QwikProducts®
by Mainstream Engineering

Qwik**Pad**® For Condensers

Rooftop Applications

QwikProducts
Business Development Team
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2024

Mainstream Engineering Corporation • 200 Yellow Place • Rockledge, Florida 32955 • 321-631-3550

- Small business incorporated in 1986

- 200+ employees

- Mechanical, chemical, electrical, materials and aerospace engineers

- 85,000 ft^2 facility in Rockledge, FL

- Eight-building campus

- Laboratories: electric power, electronics, materials, nanotube, physical and analytical chemistry, thermal, fuels, internal combustion engines

- Manufacturing: 3- and 5- axis CNC and manual mills, CNC and manual lathes, grinders, sheet metal, plastic injection molding, rotomolding, welding and painting

- Brands: QwikProducts, Mainstream Marine, EPATest.com, and more!

1 - ENGINEERING OFFICES
2 - RESEARCH & DEVELOPMENT
3 - RESEARCH & DEVELOPMENT
4 - PRODUCTION
5 - PRODUCT DEVELOPMENT
5a - MAINSTREAM EBEAM
6 - CONTROLLED-ATMOSPHERE BRAZING FACILITY
7 - SHEET METAL FABRICATION
8 - ROTOMOLD PRODUCTION

Capabilities

- **Basic Research, Applied Research & Product Development**
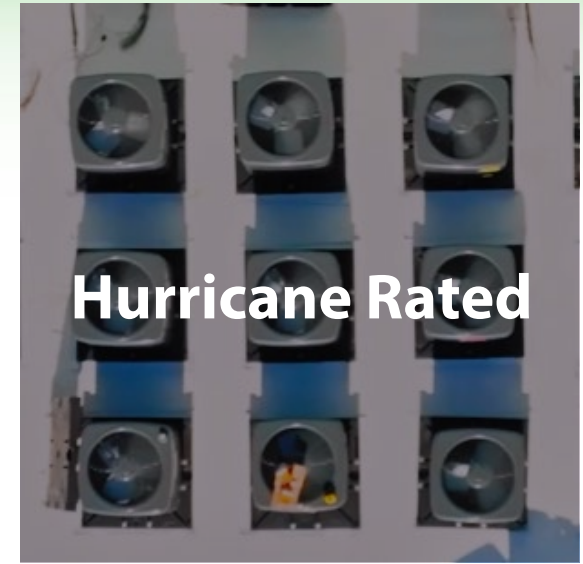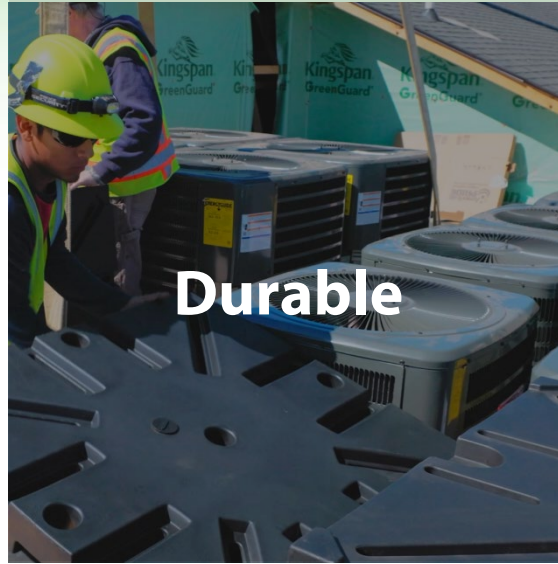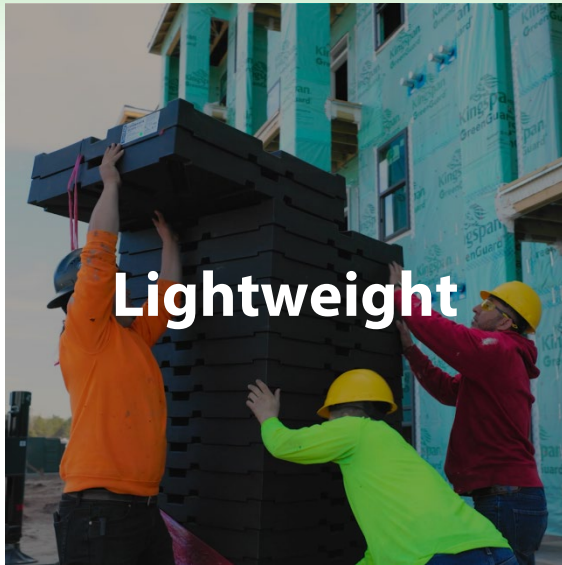- **Transition from Research to Production**
- **Manufacture Advanced Products**

