



VOSS Fitment Inspection System

Industry: Automotive

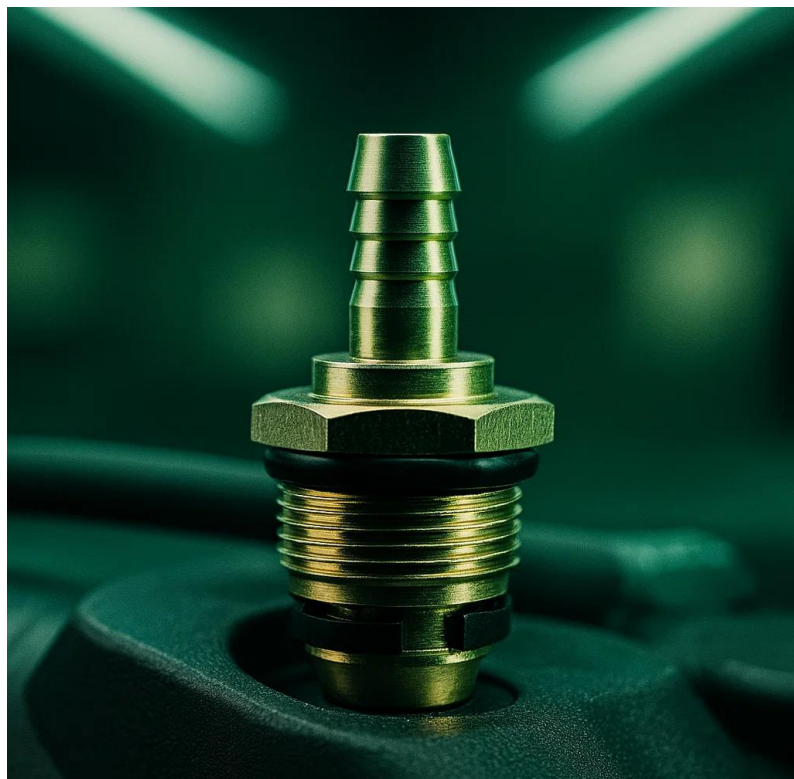
Solution: In-line Vision-Based
Fitment Verification

Why This Inspection is Critical



- VOSS connectors are critical in battery cooling, HVAC, and fuel systems.
- Improper fitment leads to fluid leakage, thermal inefficiency, or vehicle failure.
- Manual inspection lacks consistency — risk of missed defects increases with production speed.

