

# Easy Predictive Maintenance with AI and Excel—No Cost, Big Impact

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Equipment downtime can lead to significant time and money losses for small food processing facilities. Fortunately, once considered the domain of large corporations with expensive software, predictive maintenance is now within reach for small operations using free tools like ChatGPT and simple data tracking with Excel or Google Sheets.

### What is Predictive Maintenance?

Predictive maintenance is a proactive approach that identifies potential equipment failures before they happen. Rather than waiting for something to break down and halt production, predictive maintenance uses data to forecast when maintenance should be performed, minimizing unplanned downtime. By regularly monitoring critical operational metrics like vibration, temperature, or usage hours, you can anticipate failures and address them before they disrupt your operations.

### How to Implement Predictive Maintenance Using ChatGPT and Excel

You don't need specialized software or expensive sensors to start using predictive maintenance. With basic tools like Excel and ChatGPT, you can track your equipment's performance, analyze data trends, and make informed decisions about when to schedule maintenance. Here's how:

**Step 1: Manual Data Collection with Excel or Google Sheets** Start by setting up a manual data collection system for your critical machinery (e.g., mixers, ovens, or refrigeration units). Track key operational metrics, such as:

- Temperature: Record the operating temperature of motors, refrigeration units, or other equipment.
- Vibration levels: If you notice unusual vibrations, record the frequency and severity.
- Operational hours: Track how long each machine runs between maintenance cycles.
- Breakdown history: Note any equipment failures, repair dates, and causes.

Date	Equipment	Temp.	Vibration Level	Hours Operated	Notes
09/21/2024	Mixer	185 F	Low	20	Normal
09/22/2024	Mixer	194 F	Moderate	22	Running Hot
09/23/2024	Mixer	198 F	Moderate	24	Vibrating Too Much

**Step 2: Using ChatGPT to Analyze Trends** After collecting data in your spreadsheet, summarize trends or provide details to ChatGPT. For example, ask:

“Our mixer’s temperature rose from 85°C to 92°C in the last two weeks. Is this a potential issue?”

“Our oven’s vibration increased from ‘low’ to ‘high’ over three days. What should I do?”

Receive Analysis and Recommendations: ChatGPT can identify abnormal trends, suggest causes like worn-out parts or overheating, and recommend maintenance schedules to prevent breakdowns.

Example prompt: “Based on these readings, when should I perform maintenance?” ChatGPT may suggest motor cleaning or replacement before temperatures exceed safe limits.

**Step 3: Scheduling Preventive Maintenance** Once ChatGPT helps you identify when maintenance is needed, create a manual preventive maintenance schedule based on these insights. For example, suppose ChatGPT identifies that your mixer tends to overheat every 200 hours of operation. In that case, you can proactively schedule a cleaning or part replacement every 180 hours to stay ahead of potential breakdowns.

Using your manual log and ChatGPT's insights, you can implement a maintenance routine that ensures smoother operations and less downtime. You can even ask ChatGPT to help refine this schedule as more data is collected, leading to more accurate predictions.

Example prompt: “Based on these readings, when should I perform maintenance?” ChatGPT may suggest motor cleaning or replacement before temperatures exceed safe limits.

### **The Benefits of Free Tools for Predictive Maintenance**

1. **Reduced Downtime:** By anticipating failures, you can schedule maintenance during slow periods, keeping operations running without disruption.
2. **Cost Savings:** Preventive maintenance usually costs less than emergency repairs and helps extend the lifespan of your equipment.
3. **Increased Efficiency:** With data insights from ChatGPT, you can shift from reactive to proactive maintenance, making your facility more efficient overall.

### **Conclusion**

Even with limited resources, small food processing facilities can leverage AI tools like ChatGPT and simple spreadsheet software to implement predictive maintenance. By manually tracking key equipment metrics, inputting that data into ChatGPT, and using its analysis to predict failures, you can reduce downtime, improve efficiency, and keep your operations running smoothly—without costly new technology. Adopting this DIY approach will turn operational chaos into smooth, streamlined productivity.