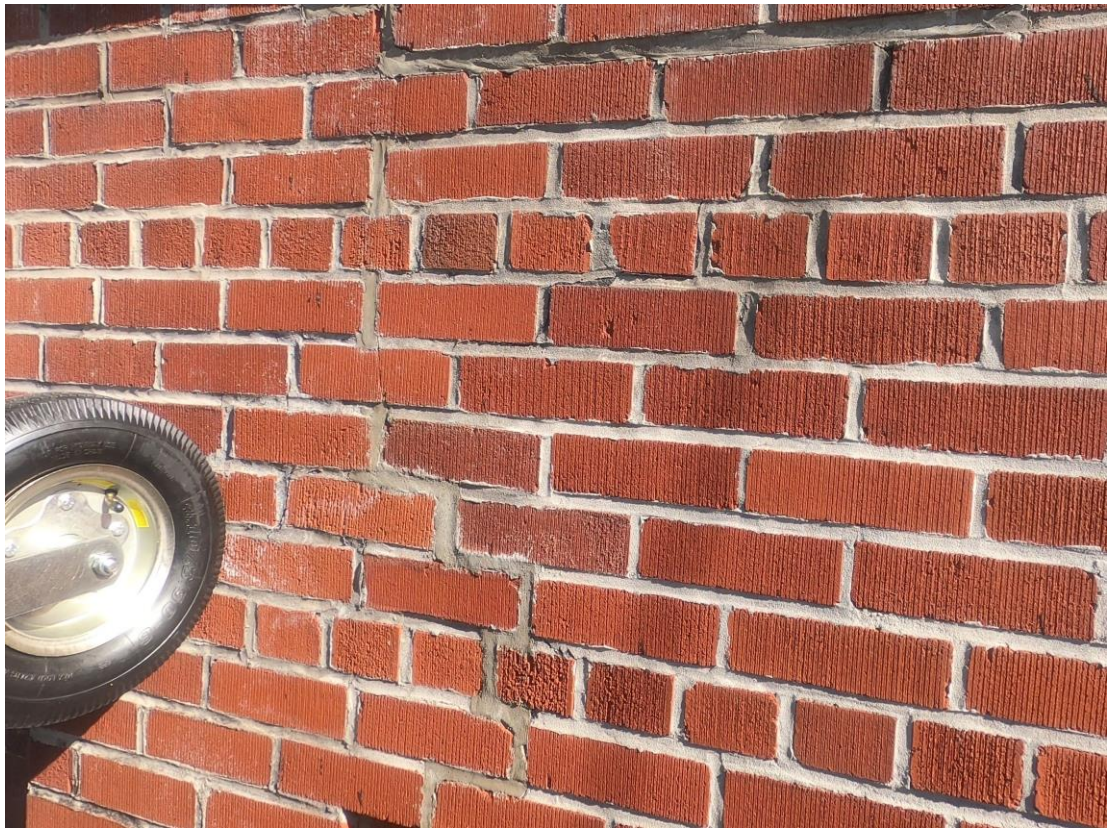
IMAGER ROBOT

by aRobotics, Co

a Robotics Company

Uncompromising commitment to quality

IMAGING ROBOTS FOR FAÇADE INSPECTIONS



SOURCE: arobotics.com

How it's used

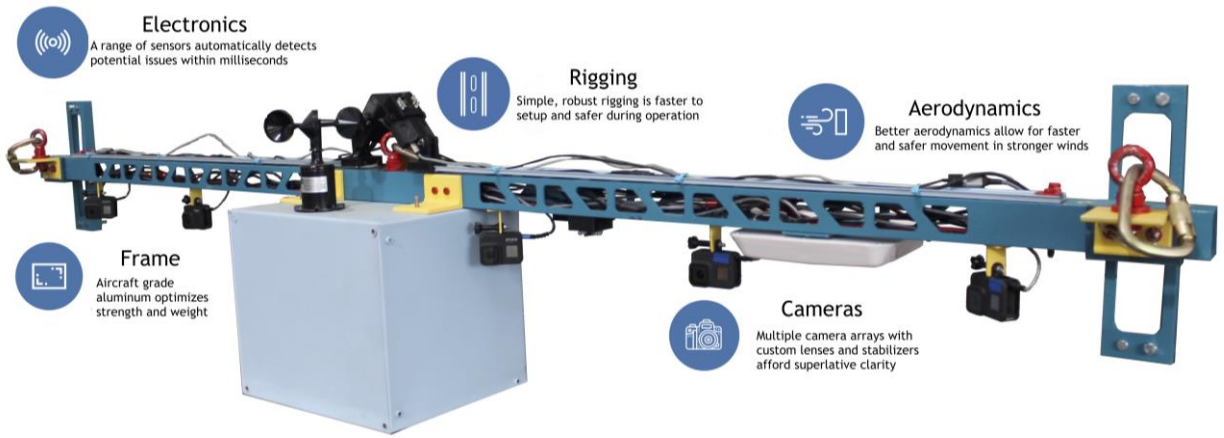
- Camera rig used to produce high resolution images of facades.
- Images are used for more thorough evaluations of facade conditions.
- Limited use as an aid for QEWI performing critical examination and inspection of the building's exterior walls as set forth by 1 RCNY 103-04.

IMAGING ROBOTS FOR FAÇADE INSPECTIONS

Description

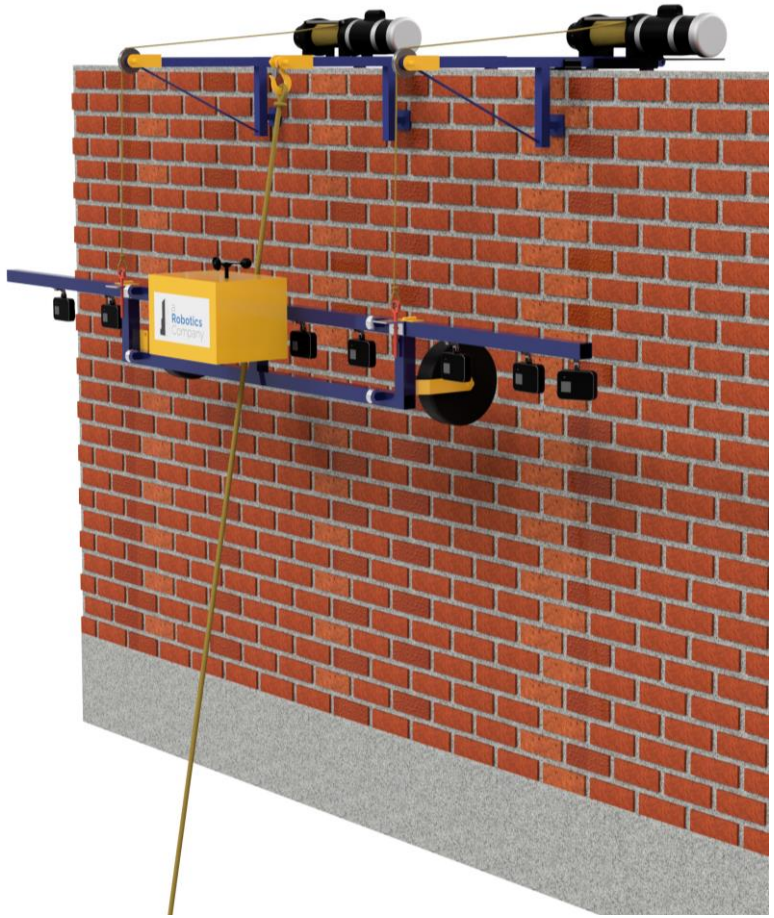
A machine made from a frame and multiple cameras used to photograph façade conditions.

- Secured to hoisting cables or rails, often with a mechanism for adjustable displacement from the building façade, in order to execute vertical drops.
- Offers high resolution and zoom photographic and video capabilities, as well as infrared and/or ultraviolet imaging.



