



# FASTENING SOLUTIONS FOR DATACOM SERVERS

Thermal & Power Engineering | Mechanical Systems | PCB & Electric Integration

## FASTENERS MATTER

As AI workloads, edge computing, and cloud-scale deployments expand, server architecture must deliver performance and serviceability at scale.

PEM® offers the industry's most comprehensive fastening portfolio – making scalable, reliable, sustainable server systems possible with reduced assembly time and lower cost of ownership.

## SOLUTIONS THAT SCALE FOR YOUR DESIGN

Innovating fastening solutions is at the core of what we do. Whether it's a standard, modified, or fully custom part, PEM® has capabilities that scale for your design – so you get the results you're looking for, fast.

### Standard Catalog Parts

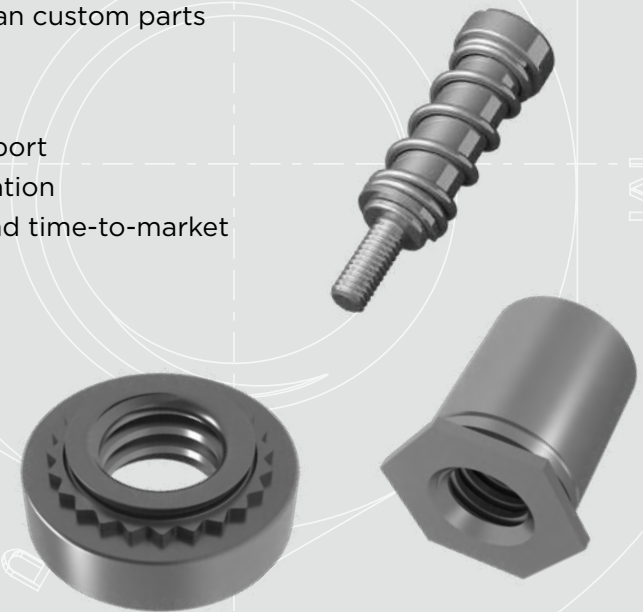
- Most diverse portfolio in the industry
- Self clinching, broaching, flaring, surface mount
- Fast global distribution

### PEM® Personalized™

- Fast modified catalog parts
- Adjust fastener length, thread size, head height, material
- Can cost significantly less than custom parts

### Full Customization

- Application engineering support
- Quick prototyping and validation
- Reduced design iterations and time-to-market



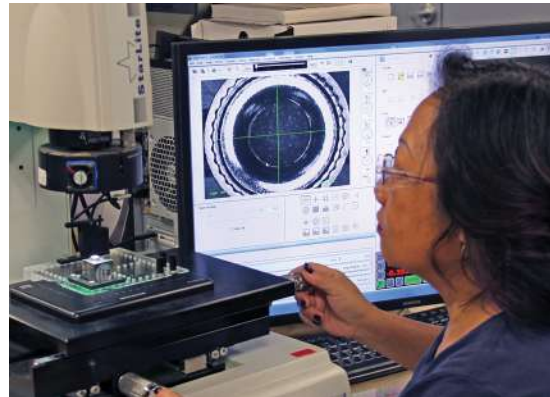
# PEMedge® SERVICES

PEMedge® Services provide a full suite of free engineering expertise and peer-to-peer collaboration to improve product costs, performance, and time to market:



## Application Engineering Support

- Application Review
- Custom Design/Product Development
- Customer Drawings
- Catalog Samples
- 3D Models



## Testing Services

- Watertightness Testing
- Conductivity Testing
- Plating/Corrosion Testing
- Mechanical Testing
- Tensile/Compression Strength
- Micro Hardness
- In-Sheet Performance



## Prototype Development

- Newest CNC Technologies
- Fast Prototyping/Testing
- Short Run Samples
- Installation Tooling (Turning, Milling, Drilling, Reaming, Punching, Grinding)



# PRECISION FASTENING ACROSS YOUR ENTIRE INFRASTRUCTURE

Server performance relies on fasteners that work seamlessly across thermal management, power delivery, structural assembly, and circuit board integration. PEM® fasteners are engineered to meet the demands of each critical system.

