Introducing, ARDEN.

The best predictive maintenance system for Industry 4.0

by coding gods,

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What is industry 4.0?

Industry 4.0 is the next phase in the digitization of the manufacturing sector.

Arden detects and predict anomalies in factory operations, particularly in temperature and air quality aspects, to solve these problems...

Problems

1. Energy Wastage

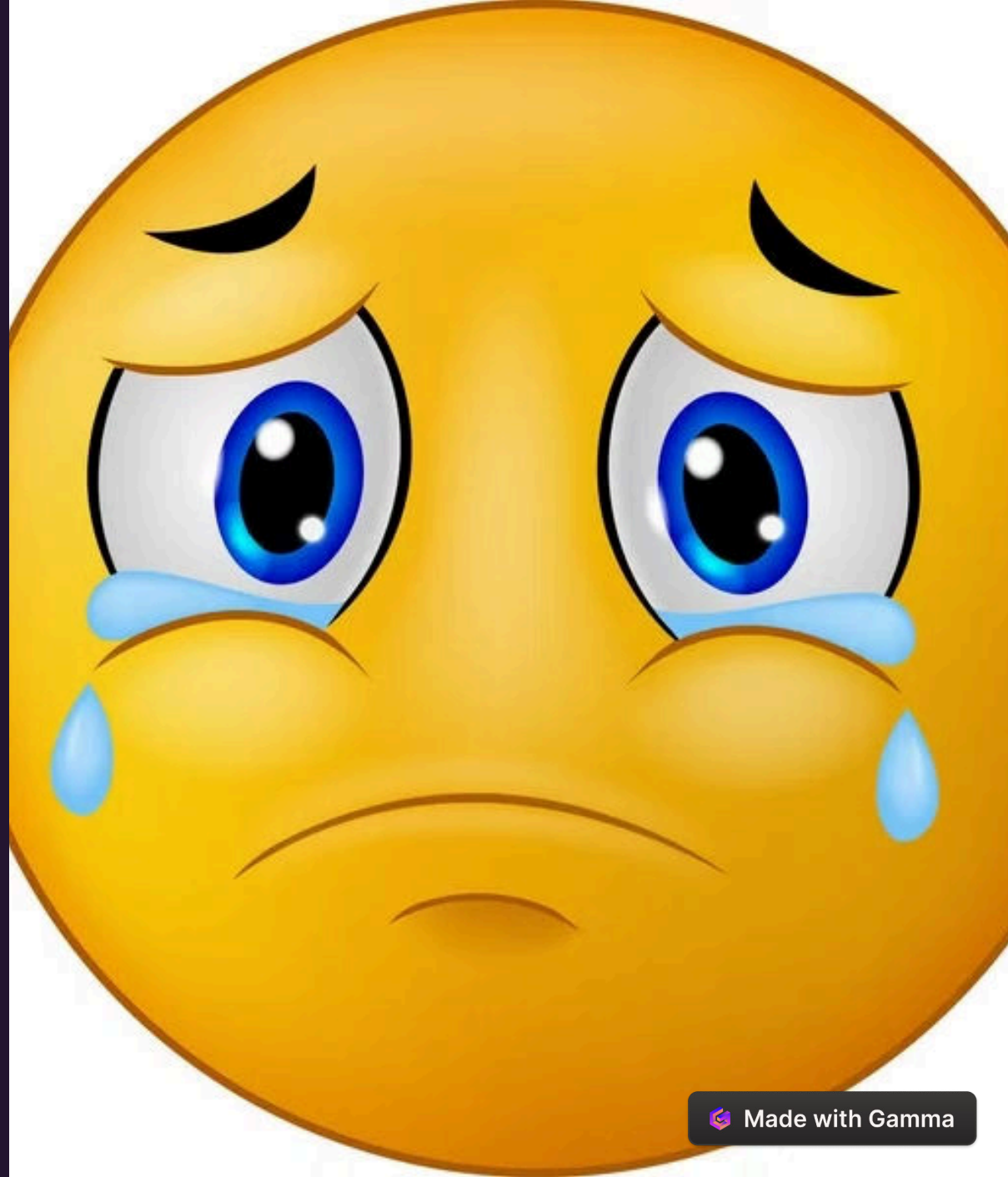
- inefficient systems can lead to higher carbon emissions

2. Unplanned downtime & Failures

- unexpected machine failures → downtime + loss of revenue
- industries have to bear more cost, buying new equipment

3. Reduced equipment lifespan

- inadequate maintenace → shorter lifespan of machines



Our Solution.