SOURCE: arobotics.com

IMAGING ROBOTS FOR FAÇADE INSPECTIONS



SOURCE: arobotics.com

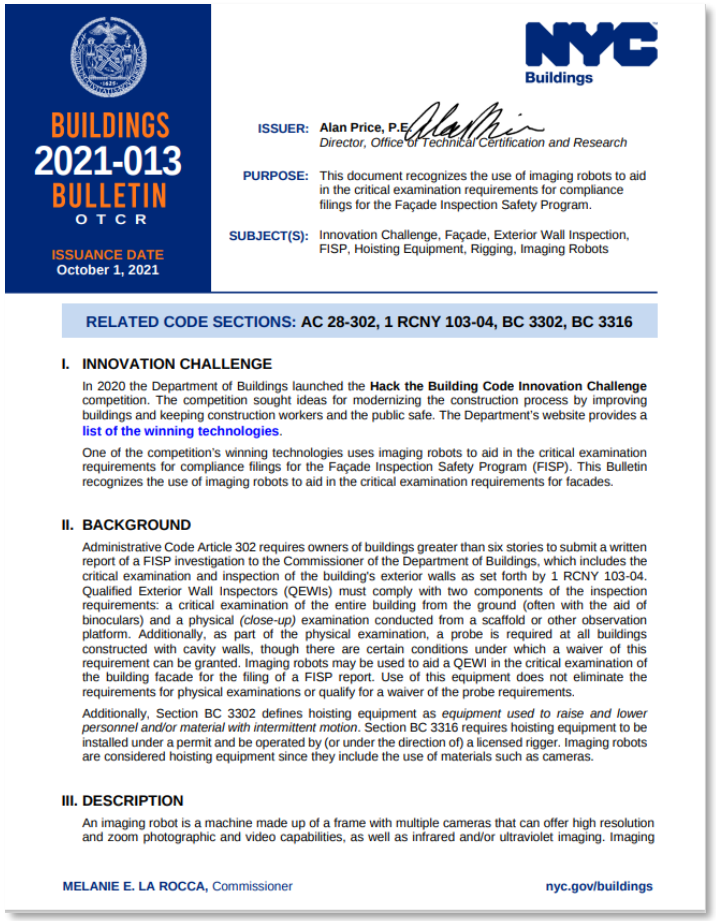
IMAGING ROBOTS FOR FAÇADE INSPECTIONS

SOURCE: arobotics.com

Benefits

- The photographs are up close and high resolution to better inform the QEWI of appropriate locations for the hands-on inspections.
- The flexibility of positioning of the robot will allow QEWIs different vantage points such as the top of a windowsill which allows the QEWI to pinpoint potentially hazardous conditions more quickly.
- Location data collected by the robot can satisfy mapping requirements for conditions classified as other than safe.

IMAGING ROBOTS FOR FAÇADE INSPECTIONS



BUILDINGS
2021-013
BULLETIN
OTCR

ISSUANCE DATE
October 1, 2021

NYC Buildings

ISSUER: Alan Price, P.E.
Director, Office of Technical Certification and Research

PURPOSE: This document recognizes the use of imaging robots to aid in the critical examination requirements for compliance filings for the Façade Inspection Safety Program.

SUBJECT(S): Innovation Challenge, Façade, Exterior Wall Inspection, FISP, Hoisting Equipment, Rigging, Imaging Robots

RELATED CODE SECTIONS: AC 28-302, 1 RCNY 103-04, BC 3302, BC 3316

I. INNOVATION CHALLENGE

In 2020 the Department of Buildings launched the **Hack the Building Code Innovation Challenge** competition. The competition sought ideas for modernizing the construction process by improving buildings and keeping construction workers and the public safe. The Department's website provides a **list of the winning technologies**.

One of the competition's winning technologies uses imaging robots to aid in the critical examination requirements for compliance filings for the Façade Inspection Safety Program (FISP). This Bulletin recognizes the use of imaging robots to aid in the critical examination requirements for facades.

II. BACKGROUND

Administrative Code Article 302 requires owners of buildings greater than six stories to submit a written report of a FISP investigation to the Commissioner of the Department of Buildings, which includes the critical examination and inspection of the building's exterior walls as set forth by 1 RCNY 103-04. Qualified Exterior Wall Inspectors (QEWIs) must comply with two components of the inspection requirements: a critical examination of the entire building from the ground (often with the aid of binoculars) and a physical *(close-up)* examination conducted from a scaffold or other observation platform. Additionally, as part of the physical examination, a probe is required at all buildings constructed with cavity walls, though there are certain conditions under which a waiver of this requirement can be granted. Imaging robots may be used to aid a QEWI in the critical examination of the building facade for the filing of a FISP report. Use of this equipment does not eliminate the requirements for physical examinations or qualify for a waiver of the probe requirements.

Additionally, Section BC 3302 defines hoisting equipment as *equipment used to raise and lower personnel and/or material with intermittent motion*. Section BC 3316 requires hoisting equipment to be installed under a permit and be operated by (or under the direction of) a licensed rigger. Imaging robots are considered hoisting equipment since they include the use of materials such as cameras.

III. DESCRIPTION

An imaging robot is a machine made up of a frame with multiple cameras that can offer high resolution and zoom photographic and video capabilities, as well as infrared and/or ultraviolet imaging. Imaging

MELANIE E. LA ROCCA, Commissioner

nyc.gov/buildings

BB 2021-013

Establishes guidelines for using imaging robots to aid in the critical examination requirements for compliance filings for the **Façade Inspection Safety Program (FISP)**.

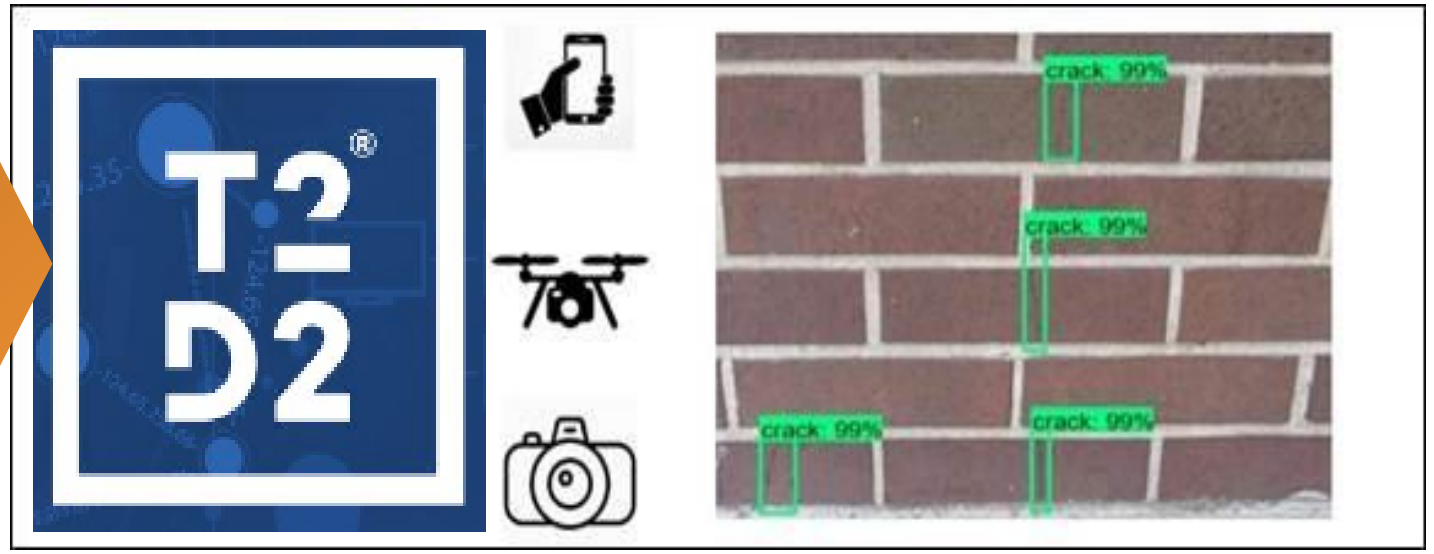
- Restricts imaging robots from satisfying physical examination requirements for compliance filings.
- Outlines permitting and rigging requirements in accordance with the NYC Construction Codes.