## Thermal Engineering

PEM® fasteners deliver vibration-resistant connections in cooling systems, fans, and heat sinks – preventing loosening from thermal cycling. Precision mounting provides optimal airflow and temperature control to protect your critical infrastructure from thermal failures.

## Mechanical Systems

Self-clinching PEM® fasteners create durable, reusable threads without welding or bulky hardware. For access panels, airflow management components, and enclosures, their flush profiles and vibration resistance make them ideal for high-density environments.

## Power Engineering

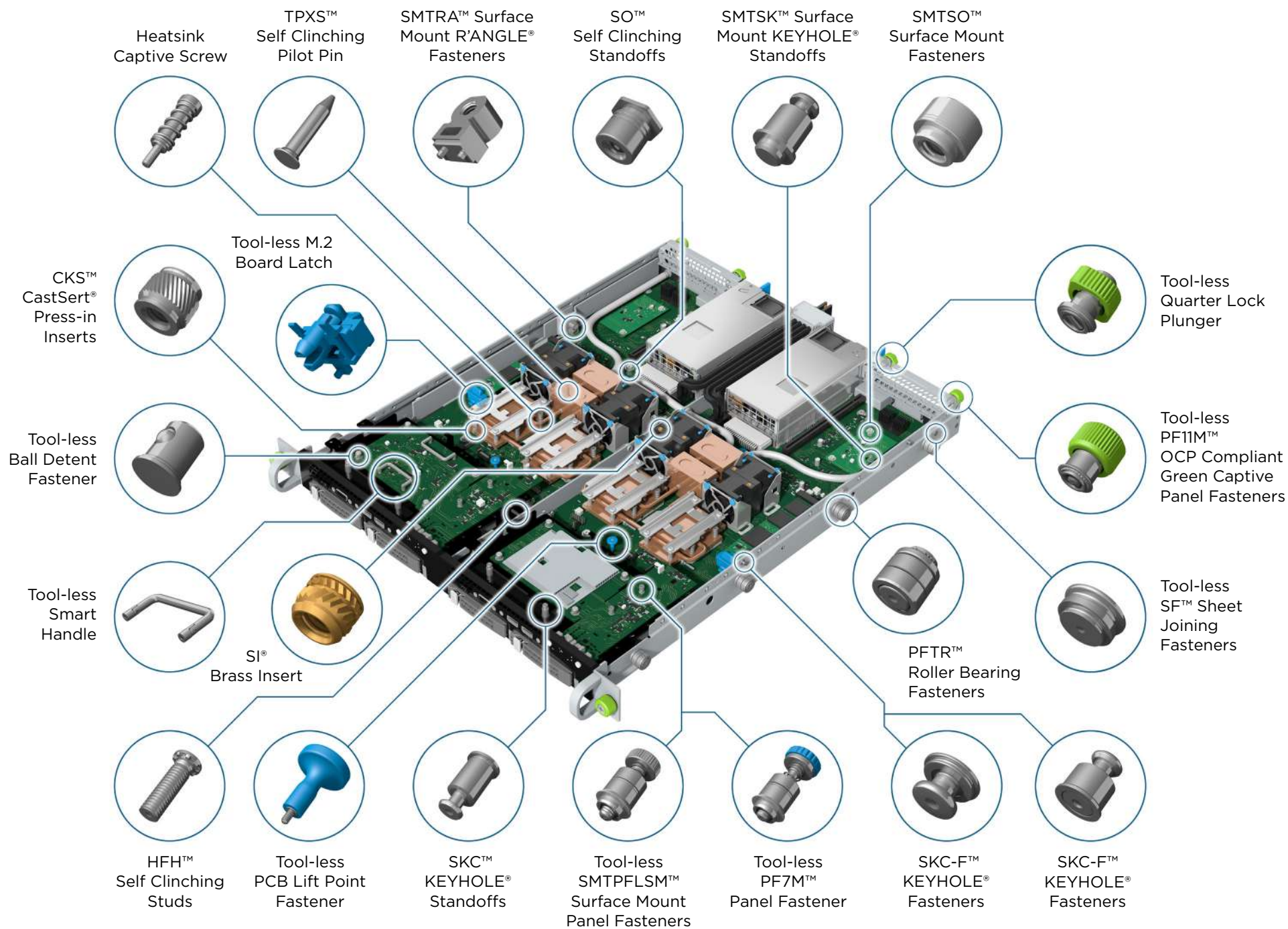
PEM® fasteners maintain mechanical and electrical performance in your switchgear, transformers, and BESS applications. Conductive fasteners in busbars minimize resistance and energy loss, with specialized coatings for reliable conductivity in high current.