Arden utilizes real-time data to detect anomalies in machine parts and alerts users when maintenance is needed, before it malfunctions. Some features include:

1

Efficient Scanning system

LDR ensures smooth operations & detecting disruptions.

2

Air Quality Monitoring

When machines with chemical processes malfunctions, hazardous gases may be released.

Our gas sensor detect these toxic gases and alerts user when maintenance is needed.

3

Temperature Monitoring

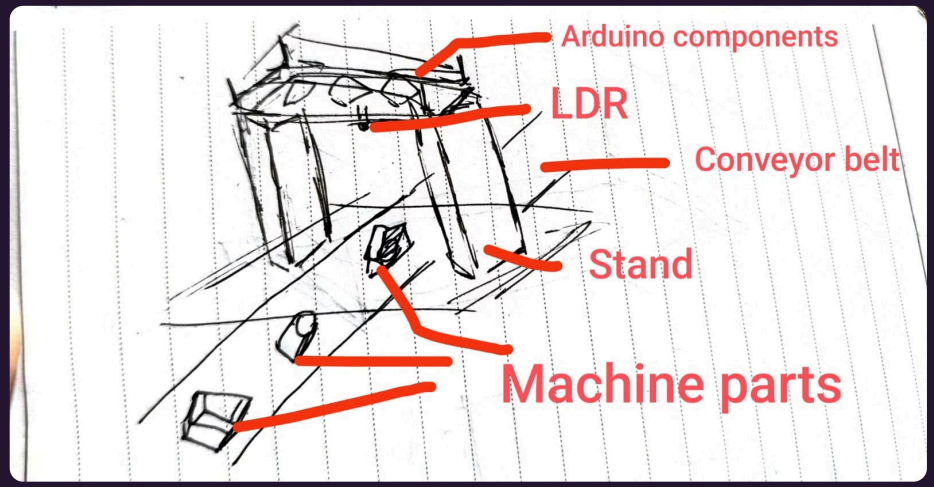
Temp sensors detect temp spikes and sends alerts to the user.

4

Energy Optimization

The potentiometer adjusts the backlight strength of the LCD, helping to reduce excessive energy usage.

Here's how it works:

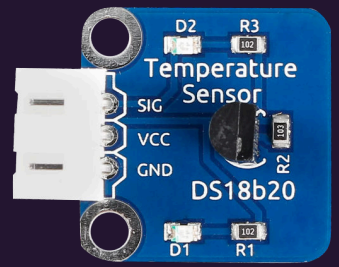


1. Machine parts passes through the conveyor belt.
2. LDR detects object.
3. Temperature and gas sensor reads data and checks for anomalies.
4. If anomalies are detected, user is alerted to repair the machine parts.

Arduino Components Used (1/2)

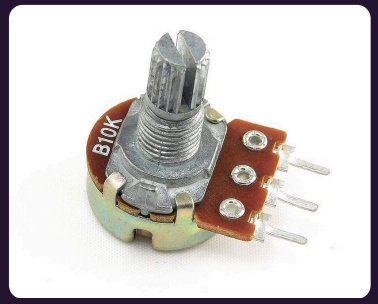
LDR

senses the passing objects by detecting changes in light intensity, which will trigger the tracking system.



Temperature sensor

monitors temp. If the temp exceed a specified range, an alert will be sent to the LCD.



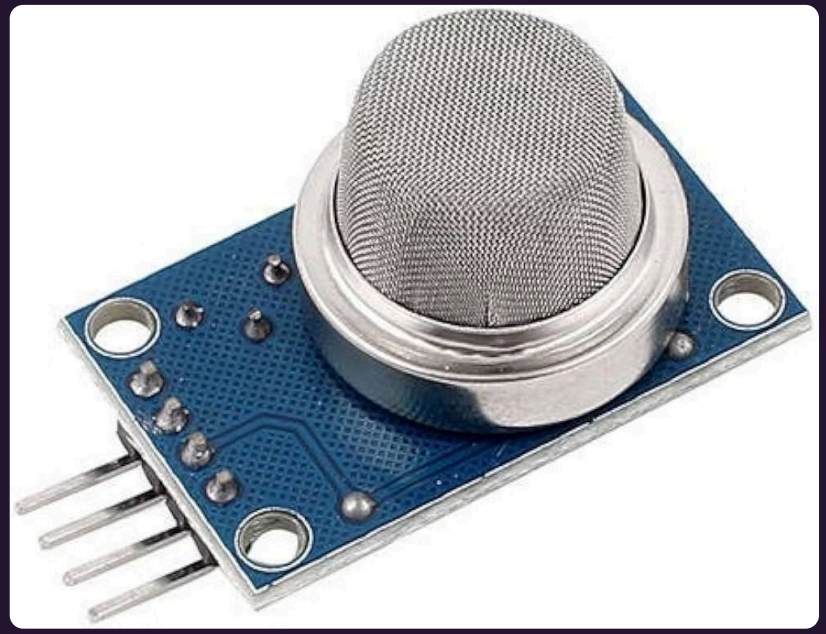
Potentiometer

reduces energy consumption by allowing the backlight of the LCD to be adjusted

LCD screen

alerts user if a part needs repair, prompting swift action.

