PLANT SERVICES

SPECIAL REPORT

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2025 Electrical Safety Survey

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2025 Electrical Safety Survey

■ Do you consider your plant electrically up to code? What are the electrical safety challenges at your facility? And, in a moment where the potential of AI has caught everyone's attention, how interested are you in using smart tools to improve safety?

These were the three key questions posed in the 2025 Plant Services Electrical Safety Survey. This is the third time Plant Services has run the survey with our readers, and more than 150 industry professionals provided their feedback in January and February of this year.

The 23-question survey included topics such as training and certifications, time between electrical incidents, and near-miss reporting, as well as asking what kinds of tools and PPE are currently being used. Also, this survey asked a few new questions about smart tools – devices that collect and process data in real-time and provide actionable insights – to get a sense of what the market reality is for these devices.

1. THE GREENING OF THE WORKFORCE

The first interesting data emerged from the short series of demographic questions that we've asked on all three Electrical Safety surveys. The balance of job titles has stayed about the same since 2018, with a slight reduction in the number of reliability professionals responding (see Figure 1).

However, two further questions on length of experience and number of certifications earned reveal a certain greening of the workforce. For example, the number of respondents with 5 years or less experience has increased by almost 70% from when we ran this survey in 2020 (see Figure 2), even as the largest segment of respondents remain those who have at least 16 years of experience.

These results align with the next question, which asked about the types of professional certifications held by respondents (see Figure 3). Compared to data from the 2020 survey, the numbers went up for key higher-level certifications, including the CMRP, CEI, and CESW. However, those selecting "none of the above" also increased from 2020, up from 40.9% to 49.0%.

Taken together, these data indicate that a segment of 2025 respondents has not been in industry long enough to earn or pursue key technical certifications; and, that those who have more experience also have not slowed their pursuit of continuing education and training.

2. KEY ELECTRICAL SAFETY CHALLENGES

The next set of survey questions asked respondents about the electrical safety challenges that they find most pressing at their facilities. Four challenges stood out for 2025: training, maintenance, incident reporting, and slips, trips, falls (see Figure 4). A quick series of follow-up questions added depth to these findings:

- More than 78% of respondents thought their facility was up to code, the highest level of the past seven years (see Figure 5)
- Overall, the average time between electrical incidents is increasing, with almost 50% of respondents telling us it has been more than a year between incidents (see Figure 6)
- Although the number of respondents saying they have been part of an OSHA investigation has increased steadily since 2018, the number of respondents either involved in arc flash incidents who know someone involved has decreased (see Figures 7, 8, and 9)

INCREASING SAFETY AND EFFICIENCY WITH SMART TOOLS

By Fluke Corporation

Safety is always top of mind for maintenance professionals, especially when it comes to electrical systems. As modern plants continue to evolve, managers are looking to smart tools to protect workers and boost efficiency. Here's what that looks like:

A Growing Demand for Smart Tools. Seven in ten maintenance experts are interested in implementing smart tools at their facilities, according to this electrical safety survey. The majority of maintenance professionals are confident that smart tools will improve worker safety, increase operational efficiency, and boost productivity. Maintenance decision-makers also trust smart tools to improve accuracy and reduce the need for time-consuming, repetitive work.

The Smart Approach to Safety. As this survey reveals, at least one in five maintenance professionals has been involved in an arc flash incident. Nearly one in three respondents said they hadn't received specialized training in dealing with arc flashes. For new, untrained workers, smart tools are particularly important. They deliver fast, accurate results, all without potentially hazardous contact with live electrical conductors.

Smart tools keep electric workers out of harm's way, protecting them from dangers like arc flashes during routine testing. Digital multimeters, voltage testers, and clamp meters all enable non-contact measurement, so that workers don't have to squeeze into narrow spaces or venture into hazardous areas. Sensors mounted on equipment can scan equipment for issues like overload, power imbalance, or overheating. Instead of sending crews to do route-based testing, technicians can monitor equipment by smartphone, from a safe distance.