Common Defects in Connector Fitment



Missing O-ring

- Coolant leakage, system shutdown

Cross-threaded fitting

- Loose fit, progressive failure

Misorientation

- Torque misread or fit rejection

Incomplete insertion

- Leak under pressure

Loose flange

- Loss of mechanical seal

Limitations of Manual Inspection



Relies on operator experience

Subjective judgment — what looks 'tight' varies

Cannot verify internal O-rings or fine geometry

Hard to track and log for traceability

What Must Be Checked

Connector flange presence and alignment

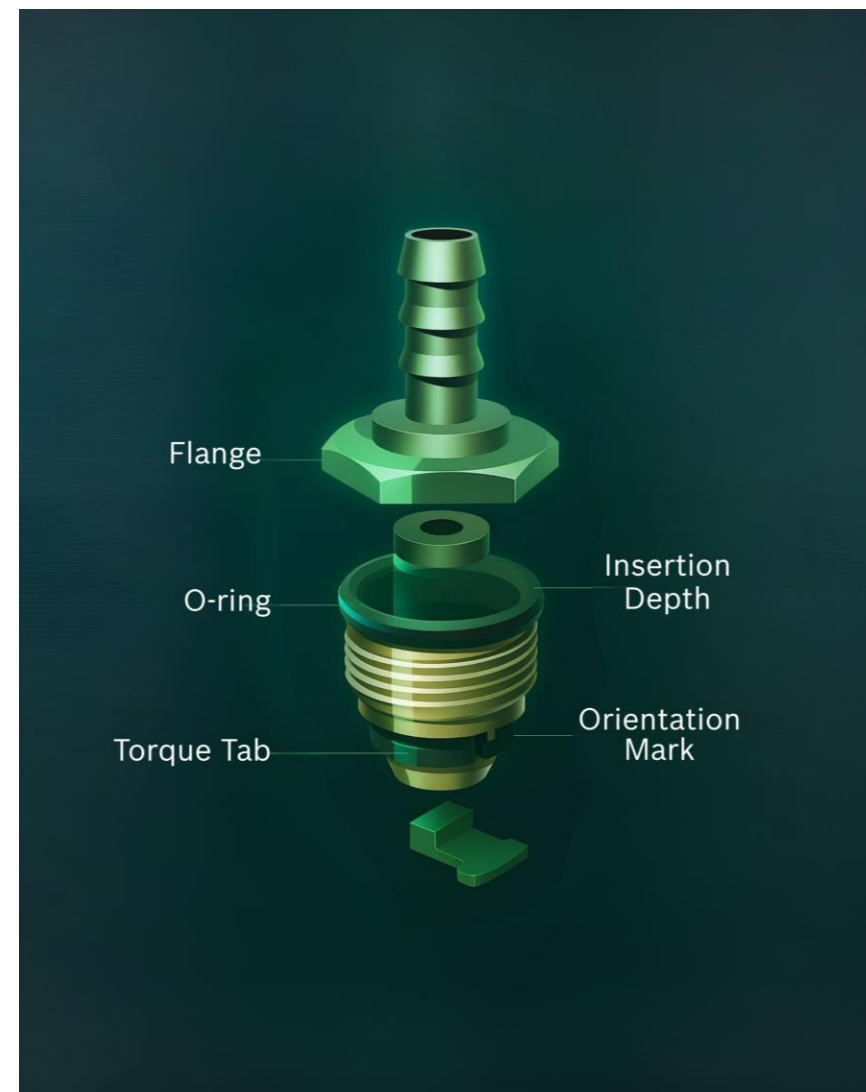
Proper seating & insertion depth

Rotational orientation (locking angle)