Arduino Components Used (2/2)



Gas sensor (WOW!)

Early Warning System:

When a machine malfunctions or a gas leak in the factory occurs, the gas sensor which monitors smoke and methane levels, will trigger an alert to the user.

By detecting these anomalies early, Arden acts as an early warning system, allowing personnel to take immediate action to repair damaged machines, while ensuring workers' safety.

Impact on Industries

1. Increase Machine Lifespan

By **identifying potential issues** and addressing them early, predictive maintenance can **extend the lifespan** of equipment.

2. Cost Savings

Predictive maintenance helps avoid costly emergency replacements, reducing redundant maintenance and labor costs.

3. Increase Manufacturing Efficiency

Arden **optimizes** factory processes by preventing unexpected breakdowns, **which reduces downtime.**

4. Improve Workplace Safety

By predicting and fixing machines before they fail, workplace accidents an be avoided, and workers' safety can be prioritized.

Scalability- The Future of Smart Manufacturing

Arden takes a big step in enhancing smart manufacturing by leveraging real-time data insights, to optimize manufacturing efficiency, minimize downtime, and reduce maintenance costs, ultimately improving overall operational efficiency and equipment reliability.

How relevant is predictive manufacturing?

THE IMPACT IS HUGE!

IOT ANALYTICS

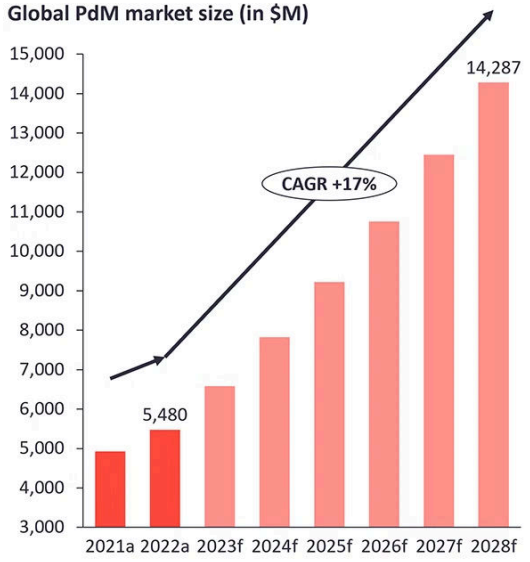
November 2023

Your Global IoT Market Research Partner

Market snapshot: Predictive maintenance 2024

Market size

Global PdM market size (in $M)



20 selected vendors

MathWorks · ARUNDO · AVEVA · machinemetrics · SAS · aspentech · Icare · aws · Rockwell Automation · novity · IBM · boon · COGNITE · falkonry · SKF · ABB · Microsoft · AUGURY · Baker Hughes · SIEMENS

3 different types

1. Indirect failure prediction
2. Anomaly detection
3. Remaining useful life

3 selected trends

- Complete solutions that offer pre-trained models and prescriptions
- Integration into the maintenance workflow
- Specialized solutions for specific industries or assets

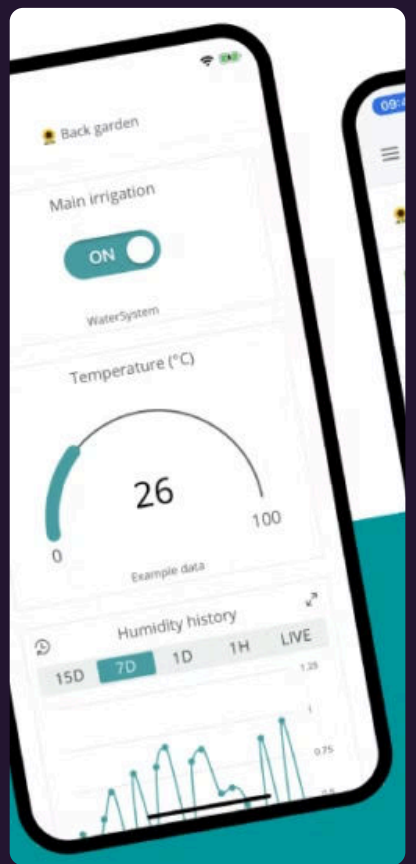
Source: IoT Analytics Research 2023-Predictive Maintenance Market Report 2023-2028. Please cite the source and link to the original post and our website if you republish our images.