Rapidly Diagnosing Faults. Smart tools don't just collect data – they analyze it, using it to diagnose faults. Multimeters, for example, have built-in diagnostic capabilities so that they can spot issues like voltage and current unbalance. Using smart tools lets teams skip over a few steps in the diagnostic process. Instead of first collecting data, and then analyzing it, technicians can use smart tools to capture data and make sense of it, all at high speed.

Because smart tools are quick and accurate, they allow electrical workers to cover more ground than traditional tools. That's what today's large, complex plants require: safe, quick, and reliable testing and diagnosis. For managers overseeing multiple worksites, the ability to remotely track assets and receive alerts is a game changer.

By rapidly diagnosing faults, smart tools provide the foundation for a more proactive approach: predictive maintenance. Instead of reacting to failures after they occur, teams can use diagnostic insights to anticipate problems before they cause downtime. When paired with AI-driven analytics, these insights help transform maintenance from a reactive process into a strategic advantage.

Driving Productivity with Predictive Maintenance. Predictive maintenance relies on data to anticipate upcoming maintenance needs – the more data, the more accurate the predictions. By transforming the data collection process, smart tools enable an effective predictive maintenance program. This is a proven way to cut costs and slash unplanned downtime. Instead of waiting for machines to break down, maintenance teams can stay ahead of problems and avoid costly, extensive repairs.

AI-powered software analyzes patterns in asset data and makes accurate predictions about when a machine is likely to fail. Often, AI can predict machine failure weeks or months ahead of time. This gives maintenance teams plenty of opportunities to schedule repairs at a convenient time, when the right personnel and tools are available. Predictive maintenance also increases safety throughout the workplace, by keeping assets in optimal condition. It's a great way to run a tighter ship while keeping everyone on board safe.

- When it comes to training, it is a tale of the haves and have-nots: the number of people saying they were trained up to the latest version of NFPA 70E increased by more than 50% since 2020, and the number of people who say they have not been trained at all on NFPA 70E also increased (see Figure 10)
- Finally, when it comes to incident reporting, 89% of respondents say there is a near-miss reporting plan in place, but only 2 in 3 of those programs are formal reporting programs (see Figure 11)

3. SMART TOOLS AND CONTRACTED WORK

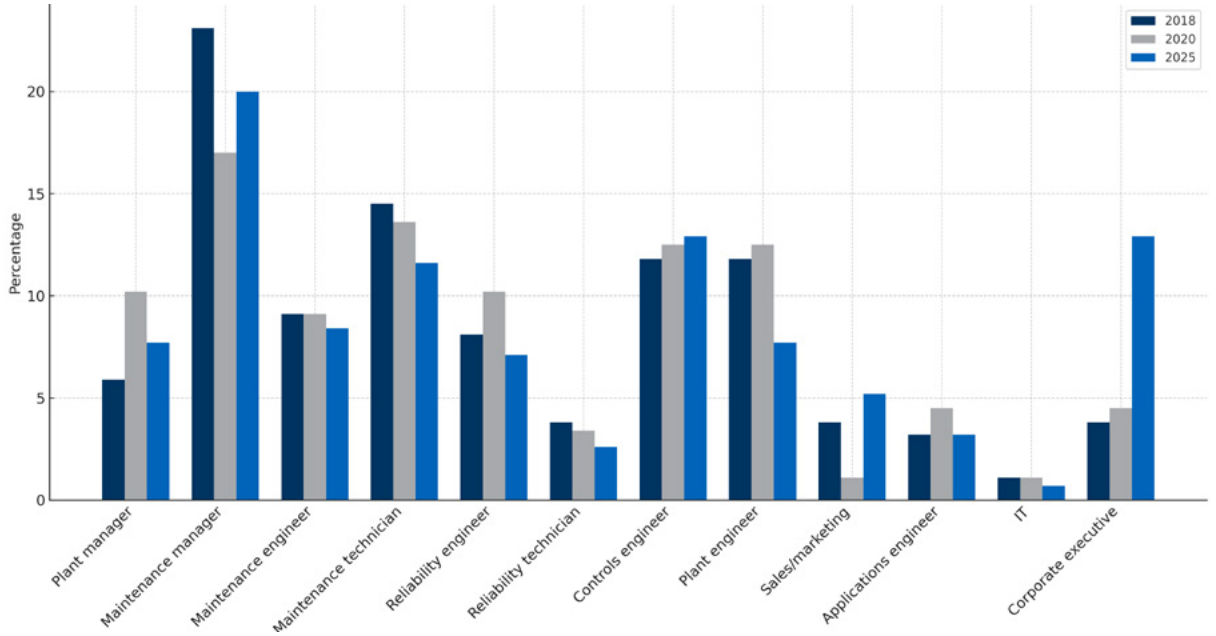
The last section of the survey asked about people's attitudes toward both tools of the trade, especially smart tools, as well as the kinds of electrical work that are commonly contracted out.