Cross-threading pattern

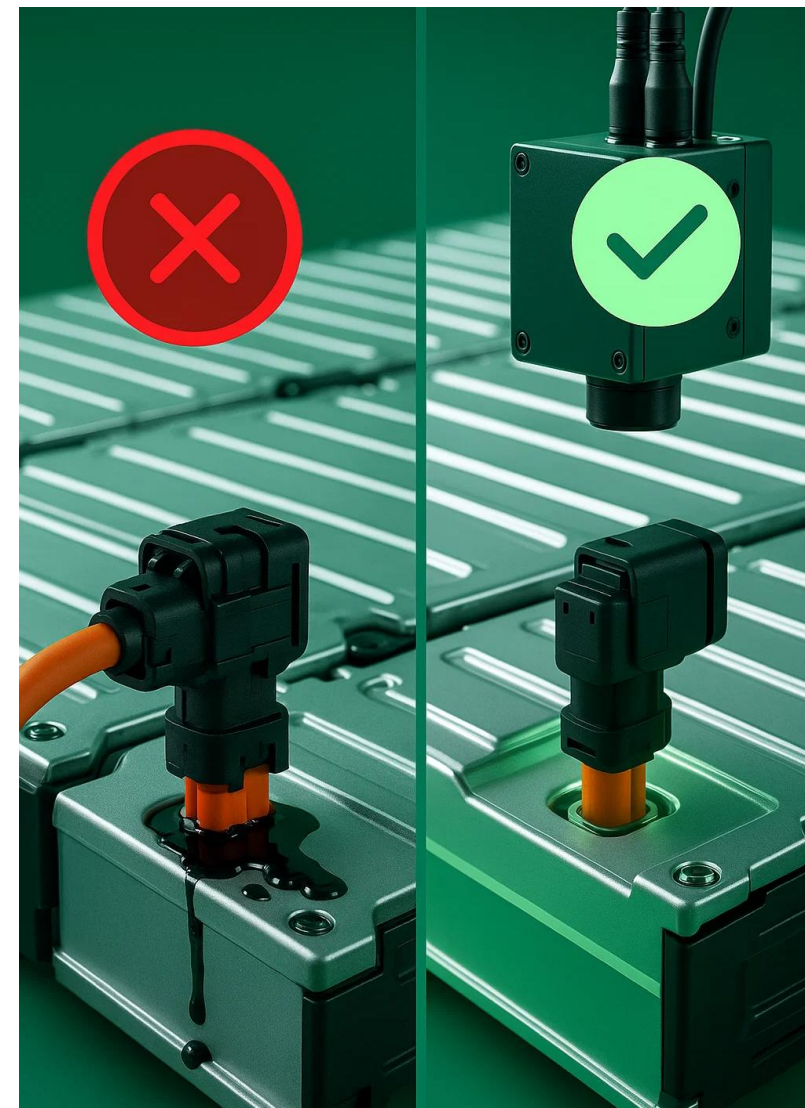
Torque marker tab alignment

O-ring or seal presence

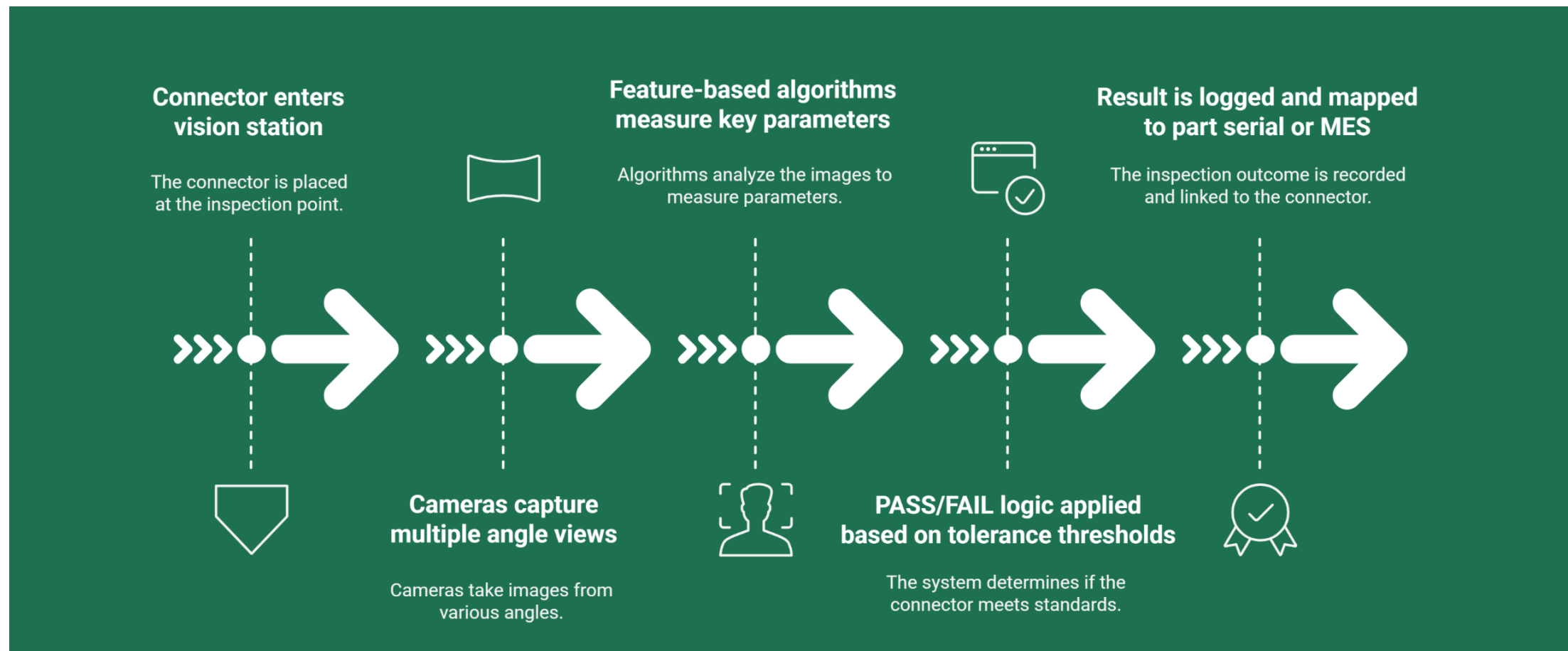


Our Vision-Based System

- 2D/3D cameras inspect from multiple angles
- Image processing identifies pass/fail within milliseconds
- Works inline — no stoppage required
- Integrates with assembly torque tools and MES