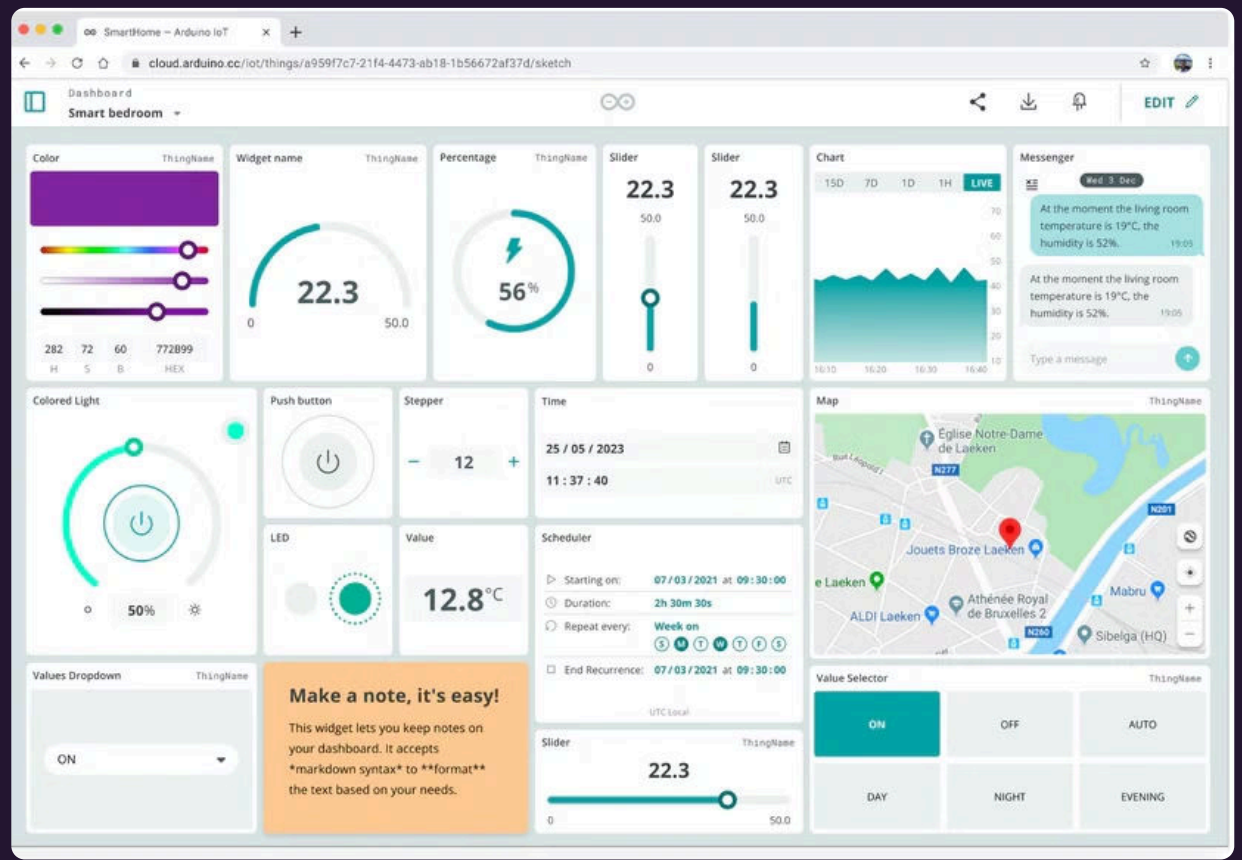
Cost Effectiveness of Arden

components	cost
Gas sensor	$ 2.68
LCD	$ 1.20
Potentiometer	$0.43
DIY acrylic stand	$2
temperature sensor	$1.34
Others (tape, glue etc)	$0.20
Total	$7.86

All it takes to build Arden is less than $8, and yet, it can save millions of dollars worth of machinery replacement costs! 💸🤑

Scaling UP even further…





We plan to use a **cloud-based system** that utilizes **real-time monitoring of machine conditions**, **accessible** anywhere. Integrated **alerts and notifications** in the Arduino cloud system notifies for immediate action.

Thank you!