On commonly contracted types of work, this year's survey stayed generally consistent with results from 2020, with an overall trend pointing toward the increased outsourcing of electrical work, with a significant increase in the percentage of respondents who would be willing to outsource both testing and repair (see Figure 12).

On smart tools – devices that collect and process data in real-time and provide actionable insights – survey respondents signaled a strong interest in the potential for these tools to improve safety and work efficiency. Just over 60% of respondents said they were interested in applying these tools, with almost 70% saying they thought these tools would improve electrical safety (see Figures 13 and 14). Nearly as many also thought smart tools would increase job efficiency and productivity, as well as accuracy and troubleshooting.

The final question asked about planned technology investments to enhance electrical safety (see Figure 15), so it is worth noting that responses were collected before the Trump administration announced their tariff strategy. Of the safety technologies listed, the most-deployed technologies are switches (both limit and interlock), single-function relays, PLCs, and overcurrent protection devices. The devices coming in at the bottom of the list are IR windows and viewports and motion control devices.

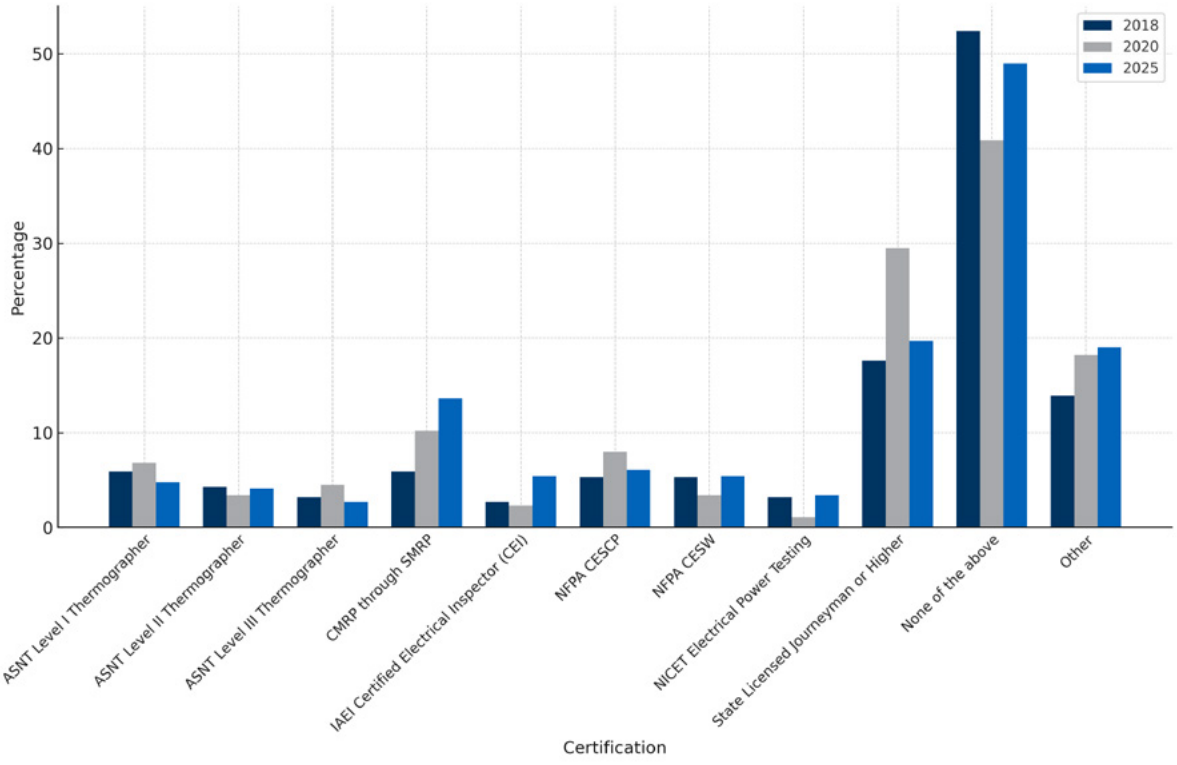
1. WHAT IS YOUR PRIMARY JOB FUNCTION?