ARTIFICIAL INTELLIGENCE FOR FAÇADE INSPECTIONS

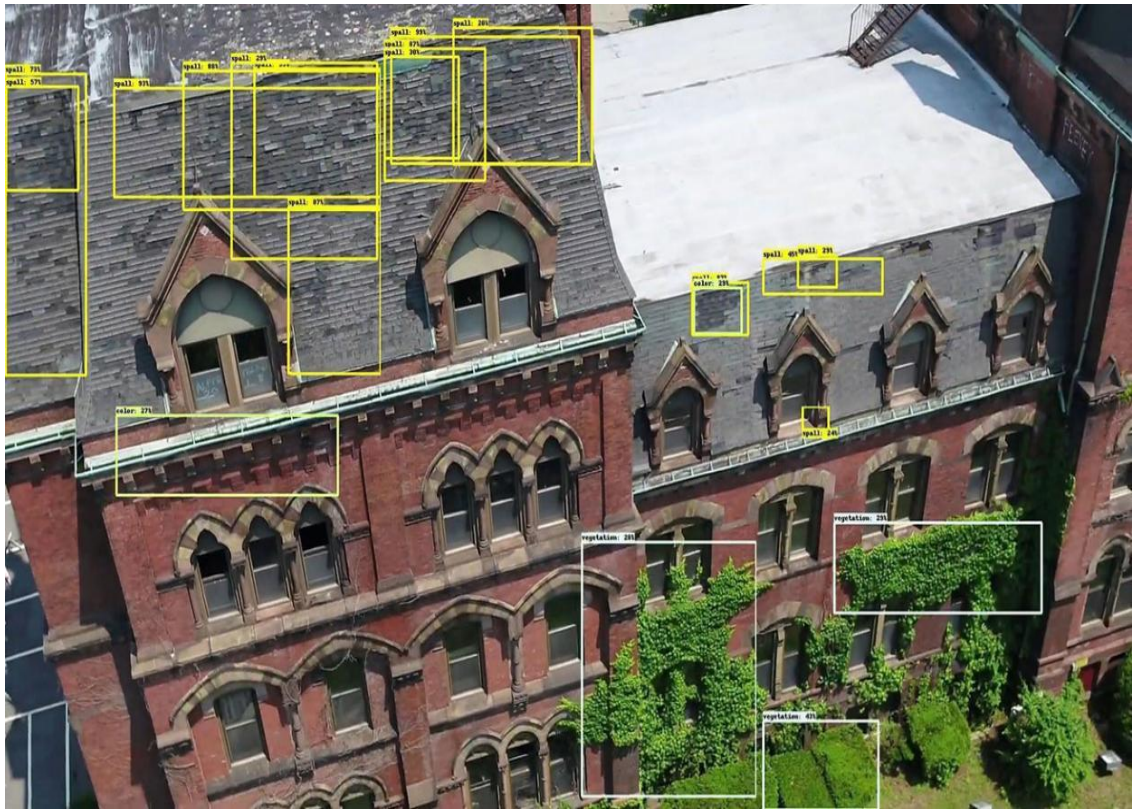
Winning Technology

T2D2.AI

by Thornton Tomasetti



ARTIFICIAL INTELLIGENCE FOR FAÇADE INSPECTIONS

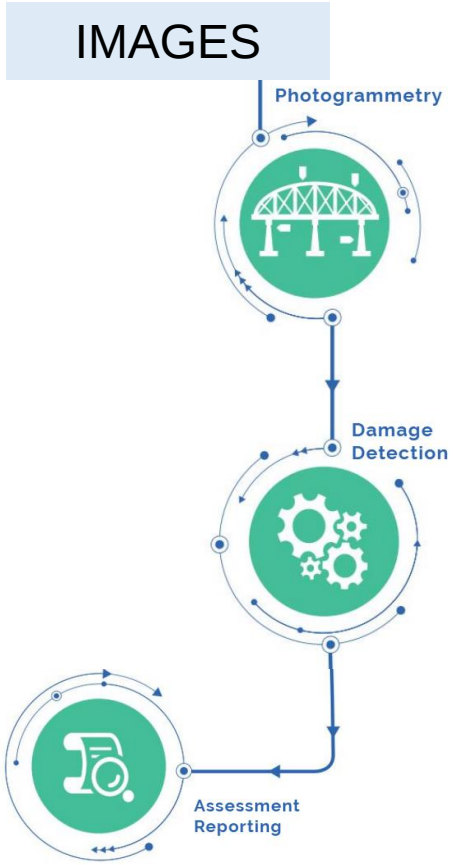


https://www.thorntontomasetti.com/capability/t2d2

How it's used

- Software used to visually analyze façade conditions, including identifying materials, detecting defects, reporting of conditions and maintaining records.
- Uses self-learning software.
- Supplements QEWI work during facade inspections as required by 28-302 and 1 RCNY 103-04.
- Supplements QEWI reporting responsibilities in accordance with 28-302 and 1 RCNY 103.04.

ARTIFICIAL INTELLIGENCE FOR FAÇADE INSPECTIONS

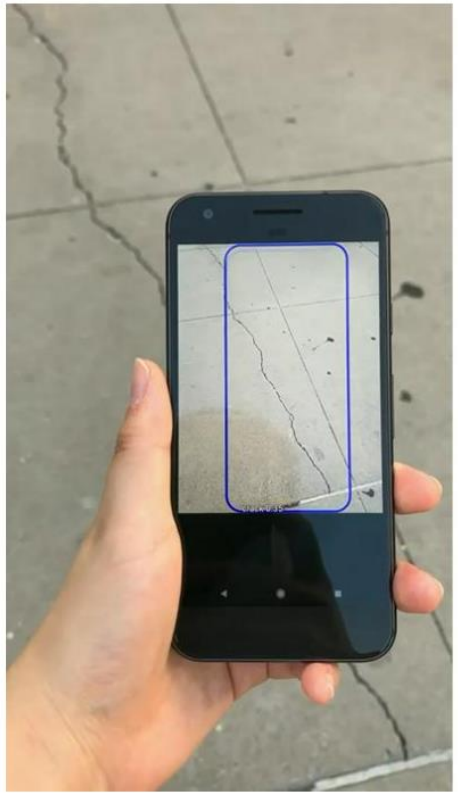


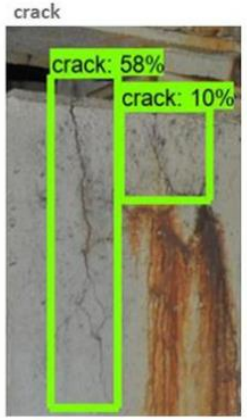
Description

Self-learning software platform for analyzing façade conditions during inspections.

- Images are imported to software.
- Software uses AI for analyzing inspection images and identifies facades materials such as brick, concrete, stone masonry, etc.
- Detects defects such as corrosions, cracked mortar joints, cracks, displaced masonry, etc.
- Maintains image records and generates reports for repair efforts.

ARTIFICIAL INTELLIGENCE FOR FAÇADE INSPECTIONS



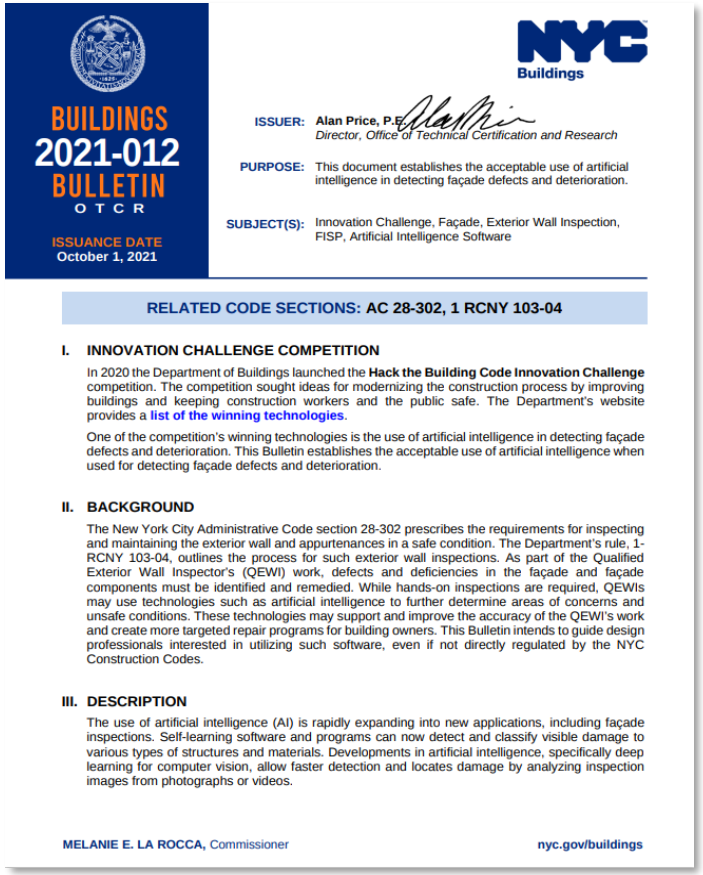


https://www.thorntontomasetti.com/capability/t2d2

Benefits

- Expedites condition assessments, saves time and money.
- Allows for more frequent assessments to detect and repair damages before it escalates.
- Supplements requirements for documentation, detection and classification.

ARTIFICIAL INTELLIGENCE FOR FAÇADE INSPECTIONS



BUILDINGS 2021-012 BULLETIN
OTCR
ISSUANCE DATE
October 1, 2021

NYC Buildings

ISSUER: Alan Price, P.E.
Director, Office of Technical Certification and Research

PURPOSE: This document establishes the acceptable use of artificial intelligence in detecting façade defects and deterioration.