## PCB & Electrical Integration

Lightweight PEM® fasteners deliver easy serviceability when mounting PCBs in servers and networking equipment. Standoffs and clips allow proper spacing for airflow and electrical isolation and deliver shock resistance to protect your sensitive components.

Learn More





# EXPERTISE TO TAKE YOU FURTHER

PEM® fasteners can add better performance and long-term cost savings to your most complex server requirements. Our portfolio is one of the most diverse in the industry, along with a full suite of capabilities for modified and fully custom solutions.



## HFH™ Self Clinching Studs

For high-strength applications with high pull-through resistance.



## SO™ Self Clinching Standoffs

Fasteners designed to hold a fixed gap between two panels.



## TSO™ Self Clinching Standoffs

Installs flush in ultra-thin sheets.



## SMTSO™ Surface Mount Fasteners

For strong, soldered attachment point directly on PCBs.



## Heatsink Captive Screws

Provides secure attachment of a heat sink to the circuit board.



## PFTR™ Roller Bearing Fasteners

Support loads while guiding & positioning components.



## SMTSK™ Surface Mount KEYHOLE® Standoffs

Enable fast, tool-free panel installation or removal.



## SKC-F™ KEYHOLE® Fasteners

Designed to quickly join two sheets flat against each other.



## SKC™ KEYHOLE® Standoffs

Allows detachable spacing between two sheets.



## CKS™ CastSert® Press-in Inserts

Provide strong, metal threads in die-cast magnesium and die-cast aluminum.



## SI® Brass Insert

Provides strong reusable threads in plastic.



## SMTRA™ Surface Mount R'ANGLE® Fastener

Right angle attachment points for PC boards.



## TPXS™ Self Clinching Pilot Pin

Ensures precise, damage-free PC board alignment.



# NEW: PEM® TOOL-LESS FASTENERS

PEM® tool-less technology gives you secure fastening plus the speed that modern data centers require. Designed for easy fastening or removal without the need for traditional tools like screwdrivers.



**PF11PM™ OCP Compliant Green Captive Panel Fasteners**  
Hardware for easy service access without loose components.



**SMTPFLSM™ Surface Mount Panel Fasteners**  
Streamlines the assembly process in PCB applications.



**PF7M™ Panel Fastener**  
Secure panel attachment, offering quick installation and strong holding power.



**Quarter Lock Plunger**  
Secures panels or components with a 90° turn, providing quick, reliable locking and easy tool-free operation.



**M.2 Board Latch**  
Tool-less connector for quick one-press locking and release of daughter boards to motherboards.



**PCB Lift Point**  
Enlarged head for secure panel attachment, providing strong hold and simple, tool-free operation.



**Smart Handle**  
Secure, intuitive access with integrated monitoring and quick-release functionality.



**Ball Detent Fastener**  
Allow sliding of servers, switches, other boxes into frames without scratching or releasing.



**SF™ Sheet Joining Fasteners**  
Flush, strong sheet-to-sheet attachment.

Our engineering experts collaborate with you to create custom-designed parts that meet your exact specifications, including modifications to catalog items or fully customized PEM® fasteners.

