

# Ch43

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| ≡ Title       | Power Distribution Room Inspection Robot   |
| ≡ Description | For industrial parks, utilities, airports, data centers, renewable energy facilities, and harsh-environment O&M scenarios where high temperature and manpower scarcity are critical issues |

## Power Distribution Room Inspection Robot — One-Pager (English Version)

*Indoor Autonomous Inspection · Electrical Safety · AI Analytics for Power Infrastructure*

### Power Distribution Room Inspection Robot

**Designed for Indoor Electrical Facilities · Autonomous Patrol · Multi-Sensor Inspection**

This robot is purpose-built for **indoor power distribution rooms, electrical equipment rooms, data center power modules, industrial substations, inverter rooms, and utility buildings**.

It performs autonomous patrols, detects abnormal electrical conditions, provides real-time imaging and thermal inspection, and integrates seamlessly with Inspur cloud AI for automated report generation.

It is ideal for **Saudi Arabia's industrial parks, utilities, airports, data centers, renewable energy facilities**, and harsh-environment O&M scenarios where **high temperature and manpower scarcity** are critical issues.

## CORE HIGHLIGHTS

- **Indoor autonomous navigation** using LiDAR SLAM
  - **Infrared thermal imaging** for breaker & cable hotspot detection
  - **4K visual inspection** for gauges, meters, indicator lights, switch positions
  - **Acoustic sensors** for abnormal noise detection in transformers or switchgear
  - **Environmental sensing**: temperature, humidity, gas, smoke
  - **Supports night-time operation & low-light recording**
  - **Auto-charging dock** for 24/7 duty cycles
  - **AI defect detection** via Inspur Cloud models
  - **Suitable for confined, indoor, and high-risk electrical environments**
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## APPLICATION SCENARIOS

### 1. Electrical Distribution Room Patrol

Targets:

- Low-voltage & medium-voltage switchgear
- Power distribution cabinets
- ATS / UPS systems
- Transformer compartments
- MCC cabinets

**Value:** Reduces manpower load and ensures standardized inspections.

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### 2. Thermal Abnormality & Hotspot Detection

Detects:

- Contact resistance heating
- Cable terminal temperature rise
- Circuit breaker overheating

**Value:** Prevents fire risks and equipment failure.

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### 3. Indicator and Meter Reading Automation

- Switch position verification
- Indicator light status detection
- Digital/analog meter OCR

**Value:** Eliminates manual log-keeping errors.

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### 4. Environmental Safety Monitoring

- Smoke detection
- Harmful gas monitoring
- High-temperature alarm

**Value:** Protects unmanned substations and industrial facilities.

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## TECHNICAL SPECIFICATIONS

| Item            | Specification                             |
|-----------------|---|
| Navigation      | LiDAR SLAM + depth camera                 |
| Imaging         | 4K RGB camera + thermal imaging           |
| Sensing         | Temperature, humidity, smoke, harmful gas |
| Audio Detection | Abnormal noise recognition                |
| Communication   | WiFi / 4G / optional wired docking        |
| Battery Life    | Multi-hour operation, auto-docking charge |
| Chassis         | Compact indoor industrial chassis         |
| Control         | Autonomous patrol + manual control        |

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## VALUE TO OPERATORS

- Maximizes electrical facility safety via continuous monitoring

- Reduces O&M manpower requirements by up to **70%**
  - Improves inspection frequency from monthly to **hourly** if needed
  - AI-driven defect recognition reduces human error
  - Early detection of faults minimizes outage risk
  - Ideal for **utilities, industrial zones, data centers, airports, renewable energy plants**
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## 配电房巡检机器人 — 一页纸（中文正式版）

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### 配电房巡检机器人

室内自主巡检 · 电气异常检测 · 电力设施智能运维专用机器人

配电房巡检机器人适用于 **配电房、变电所、机房、数据中心供配电模块、逆变室、厂区电气室、公共建筑电气间** 等场景。

机器人能够自主巡航，对电气设备进行可见光、红外、声音、环境等多维度检测，并通过浪潮云平台实现自动化巡检分析与报告生成。

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### 核心亮点

- **室内自主导航（激光雷达 SLAM）**
  - **红外热成像检测电气热点**
  - **4K 高清巡检**：表计读数、指示灯、开关位置
  - **声音异常检测**：识别变压器/开关设备异响
  - **多传感环境监测**：温湿度、烟雾、有害气体
  - **弱光/夜间工作能力**
  - **24/7 工作 + 自动充电底座**
  - **AI 自动分析与报警（浪潮平台）**
  - **适应狭窄空间、高温环境等室内复杂工况**
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# 典型应用场景

## 1. 配电房/机房日常巡检

适用于：

- 高低压开关柜
  - 配电柜
  - ATS/UPS
  - 变压器区
  - MCC 柜
  - \*价值：\*\*巡检标准化、降低现场运维负担。
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## 2. 热点异常检测

可识别：

- 接触电阻发热
  - 电缆头温升
  - 断路器过热
  - \*价值：\*\*提前预警火灾及故障风险。
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## 3. 指示与表计自动识别

- 开关状态自动识别
  - 指示灯亮灭检测
  - 表计自动 OCR 识别
  - \*价值：\*\*减少人工记录错误，提升巡检效率。
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## 4. 环境安全监测

- 烟雾报警
- 有害气体监测

- 高温报警
- \*价值：\*\*保障无人值守电力场站安全。

## 技术参数

| 项目   | 参数                 |
|------|--------------------|
| 导航方式 | 激光雷达 SLAM + 深度摄像头  |
| 成像系统 | 4K 可见光 + 红外热成像     |
| 环境监测 | 温湿度、烟雾、有害气体        |
| 声音检测 | 异响识别               |
| 通信方式 | WiFi / 4G / 可选有线对接 |
| 续航时间 | 多小时连续巡检            |
| 充电方式 | 自动回充底座             |
| 控制模式 | 自主巡检 + 远程控制        |

## 为电力用户带来的价值

- 显著提高电气运维的安全性
- 巡检频次大幅提升，实现“小时级”监控
- 异常预警及时，降低停电与事故风险
- AI 自动分析减少人工巡检误差
- 大幅降低 O&M 成本，适用于大规模场站