2. HOW LONG HAVE YOU BEEN DOING ELECTRICAL REPAIRS OR TROUBLESHOOTING?

TIME	2018	2020	2025
0-5 years	13.3%	9.1%	15.8%
6-10 years	15.5%	15.9%	10.1%
11-15 years		8.0%	7.6%
16-20 years	71.1%	10.2%	12.0%
20+ years		56.8%	54.4%

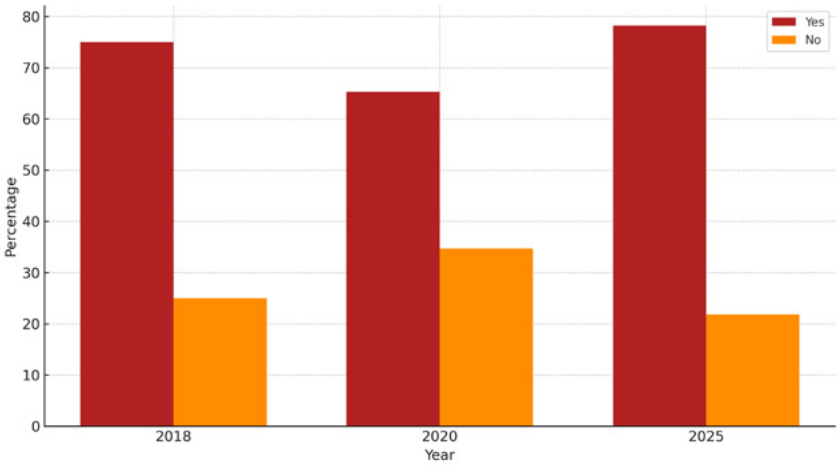
3. WHICH CERTIFICATIONS DO YOU CURRENTLY HOLD?



4. RATE THE FOLLOWING ELECTRICAL SAFETY CHALLENGES AT YOUR FACILITY.

	NOT A FACTOR (%)			LOW (%)			MEDIUM (%)			HIGH (%)		
	2018	2020	2025	2018	2020	2025	2018	2020	2025	2018	2020	2025
Poor coordination with internal departments (i.e., EH&S)	41.4	40.0	43.7	31.4	30.7	32.8	21.4	20.0	20.1	5.7	9.3	3.4
Poor coordination with external agencies (i.e., OSHA)	51.4	44.0	50.8	27.9	33.3	30.0	15.0	17.3	15.8	5.7	5.3	3.3
Poor / ineffective training	35.7	18.7	22.5	31.4	38.7	40.8	24.3	22.7	28.3	8.6	20.0	8.3
Poor / ineffective PPE	55.7	37.3	50.8	29.3	37.3	35.0	12.1	17.3	9.2	2.9	8.0	5.0
Poor / ineffective dust mitigation	35.0	32.0	36.8	37.9	33.3	35.9	20.0	25.3	22.2	7.1	9.3	5.1
Poor / ineffective lockout / tagout	45.7	33.3	39.5	30.7	41.3	44.5	16.4	14.7	11.7	7.1	10.7	4.2
Poor / ineffective equipment maintenance	27.1	14.7	26.1	34.3	48.0	37.0	27.9	26.7	28.6	10.7	10.7	8.4
Poor / ineffective equipment grounding	42.9	30.7	42.7	35.0	42.7	43.7	12.9	24.0	9.2	9.3	2.7	4.2
Poor / ineffective incident reporting	45.7	33.3	41.2	30.7	37.3	35.3	18.6	21.3	19.3	5.0	8.0	4.2
Loose electrical connections	23.6	20.0	30.3	50.0	49.3	47.9	22.9	26.7	19.3	3.6	4.0	2.5
Slips, trips, falls	21.4	9.3	22.9	52.1	53.3	54.2	18.6	34.7	19.5	7.9	2.7	3.4
Contact with overhead or underground electrical lines	66.4	45.2	63.9	25.0	45.3	25.2	5.7	8.0	7.6	2.9	1.3	3.4