# INTUITIVE INSTALLATION THAT HAS A BIG IMPACT ON YOUR BOTTOM LINE.

Fasteners represent just part of your component costs, but they can make major in-roads to your total build costs because of how quick and easy they install. Whether you need installation systems for in-die, robot cell, or manual, you can expect best-in-class equipment with low complexity.



## Haeger®

Our Haeger® semi-automated fastener installation equipment was designed to install PEM® fasteners – a total system solution that gets installation right, the first time. Reach optimal production performance and reduce the risk of human error with precise, consistent, and repeatable installations.

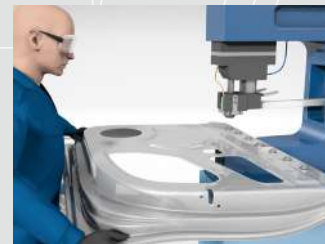


Learn More  
about Haeger



## In-Die

PEMSERTER® fastener installation system enables you to install a high volume of fasteners automatically, efficiently, and accurately directly in the stamping process. This eliminates secondary operations, which means shorter reduced lead times and fewer labor and application costs.



## Manual

For lower volumes, you may need a manual fastener installation process. In this case, a person takes the place of the robot and carefully feeds the panel into the user-friendly c-frame press to install the mechanically attached fasteners.



# ENGINEERING A SUSTAINABLE FUTURE ONE FASTENER AT A TIME.

When you specify PEM®, you have a partner that shares your responsibility to build a more sustainable future. Together, we can reduce environmental impact across your product lifecycle and keep the performance and reliability your applications require.

## Material Traceability

Our material traceability program documents the journey of raw materials from certified sources through manufacturing to your final assembly – so you can confidently meet your regulatory standards without compromising performance.

## Responsible Sourcing Standards

As data centers strive to reduce their environmental footprint, the fasteners you specify influence the sustainability metrics you report. PEM®'s sourcing standards ensure that our materials align with your green efforts.

## Design-for-Sustainability Consultations

Through collaboration with our in-house engineers, we help you identify opportunities where material optimization, weight reduction, or installation efficiency can lower your environmental impact while maintaining consistent performance.



## ENGINEERING SERVICES



PEM® Office Hours | Real-time, on-site engineering support  
Custom Technical Training | Access to upskilled engineering teams  
Free Teardowns & Validation | Accelerated design optimization  
DFM/DFA Consultations | Reduced rework & improved yield  
On-Site CM Integration | Seamless support at manufacturing sites

## LAB SERVICES



- Installation of fasteners
- Pushout
- Torque-out
- Pull thru
- Tightening torque
- Panel hardness testing
- Variable panel testing
- Product teardowns
- Samples
- Technical support
- New product development
- Testing

## SUPPLY CHAIN SUPPORT



Expedited Lead Times | Faster response to demand shifts  
Guaranteed Capacity | Buffer stock & dedicated manufacturing allocation  
Collaborative Forecasting | Rolling forecasts & quarterly business reviews  
Global Support Network | 24/7 coverage for operational continuity

# GET PEM® SUPPORT ANYTIME, ANYWHERE

No matter where you are in the world, PEM® services are there. Our locations throughout North America, Asia, and Europe provide complete global support at the local level.



## AMERICAS

Danboro, PA (HQ)  
Modesto, CA  
San Jose, CA  
Shelby, MI  
Waterford, MI  
Winston-Salem, NC  
Querétaro, Mexico

## EUROPE

Galway, Ireland (EU-HQ)

## ASIA

Kunshan, China (ASIA-HQ)  
Jingjiang, China  
Shanghai China  
Tokyo, Japan  
Malaysia  
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