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QwikPad® For Condensers

Made in the USA

Designed, Manufactured, and Shipped from Rockledge, Fl

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Qwik**Pad**® For Condensers

Lightweight

Durable

Hurricane Rated

Specifications	QT8036	QT8040
Dimensions	36" x 36" x 4"	40" x 40" x 4
Material	Linear Low Density Polyethylene (LLDPE)	Linear Low Density Polyethylene (LLDPE)
Pad Weight (Empty)	29 lb	35 lb
Pad Weight (Full)	163 lb	203 lb
Maximum Condensing Unit Size	32" x 32"	36" x 36"

QwikPad® For Condensers

240 Unit Rooftop Install in Houston, TX

Architect
JHP Architecture
Contractor
Block Construction

▸ **Hurricane Rated** for winds up to 180 mph

▸ **Durable** UV-resistant with all stainless steel hardware

▸ **Lightweight** for transport and 1-man handling (29lbs unfilled and 163lbs filled)

▸ **Just Add Water!** The water reacts with a gelling agent inside the pad increasing the overall weight

Protected by U.S. Patent #10,408,493, #10,559,742, #11,322,678, and #11,362,262

QwikPad® For Condensers

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Lifetime Warranty
Defect-free guarantee for the life of the equipment that is installed with the QwikPad

No Roof Penetration
Reduce need to puncture the roof membrane

UV Damage Tested
5-year accelerated UV testing showed no degradation

UV Testing Results

2017

2024

Stainless Steel Mounting Hardware

- **Strong Durable, Rust-Free Attachment** stainless steel materials for long-lasting durability

- **Adjustable** to fit the size of the unit by sliding the tie-down bracket to fit any configuration

Regular hardware rusts overtime
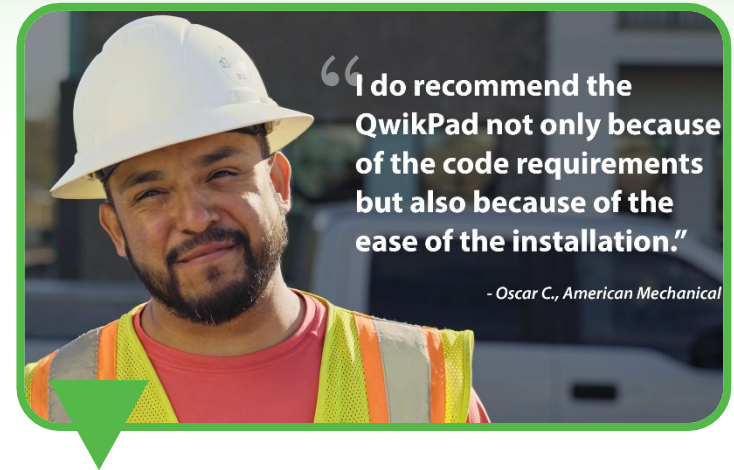
Adjustable

1

2

3

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QwikPad® Installations

Myrtle Beach, SC

- **Units** 280
- **Location** Hawthorne @ The Mill 208 Windfall Way
- **Builder** The Sembler Co.
- **Contractor** American Mechanical

"I do recommend the QwikPad not only because of the code requirements but also because of the ease of the installation."