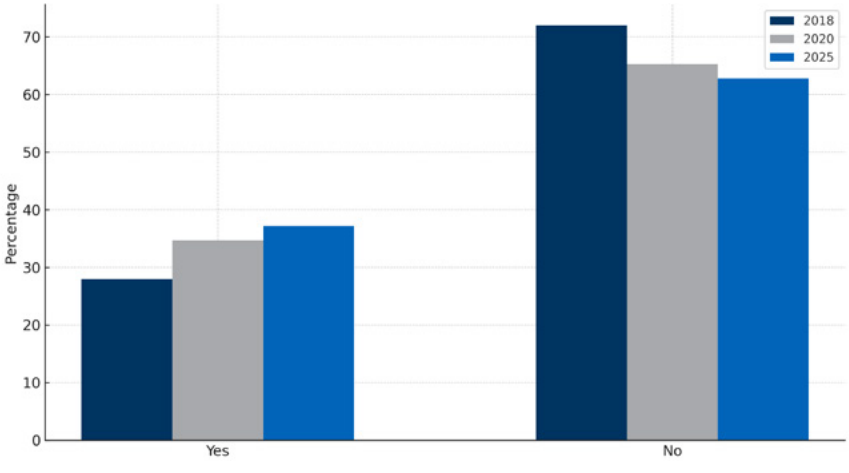
5. DO YOU CONSIDER YOUR PLANT ELECTRICALLY UP TO CODE?



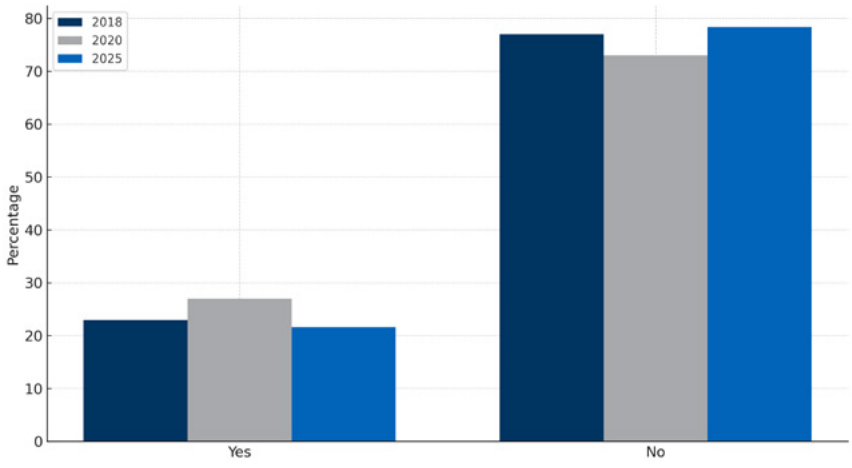
6. WHAT IS YOUR FACILITY'S AVERAGE TIME BETWEEN ELECTRICAL INCIDENTS?

	2018	2020	2025
0-30 days	6.4%	12.0%	9.3%
31-90 days	8.5%	9.3%	10.2%
91-180 days	10.6%	16.0%	13.6%
181-365 days	22.7%	25.3%	17.8%
365+ days	52%	37.3%	49.2%