SUBJECT(S): Innovation Challenge, Façade, Exterior Wall Inspection, FISP, Artificial Intelligence Software

RELATED CODE SECTIONS: AC 28-302, 1 RCNY 103-04

I. INNOVATION CHALLENGE COMPETITION

In 2020 the Department of Buildings launched the **Hack the Building Code Innovation Challenge** competition. The competition sought ideas for modernizing the construction process by improving buildings and keeping construction workers and the public safe. The Department's website provides a **list of the winning technologies**.

One of the competition's winning technologies is the use of artificial intelligence in detecting façade defects and deterioration. This Bulletin establishes the acceptable use of artificial intelligence when used for detecting façade defects and deterioration.

II. BACKGROUND

The New York City Administrative Code section 28-302 prescribes the requirements for inspecting and maintaining the exterior wall and appurtenances in a safe condition. The Department's rule, 1-RCNY 103-04, outlines the process for such exterior wall inspections. As part of the Qualified Exterior Wall Inspector's (QEWI) work, defects and deficiencies in the façade and façade components must be identified and remedied. While hands-on inspections are required, QEWIs may use technologies such as artificial intelligence to further determine areas of concerns and unsafe conditions. These technologies may support and improve the accuracy of the QEWI's work and create more targeted repair programs for building owners. This Bulletin intends to guide design professionals interested in utilizing such software, even if not directly regulated by the NYC Construction Codes.

III. DESCRIPTION

The use of artificial intelligence (AI) is rapidly expanding into new applications, including façade inspections. Self-learning software and programs can now detect and classify visible damage to various types of structures and materials. Developments in artificial intelligence, specifically deep learning for computer vision, allow faster detection and locates damage by analyzing inspection images from photographs or videos.

MELANIE E. LA ROCCA, Commissioner

nyc.gov/buildings

BB 2021-012

Establishes guidelines for the use of artificial intelligence software used for detecting facade defects and deterioration.

- AI software may support and improve the accuracy of the QEWI's work and create more targeted repair programs for building owners.
- AI may not supplant inspection requirements from 28-302, 1 RCNY 103-04 or QEWI requirements for hands-on inspections.

CAST-IN-PLACE THREADED ANCHOR

Winning Technology

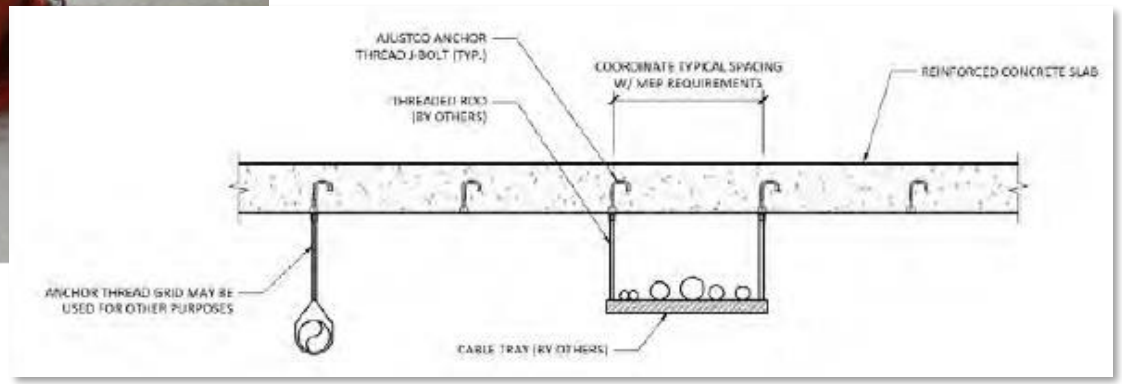
ANCHOR THREAD

by Adjustco, LLC

CAST-IN-PLACE THREADED ANCHOR

How it's used

- Anchoring points for unenclosed perimeter applications in accordance with Section BC 3308.9.
- MEP (Mechanical, Electrical and Plumbing) anchoring points, and for personal fall protection (not covered in the BB).



CAST-IN-PLACE THREADED ANCHOR

Description

Embedded anchor installed with concrete formwork and cast into concrete. Components include:

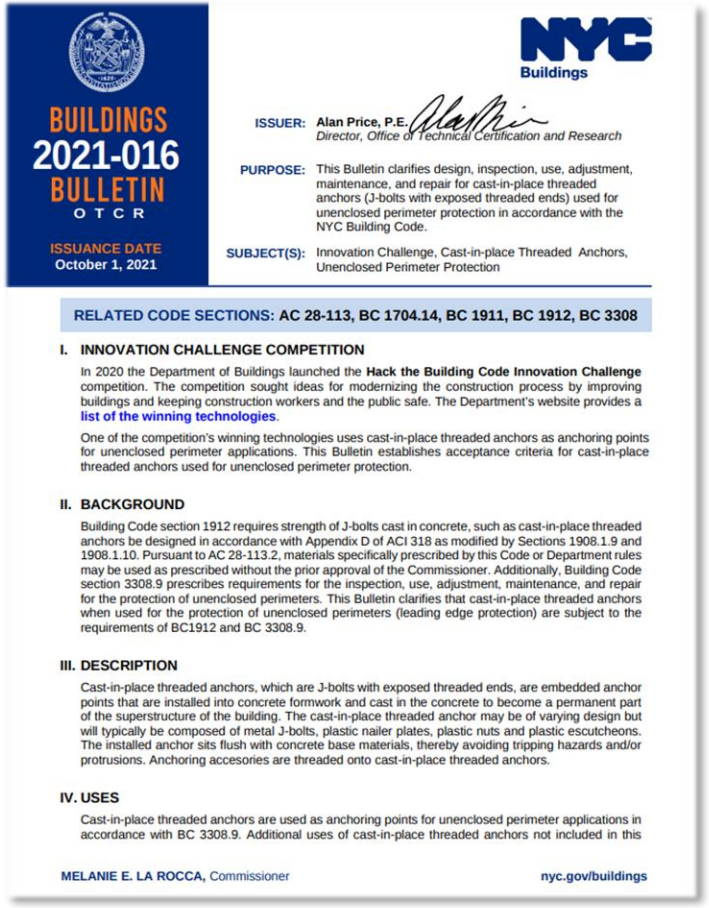
- J-bolt anchor and thread, made with Grade 5 zinc or 316 SS.
- Plastic escutcheon, lock nut, and lock plate (nailer plate).
- Attachments may include eye nuts (for leading edge cables), couplings (for MEP connections), and collar nuts and bushings (for personal fall protection).

CAST-IN-PLACE THREADED ANCHOR

Benefits

- Anchors sit flush with concrete base material, thereby avoiding tripping hazards and protrusions.
- Permanent anchor points available for re-use.
- Eliminates silica dust, noise pollution, and other negative effects associated with concrete drilling procedures and post-installed anchors.
- Multiple attachment possibilities.

CAST-IN-PLACE THREADED ANCHOR



BUILDINGS
2021-016
BULLETIN
OTCR

ISSUANCE DATE
October 1, 2021

NYC Buildings

ISSUER: Alan Price, P.E.
Director, Office of Technical Certification and Research

PURPOSE: This Bulletin clarifies design, inspection, use, adjustment, maintenance, and repair for cast-in-place threaded anchors (J-bolts with exposed threaded ends) used for unenclosed perimeter protection in accordance with the NYC Building Code.

SUBJECT(S): Innovation Challenge, Cast-in-place Threaded Anchors, Unenclosed Perimeter Protection

RELATED CODE SECTIONS: AC 28-113, BC 1704.14, BC 1911, BC 1912, BC 3308

I. INNOVATION CHALLENGE COMPETITION

In 2020 the Department of Buildings launched the **Hack the Building Code Innovation Challenge** competition. The competition sought ideas for modernizing the construction process by improving buildings and keeping construction workers and the public safe. The Department's website provides a list of the winning technologies.

One of the competition's winning technologies uses cast-in-place threaded anchors as anchoring points for unenclosed perimeter applications. This Bulletin establishes acceptance criteria for cast-in-place threaded anchors used for unenclosed perimeter protection.

II. BACKGROUND

Building Code section 1912 requires strength of J-bolts cast in concrete, such as cast-in-place threaded anchors be designed in accordance with Appendix D of ACI 318 as modified by Sections 1908.1.9 and 1908.1.10. Pursuant to AC 28-113.2, materials specifically prescribed by this Code or Department rules may be used as prescribed without the prior approval of the Commissioner. Additionally, Building Code section 3308.9 prescribes requirements for the inspection, use, adjustment, maintenance, and repair for the protection of unenclosed perimeters. This Bulletin clarifies that cast-in-place threaded anchors when used for the protection of unenclosed perimeters (leading edge protection) are subject to the requirements of BC1912 and BC 3308.9.