- Oscar C., American Mechanical

Watch this install video by scanning the QR code or clicking

Image Source www.rentcafe.com/apartments/sc/myrtle-beach/hawthorne-at-the-mill/default.aspx

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Houston, TX

- **Units** 240
- **Location** Columbia Senior Residential 2100 Memorial Dr
- **Architect** JHP Architecture
- **Contractor** Block Construction

Nashville, TN

- **Units** 40 growing to 300
- **Location** Livano Nations
- **Builder** LIV Development
- **Contractor** LandSouth Construction

2100 MEMORIAL

Image Source https://www.columbiares.com/under-development-community/2100-memorial/

Kittery, ME

- **Units** 286
- **Location** 41 Seacoast Terrace, Kittery, ME 03904
- **Architect** Cube 3
- **Contractor** Atlantis Comfort Systems

Watch the install feature by scanning the QR code or visit
youtube.com/watch?v=GXS8F3Nk40U

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QwikPad® Installations

Knightdale, NC

- **Units** 239
- **Location** The Lofts @ Knightdale
- **Architect** Brown Investment Properties
- **Contractor** Windsor Mechanical

Durham, NC

- **Units** 231
- **Location** Vintage Durham
- **Builder** Capital Commercial
- **Contractor** Klimatology HVAC

Cary, NC

- **Units** 360
- **Location** Abberly Alson
- **Builder** HHHunt
- **Contractor** American Mechanical

QwikPad® Installations

Thank You

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Appendix

Wind Loading

- Wind Loading based on ASCE 7-22
  - Risk Category II (Table 1.5-1), Exposure Category C (Sec. 26.7.3)
    - Wind Speed Zones (Fig. 26.5-1B)
  - Velocity Pressure (Eq. 26.10-1) $q_z = .00256\, K_z\, K_{zt}\, K_e V^2\ (lb/ft^2)$
  - Wind Load (Eq. 29.4-1) $F = q_z K_d \mathsf{G}\, C_f A_f\ (lb)$
    - Lateral force only.
- Overturn defined as Total Wind Moment > Weight Moment about tipping point
- Sliding should be considered for rooftop applications due to lower coefficient of friction between roof material and LDPE
  - Sliding defined as Total Wind Load > Static Friction
  - May require high-friction interface material

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Wind Loading Factors*

Factor	Description	ASCE 7	QwikPad Values
K_z	Pressure Coeff. (related to height and Exposure Category)	Table 26.10-1	0.85
K_{zt}	Topographic	Sec. 26.8.2 Fig. 26.8-1	1.00
K_e	Ground Elevation	Table 26.9-1	1.00
K_d	Wind Directionality	Table 26.6-1	0.85
G	Gust Effect	Sec. 26.11.1	0.85
C_f	Force Coeff. (cross-section / shape)	Fig. 29.4-1	1.3

* All values must be defined by a P.E for any specific site or rooftop application based on local guidelines.

Wind Loading

- Conservative assumptions in QwikPad FL Product Approval calculations
  - Direct wind loading normal to unit
  - Unit as a flat, solid surface (i.e., no wind passing through louvers/fins or deflecting off angled/curved surfaces) (C_f=1.3)
  - Open space, no blockages/walls/hills/etc...($K_{zt} = 1.0$)
  - Sea level – 0 ft elevation ($K_e = 1.00$)
  - No consideration for effect of plumbing and wiring connections
- Rooftop Application
  - Vertical force (i.e., uplift) must be considered (See Sec. 29.4.1)
  - Increase in rooftop height increases Pressure Coeff. (K_z - see table)
  - Installation site may decrease Elevation Factor (K_e - see table)
  - Consideration to parapets and other obstructions may reduce wind speed

Equations

- $Total\ Wind\ Moment = F_{wind,unit}\left(\dfrac{h_{unit}}{2} + h_{pad}\right) + F_{wind,pad}\left(\dfrac{h_{pad}}{2}\right)$

- $Weight\ Moment = \left(W_{unit} + W_{pad}\right)\dfrac{width_{pad}}{2}$

- $Total\ Wind\ Load = F_{wind,unit}(A_{unit}) + F_{wind,pad}(A_{pad})$

- $Static\ Friction = \mu_s\left(W_{unit} + W_{pad}\right)$