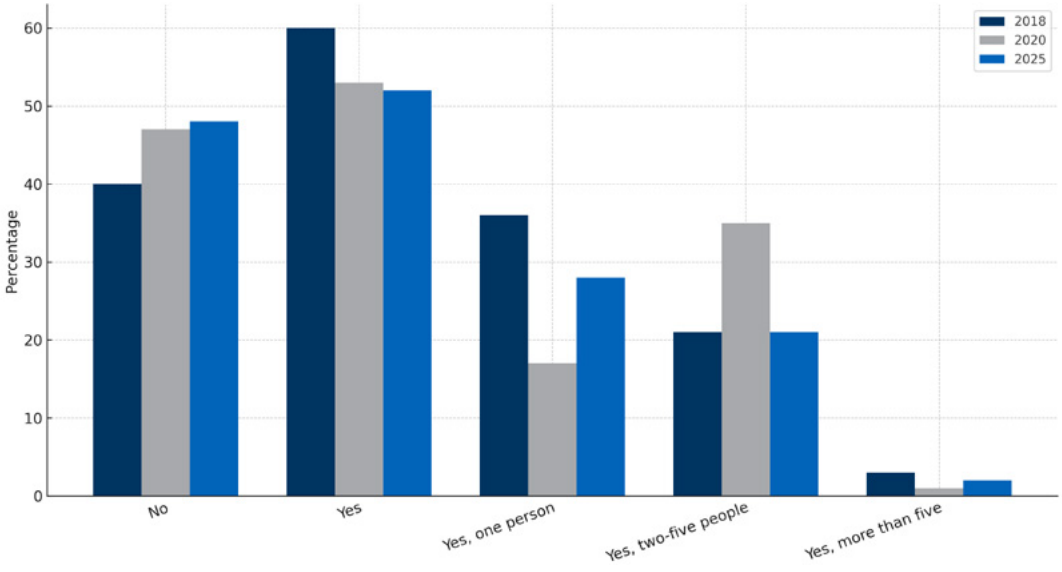
7. HAVE YOU EVER BEEN PART OF AN OSHA INVESTIGATION?



8. HAVE YOU EVER BEEN INVOLVED IN AN ARC FLASH INCIDENT?



9. DO YOU KNOW SOMEONE WHO HAS BEEN INVOLVED IN AN ARC FLASH INCIDENT?



10. HAVE YOU RECEIVED TRAINING ON NFPA 70E?

2020		2025	
Yes, up to 70E 2021	11.3%	Yes, up to 70E 2024	17.7%
Yes, up to 70E 2018	38.0%	Yes, up to 70E 2021	23.0%
Yes, up to 70E 2015	15.5%	Yes, up to 70E 2018	11.5%
No	35.2%	No	47.8%

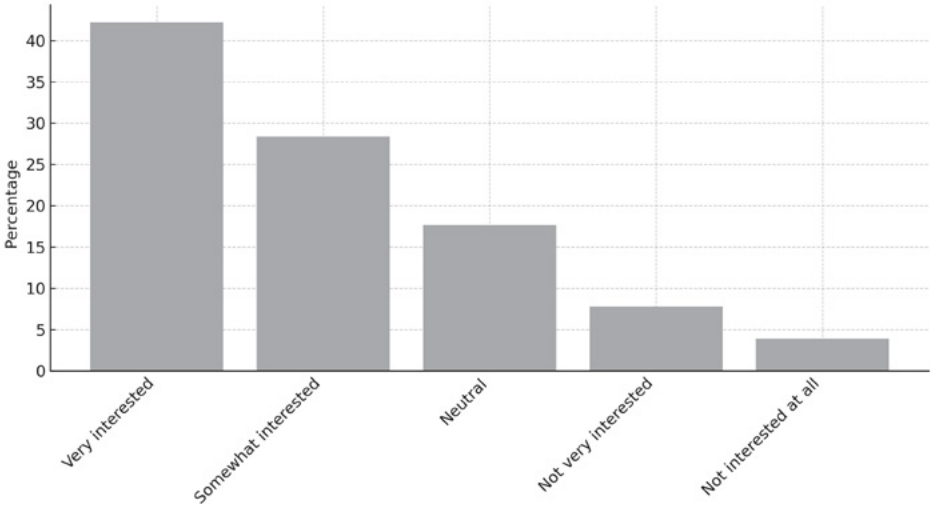
11. DOES YOUR FACILITY ENGAGE IN NEAR-MISS REPORTING?