III. DESCRIPTION

Cast-in-place threaded anchors, which are J-bolts with exposed threaded ends, are embedded anchor points that are installed into concrete formwork and cast in the concrete to become a permanent part of the superstructure of the building. The cast-in-place threaded anchor may be of varying design but will typically be composed of metal J-bolts, plastic nailer plates, plastic nuts and plastic escutcheons. The installed anchor sits flush with concrete base materials, thereby avoiding tripping hazards and/or protrusions. Anchoring accesories are threaded onto cast-in-place threaded anchors.

IV. USES

Cast-in-place threaded anchors are used as anchoring points for unenclosed perimeter applications in accordance with BC 3308.9. Additional uses of cast-in-place threaded anchors not included in this

MELANIE E. LA ROCCA, Commissioner

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BB 2021-016

Clarifies that cast-in-place threaded anchors, when used for the protection of unenclosed perimeters (leading edge protection) are subject to the requirements of BC 1912 and BC 3308.9.

- BC 1912 requires strength of J-bolts cast in concrete be designed in accordance with Appendix D of ACI 318 as modified by BC 1908.1.9 and 1908.1.10.
- BC 3308.0 prescribes requirements for the inspection use, adjustment, maintenance, and repair for the protection of unenclosed perimeters.

HACK THE BUILDING CODE WINNERS

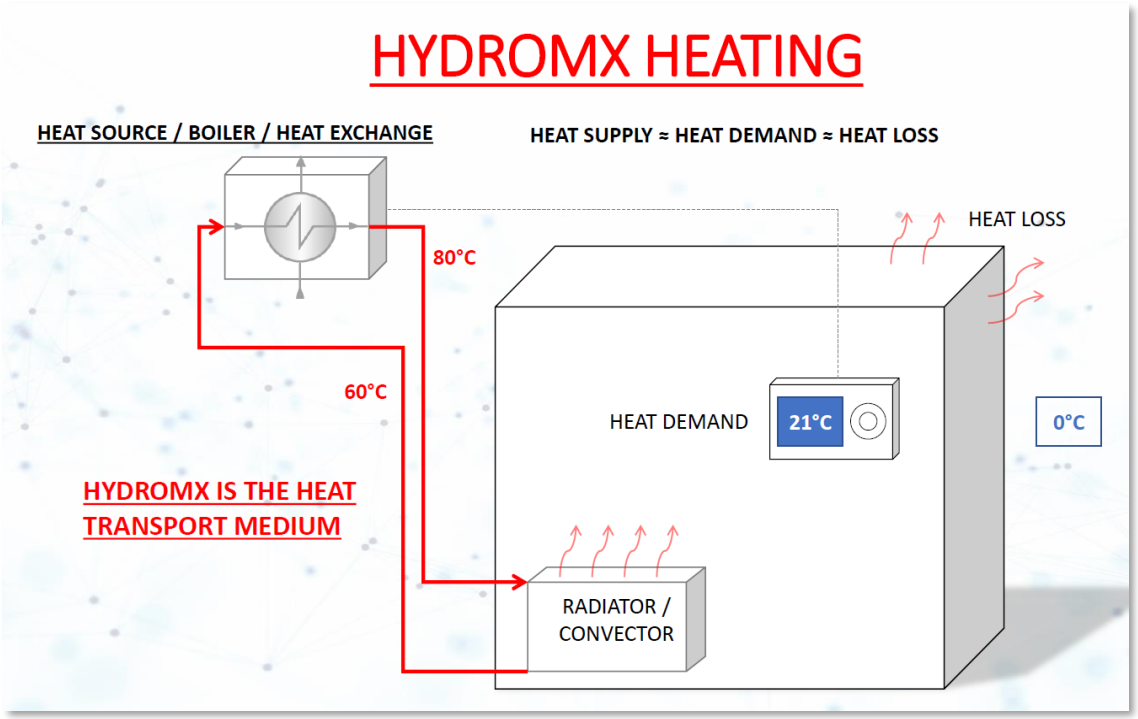
HEAT TRANSFER NANOFLUID

Winning Technology

HYDROMX

by Hydromx, Inc.

HEAT TRANSFER NANOFLUID



How it's used

- Replaces conventional heat transfer fluid with nano-particle technology (nanofluids) in closed-loop HVAC systems.
- Nanofluids improve heat transfer performance and reduces energy consumption.
- Designed to extend equipment life and reduce maintenance costs.

HEAT TRANSFER NANOFLUID

Description

A class of nanotechnology-based heat transfer fluid which disperses nanometer-sized particles (typically ranging from 1-100 nm) in traditional heat transfer fluids.

- Heat transfer nanofluids are used with hydronic closed-loop HVAC systems in buildings, including in any secondary water system, water boilers, chillers, dry coolers, CRAC units, and run-around loops.

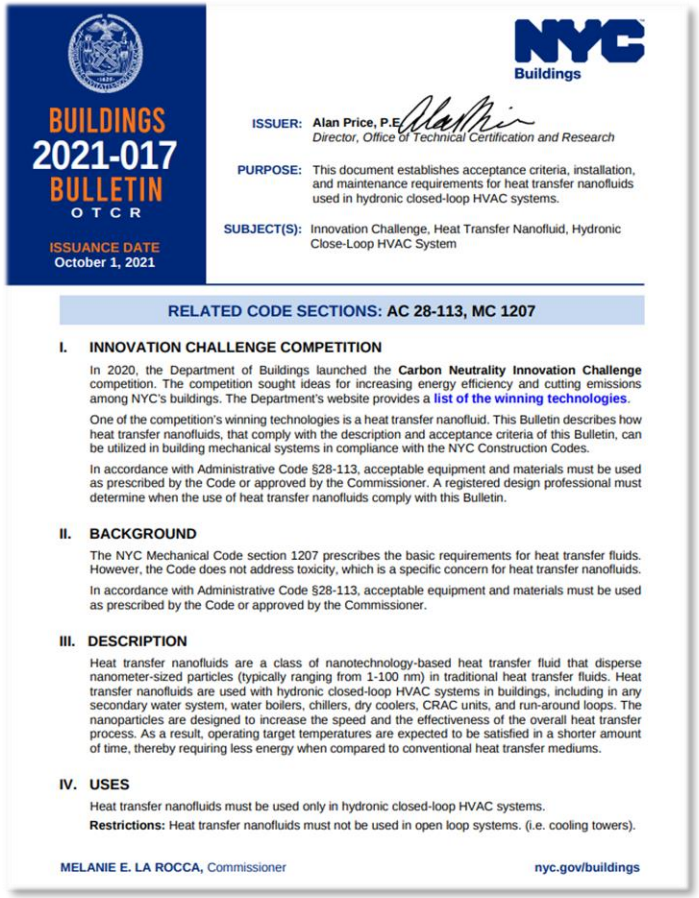
HEAT TRANSFER NANOFLUID

HYDROMX®
Energy Saving Solution

Benefits

- Increase speed and the effectiveness of the overall heat transfer process.
- Operating target temperatures are expected to be satisfied in a shorter amount of time, thereby requiring less energy when compared to conventional heat transfer mediums.

HEAT TRANSFER NANOFLUID



BUILDINGS
2021-017
BULLETIN
OTCR

ISSUANCE DATE
October 1, 2021

NYC Buildings

ISSUER: Alan Price, P.E.
Director, Office of Technical Certification and Research

PURPOSE: This document establishes acceptance criteria, installation, and maintenance requirements for heat transfer nanofluids used in hydronic closed-loop HVAC systems.

SUBJECT(S): Innovation Challenge, Heat Transfer Nanofluid, Hydronic Close-Loop HVAC System

RELATED CODE SECTIONS: AC 28-113, MC 1207

I. INNOVATION CHALLENGE COMPETITION

In 2020, the Department of Buildings launched the **Carbon Neutrality Innovation Challenge** competition. The competition sought ideas for increasing energy efficiency and cutting emissions among NYC's buildings. The Department's website provides a **list of the winning technologies**.

One of the competition's winning technologies is a heat transfer nanofluid. This Bulletin describes how heat transfer nanofluids, that comply with the description and acceptance criteria of this Bulletin, can be utilized in building mechanical systems in compliance with the NYC Construction Codes.

In accordance with Administrative Code §28-113, acceptable equipment and materials must be used as prescribed by the Code or approved by the Commissioner. A registered design professional must determine when the use of heat transfer nanofluids comply with this Bulletin.