How It Works – Process Flow



Inspection Capabilities

Flange Presence

- Edge profile detection

Orientation Angle

- Camera marker geometry match

Insertion Depth

- 3D profile measurement

Seal/O-ring Presence

- IR/contrast lighting

Cross-threading

- Shape deviation detection

Torque Tab Position

- Positional detection

System Architecture



Multi-camera setup with synchronized trigger



Vision controller (Fanless IPC or embedded unit)



LED-based dome lighting for shadowless inspection



Optional IR backlight for seal detection



Ethernet/IP, Modbus or OPC-UA connectivity for MES

Deployment Strategy



Mounted directly post-fitment station



500–800 ms cycle time
— no bottlenecks

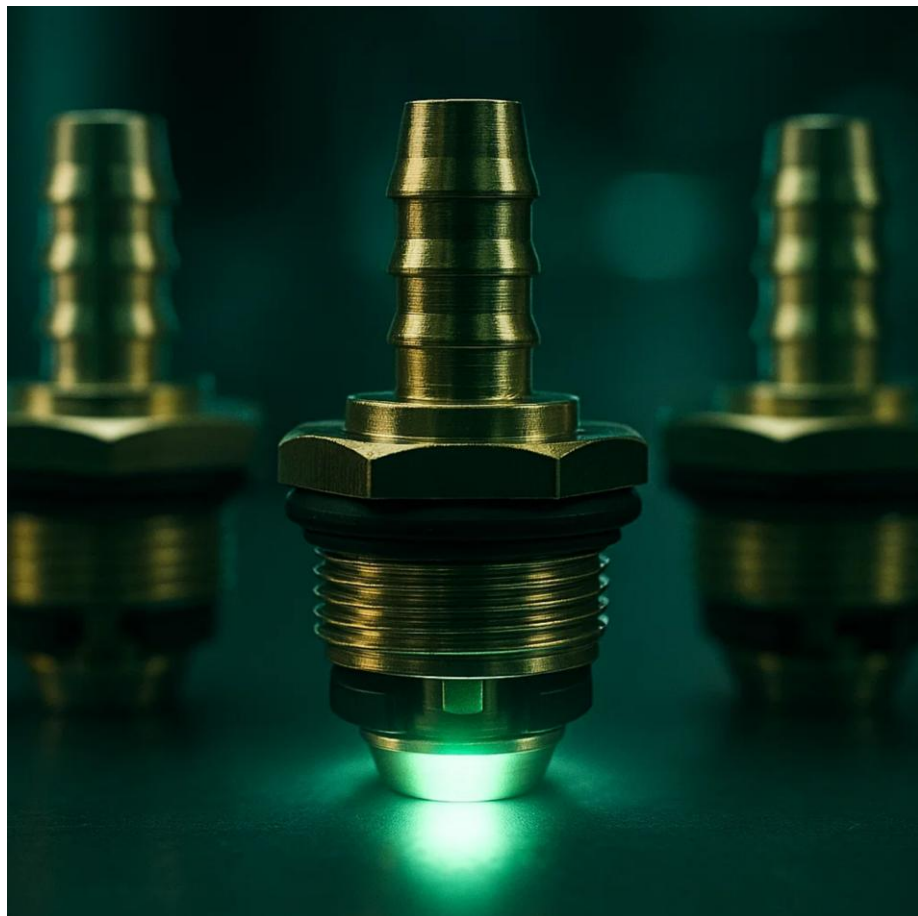


Adjustable height/frame
for different connector
types



Configurable for VOSS,
Norma, or other push-
lock connectors

What You Get by Automating Fitment Checks



Prevents field failure due to connector leakage

Reduces warranty claims and service rework

Ensures consistent quality across shifts

Improves OEM audit scores and compliance

Why Choose Us

Designed with learnings from critical cooling and fluid system applications

Uses vision tech validated across top-tier manufacturing environments

Scalable design, supported by our in-house application engineering

Integrates easily with most toolchains and MES protocols

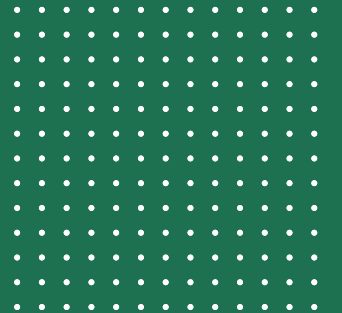


Let's Build It Together

Want to automate VOSS connector inspections?

Book a demo.

We'll design a system tailored to your line.



www.associatedengineers.co.in