Yes, we have implemented a formal near-miss reporting program	58.5%
Yes, but our program is informal	30.5%
No, but plans are in place	5.9%
No, with no plans to change	5.1%

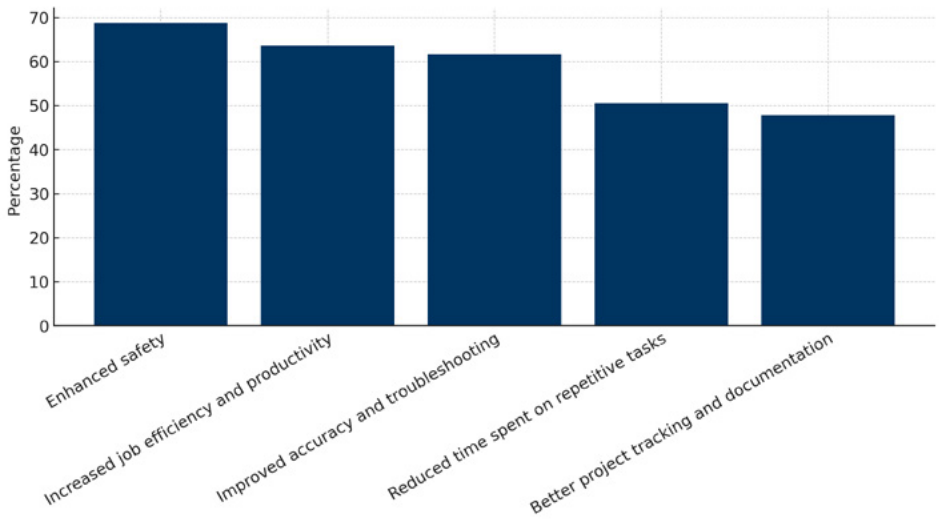
12. WHICH TYPES OF ELECTRICAL WORK DOES YOUR FACILITY CONTRACT OUT?

	2020		2025	
	NOW / IN BUDGET	NO PLANS	NOW / IN BUDGET	NO PLANS
Installation	71.8%	23.9%	71.9%	21.8%
Testing	61.9%	31.0%	67.0%	24.5%
Repair	66.2%	32.4%	67.9%	26.6%
Condition monitoring	53.6%	39.4%	53.9%	37.3%

13. HOW INTERESTED ARE YOU IN USING SMART TOOLS (E.G., DEVICES THAT COLLECT AND PROCESS DATA IN REAL-TIME AND PROVIDE ACTIONABLE INSIGHTS) TO IMPROVE YOUR SAFETY AND DAILY WORK EFFICIENCY AS AN ELECTRICIAN?



14. WHICH OF THE FOLLOWING BENEFITS DO YOU BELIEVE SMART TOOLS WOULD PROVIDE IN YOUR WORK AS AN ELECTRICIAN? (CHECK ALL THAT APPLY)



15. WHICH OF THE FOLLOWING SAFETY TECHNOLOGIES (OR DEVICES WITH SAFETY FEATURES) ARE DEPLOYED IN YOUR FACILITY?

	USING NOW	IN 2025 BUDGET	WITHIN 3 YEARS	NO PLANS
Connection systems (splitters, plugs, etc.)	69.6%	7.6%	6.5%	16.3%
Drives	76.1%	6.5%	5.4%	12.0%
I/O Modules	77.7%	6.4%	6.4%	9.6%
IR windows / viewports	40.2%	13.0%	8.7%	38.0%
Motion control devices	65.3%	6.3%	8.4%	20.0%
Motor control devices	86.7%	3.1%	6.2%	4.2%
Overcurrent protection (OCPDs)	85.6%	6.2%	3.1%	5.1%
PLCs / Programmable controllers	86.5%	5.2%	4.2%	4.2%
Relays (single-function)	88.5%	3.1%	4.2%	4.2%
Relays (specialty)	80.2%	5.2%	6.3%	8.3%
Sensing / proximity devices (light curtains, laser scanners, mats, etc.)	71.3%	7.5%	4.3%	17.0%
Switches (limit)	91.7%	3.1%	4.2%	1.0%
Switches (interlock)	88.5%	3.1%	5.2%	3.1%