II. BACKGROUND

The NYC Mechanical Code section 1207 prescribes the basic requirements for heat transfer fluids. However, the Code does not address toxicity, which is a specific concern for heat transfer nanofluids.

In accordance with Administrative Code §28-113, acceptable equipment and materials must be used as prescribed by the Code or approved by the Commissioner.

III. DESCRIPTION

Heat transfer nanofluids are a class of nanotechnology-based heat transfer fluid that disperse nanometer-sized particles (typically ranging from 1-100 nm) in traditional heat transfer fluids. Heat transfer nanofluids are used with hydronic closed-loop HVAC systems in buildings, including in any secondary water system, water boilers, chillers, dry coolers, CRAC units, and run-around loops. The nanoparticles are designed to increase the speed and the effectiveness of the overall heat transfer process. As a result, operating target temperatures are expected to be satisfied in a shorter amount of time, thereby requiring less energy when compared to conventional heat transfer mediums.

IV. USES

Heat transfer nanofluids must be used only in hydronic closed-loop HVAC systems.

Restrictions: Heat transfer nanofluids must not be used in open loop systems. (i.e. cooling towers).

MELANIE E. LA ROCCA, Commissioner

nyc.gov/buildings

BB 2021-017

Establishes acceptance criteria, and installation and maintenance requirements for heat transfer nanofluids used in hydronic closed-loop HVAC systems.

- MC 1207 prescribes basic requirements for heat transfer fluids but fails to prescribe requirements for heat transfer nanofluids.
- Nanofluids are known to have toxic properties. Acceptable nanofluids must have NSF HT1 and HT2 designation for safe handling and operation.

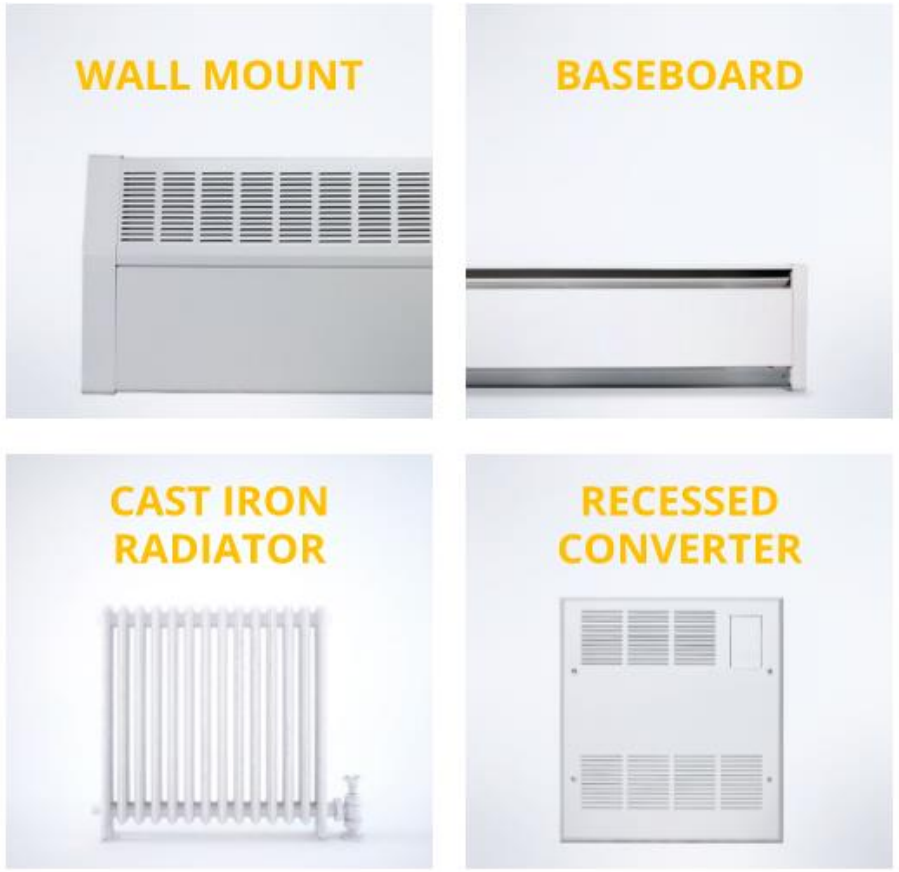
SPACE HEATING DISTRIBUTION ENERGY MANAGEMENT SYSTEM

Winning Technology

THE COZY

by Radiator Labs, Inc.

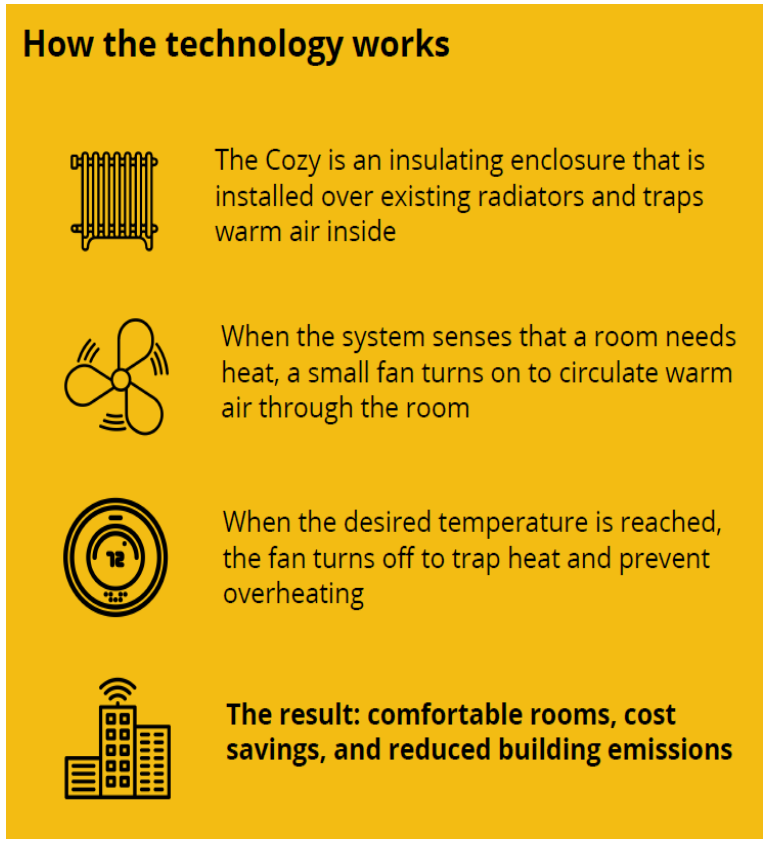
SPACE HEATING DISTRIBUTION ENERGY MANAGEMENT SYSTEM



How it's used

- Space heat regulating system designed to improve thermal comfort and optimize performance. Works with steam and hydronic space heating systems.
- Uses Thermostatic Radiator Enclosures (TRE's) to control temperatures in tenant spaces.
- Uses boiler controller to optimize heating system performance.

SPACE HEATING DISTRIBUTION ENERGY MANAGEMENT SYSTEM



Description

Space heating distribution energy management systems reduce energy consumption and improve the thermal comfort of spaces heated by steam radiators.

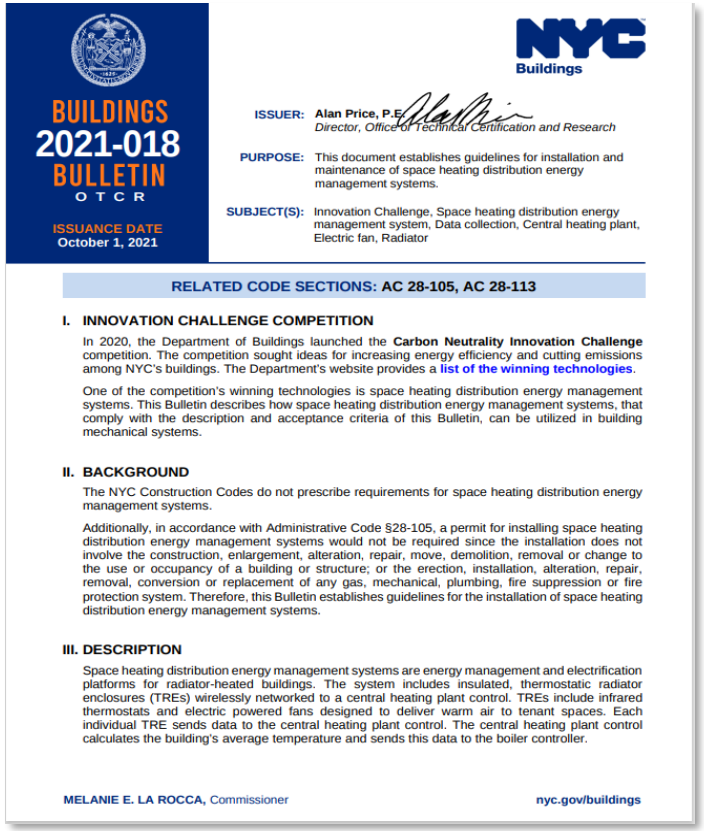
- Insulated, thermostatic radiator enclosures (TREs) regulate temperatures for building occupants by using infrared thermostats an electric powered fans.
- TREs are wirelessly networked to a central heating plant control.
- The central heating plant calculates the building's average temperature and sends this data to the boiler controller.

SPACE HEATING DISTRIBUTION ENERGY MANAGEMENT SYSTEM

Benefits

- Traps excessive warm air.
- Tenants control apartment temperatures.
- Provides heating cost savings and heating fuel consumption reduction.
- Real time data analytics including building wide information on radiator temperatures, room temperatures and steam trap health.
- Improves steam distribution and aids with identifying problems in the system.
- Permits and contractors are not required for installation.

SPACE HEATING DISTRIBUTION ENERGY MANAGEMENT SYSTEM



BUILDINGS 2021-018 BULLETIN
OTCR
ISSUANCE DATE
October 1, 2021

NYC Buildings

ISSUER: Alan Price, P.E.
Director, Office of Technical Certification and Research

PURPOSE: This document establishes guidelines for installation and maintenance of space heating distribution energy management systems.

SUBJECT(S): Innovation Challenge, Space heating distribution energy management system, Data collection, Central heating plant, Electric fan, Radiator

RELATED CODE SECTIONS: AC 28-105, AC 28-113

I. INNOVATION CHALLENGE COMPETITION

In 2020, the Department of Buildings launched the **Carbon Neutrality Innovation Challenge** competition. The competition sought ideas for increasing energy efficiency and cutting emissions among NYC's buildings. The Department's website provides a list of the winning technologies.

One of the competition's winning technologies is space heating distribution energy management systems. This Bulletin describes how space heating distribution energy management systems, that comply with the description and acceptance criteria of this Bulletin, can be utilized in building mechanical systems.

II. BACKGROUND

The NYC Construction Codes do not prescribe requirements for space heating distribution energy management systems.

Additionally, in accordance with Administrative Code §28-105, a permit for installing space heating distribution energy management systems would not be required since the installation does not involve the construction, enlargement, alteration, repair, move, demolition, removal or change to the use or occupancy of a building or structure; or the erection, installation, alteration, repair, removal, conversion or replacement of any gas, mechanical, plumbing, fire suppression or fire protection system. Therefore, this Bulletin establishes guidelines for the installation of space heating distribution energy management systems.

III. DESCRIPTION

Space heating distribution energy management systems are energy management and electrification platforms for radiator-heated buildings. The system includes insulated, thermostatic radiator enclosures (TREs) wirelessly networked to a central heating plant control. TREs include infrared thermostats and electric powered fans designed to deliver warm air to tenant spaces. Each individual TRE sends data to the central heating plant control. The central heating plant control calculates the building's average temperature and sends this data to the boiler controller.

MELANIE E. LA ROCCA, Commissioner nyc.gov/buildings

BB 2021-018

Establishes guidelines for installation and maintenance of space heating distribution energy management systems.

- The NYC Construction Codes do not prescribe requirements for space heating distribution energy management systems. Their use does not require approval or permit.
- Guidelines established in the bulletin include installation and maintenance recommendations.

TRANSPARENT WINDOW INSULATION PANELS

Winning Technology

WINDOWSKIN
by Wex Energy, LLC.

TRANSPARENT WINDOW INSULATION PANELS

Appropriate Uses

- Window panels designed to reduce conductive and convective thermal energy losses by creating lower temperature differentials between the windowpane area and conditioned air.
- Residential and commercial applications.
- Used with rectangular shaped windows including double-hung, slider, fixed, casement awning and hopper types.

TRANSPARENT WINDOW INSULATION PANELS

SOURCE: wexenergy.com

Description

Completely transparent custom-fit window insulation system that mounts onto existing windows,

- CC1 light-transmitting plastic material.
- Snaps onto window glazing via tabs located in each corner.
- Windows open and close as designed by the window manufacturer. When installed the WindowSkin doesn't impede emergency egress.

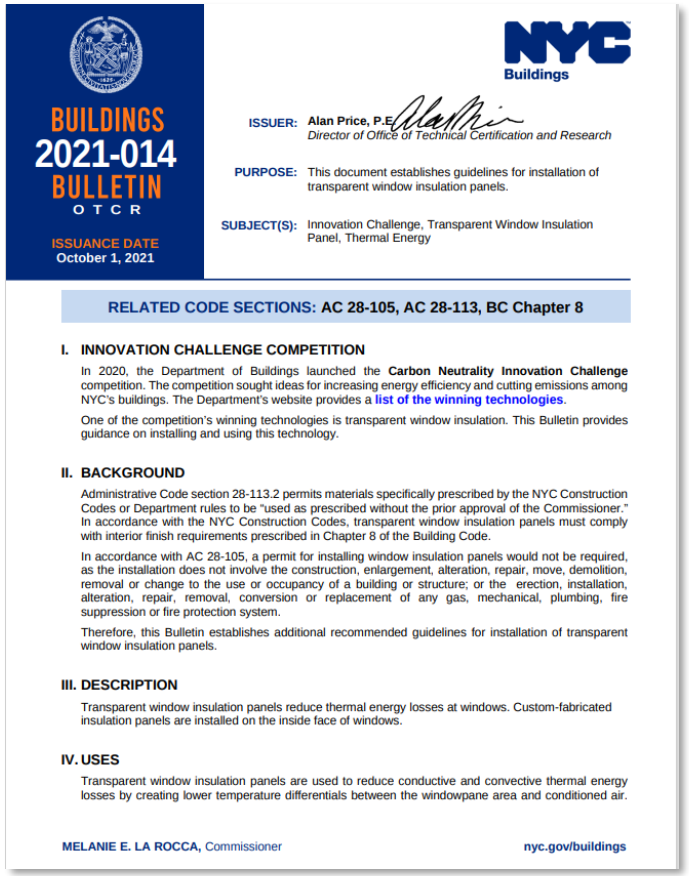
TRANSPARENT WINDOW INSULATION PANELS

SOURCE: wexenergyt.com

Benefits

- Intended to improve energy efficiency and indoor comfort.
- Intended to have shorter ROI than new window installations.
- Easy to install.

TRANSPARENT WINDOW INSULATION PANELS



BUILDINGS
2021-014
BULLETIN
OTCR

ISSUANCE DATE
October 1, 2021

NYC Buildings

ISSUER: Alan Price, P.E.
Director of Office of Technical Certification and Research

PURPOSE: This document establishes guidelines for installation of transparent window insulation panels.

SUBJECT(S): Innovation Challenge, Transparent Window Insulation Panel, Thermal Energy

RELATED CODE SECTIONS: AC 28-105, AC 28-113, BC Chapter 8

I. INNOVATION CHALLENGE COMPETITION

In 2020, the Department of Buildings launched the **Carbon Neutrality Innovation Challenge** competition. The competition sought ideas for increasing energy efficiency and cutting emissions among NYC's buildings. The Department's website provides a **list of the winning technologies**.

One of the competition's winning technologies is transparent window insulation. This Bulletin provides guidance on installing and using this technology.

II. BACKGROUND

Administrative Code section 28-113.2 permits materials specifically prescribed by the NYC Construction Codes or Department rules to be "used as prescribed without the prior approval of the Commissioner." In accordance with the NYC Construction Codes, transparent window insulation panels must comply with interior finish requirements prescribed in Chapter 8 of the Building Code.

In accordance with AC 28-105, a permit for installing window insulation panels would not be required, as the installation does not involve the construction, enlargement, alteration, repair, move, demolition, removal or change to the use or occupancy of a building or structure; or the erection, installation, alteration, repair, removal, conversion or replacement of any gas, mechanical, plumbing, fire suppression or fire protection system.

Therefore, this Bulletin establishes additional recommended guidelines for installation of transparent window insulation panels.

III. DESCRIPTION

Transparent window insulation panels reduce thermal energy losses at windows. Custom-fabricated insulation panels are installed on the inside face of windows.

IV. USES

Transparent window insulation panels are used to reduce conductive and convective thermal energy losses by creating lower temperature differentials between the windowpane area and conditioned air.

MELANIE E. LA ROCCA, Commissioner

nyc.gov/buildings

BB 2021-014

Establishes guidelines for the installation of transparent window insulation panels.

- Establishes that approval and permit is not required for installation.
- Establishes guideline for installation including recommendations for installing per manufacturer's instructions, must not interfere with window functionality and emergency access, trained installer is not required.

ZINC-AIR ENERGY STORAGE SYSTEM

Winning Technology

ZINC8

by Energy Solutions

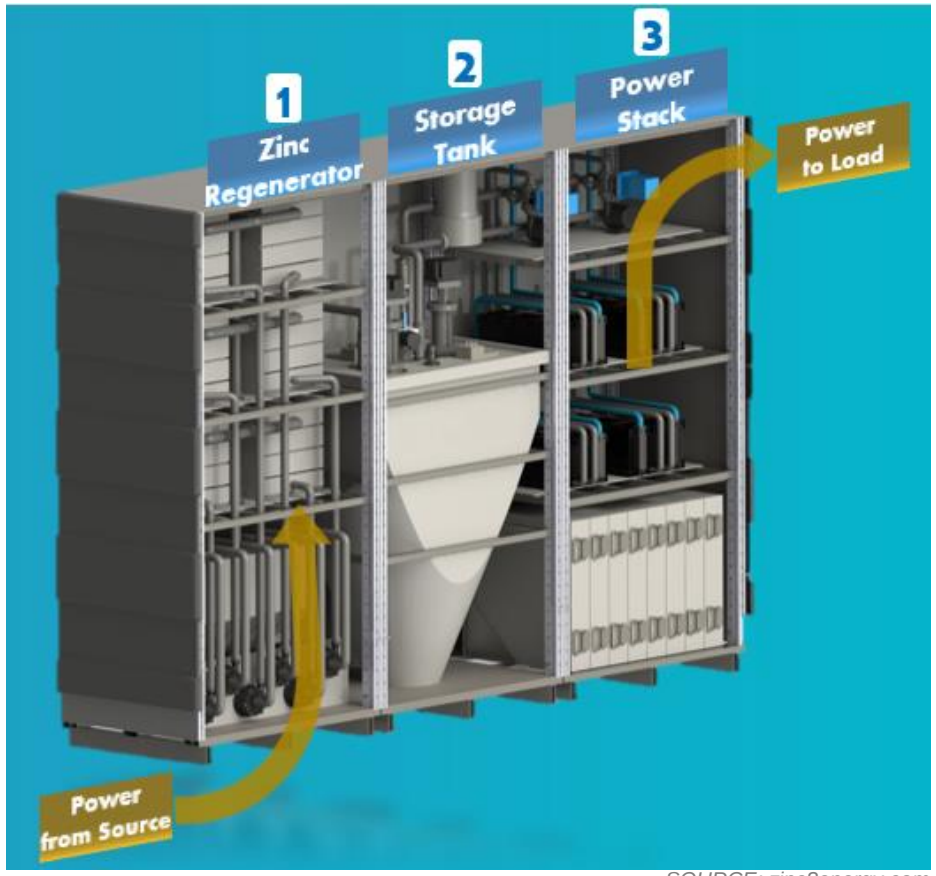
ZINC-AIR ENERGY STORAGE SYSTEM

SOURCE: zinc8energy.com

Appropriate Uses

- Stores energy from grid or local renewable source where it can be used at a later time.
- Peak-shaving, demand response, backup, and local demand.

ZINC-AIR ENERGY STORAGE SYSTEM



SOURCE: zinc8energy.com

Description

Energy storage system that uses zinc and air as fuel. The system has 3 parts.

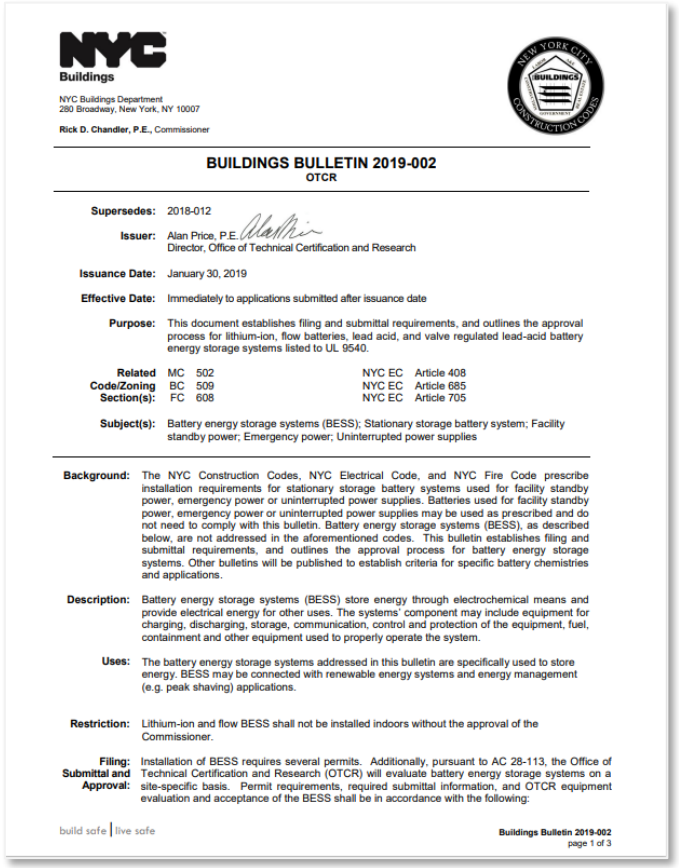
- Zinc Regenerator where zinc particles are generated by power source; oxygen is released.
- Storage tank stores and maintains zinc particles in electrolyte.
- Power stack recombines zinc particles with oxygen to generate electricity.

ZINC-AIR ENERGY STORAGE SYSTEM

Benefits

- Stable supply chain/materials.
- Intended to maintain capacity over time.
- Reduced risk of thermal runaway.
- Energy capacity easily extended by adding larger fuel tank.

ZINC-AIR ENERGY STORAGE SYSTEM



NYC Buildings

NYC Buildings Department
280 Broadway, New York, NY 10007

Rick D. Chandler, P.E., Commissioner

BUILDINGS BULLETIN 2019-002
OTCR

Supersedes: 2018-012

Issuer: Alan Price, P.E.
Director, Office of Technical Certification and Research

Issuance Date: January 30, 2019

Effective Date: Immediately to applications submitted after issuance date

Purpose: This document establishes filing and submittal requirements, and outlines the approval process for lithium-ion, flow batteries, lead acid, and valve regulated lead-acid battery energy storage systems listed to UL 9540.

Related Code/Zoning Section(s):

MC	502	NYC EC	Article 408
BC	509	NYC EC	Article 685
FC	608	NYC EC	Article 705

Subject(s): Battery energy storage systems (BESS); Stationary storage battery system; Facility standby power; Emergency power; Uninterrupted power supplies

Background: The NYC Construction Codes, NYC Electrical Code, and NYC Fire Code prescribe installation requirements for stationary storage battery systems used for facility standby power, emergency power or uninterrupted power supplies. Batteries used for facility standby power, emergency power or uninterrupted power supplies may be used as prescribed and do not need to comply with this bulletin. Battery energy storage systems (BESS), as described below, are not addressed in the aforementioned codes. This bulletin establishes filing and submittal requirements, and outlines the approval process for battery energy storage systems. Other bulletins will be published to establish criteria for specific battery chemistries and applications.

Description: Battery energy storage systems (BESS) store energy through electrochemical means and provide electrical energy for other uses. The systems' component may include equipment for charging, discharging, storage, communication, control and protection of the equipment, fuel, containment and other equipment used to properly operate the system.

Uses: The battery energy storage systems addressed in this bulletin are specifically used to store energy. BESS may be connected with renewable energy systems and energy management (e.g. peak shaving) applications.

Restriction: Lithium-ion and flow BESS shall not be installed indoors without the approval of the Commissioner.

Filing: Submittal and Approval: Installation of BESS requires several permits. Additionally, pursuant to AC 28-113, the Office of Technical Certification and Research (OTCR) will evaluate battery energy storage systems on a site-specific basis. Permit requirements, required submittal information, and OTCR equipment evaluation and acceptance of the BESS shall be in accordance with the following:

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Buildings Bulletin 2019-002
page 1 of 3

BB 2019-002

Establishes filing and submittal requirements for energy storage systems as an alternative material.

- Existing bulletin used for zinc-air energy storage technology.
- ESS must be evaluated for site-specific approval.
- Also outlines approval process.


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