

DEATH OF TRADITIONAL MAINTENANCE

In the days before electric refrigeration the icebox reigned supreme. Little more than an insulated unit with a rack to hold a block of ice, it was a simple and effective way to extend the life of perishables and cut food waste. It was a revelation.

Iceboxes ushered in a whole new industry: cooling. Icemen built businesses harvesting blocks of ice from rivers and delivering them to customers from horse-drawn wagons.

Then came electric refrigeration.

Over a period of eight years, US electric refrigerator sales rose from a few thousand to half a million units. Icemen, still hauling blocks of ice, felt threatened. Instead of applying their considerable experience in cooling and embracing new opportunities, they fought progress.

The icebox was wiped out, disrupted by electric refrigeration.

Maintenance Today

Maintenance hasn't changed in decades. It's still a binary choice between reactive and planned:

| Reactive Maintenance | Planned Maintenance |
|--|--|
| Customers pay only when contractors visit site | Customers pay annual contract fees |
| There are no contracts or minimum charges | Customers agree a minimum number of visits |
| It's 'just-too-late': breakdowns trigger maintenance | Prevents appliances from falling into disrepair |
| Few opportunities to catch developing issues | Contractors service equipment per a schedule or manufacturers' recommendations, not need |
| Emergency callouts are inconvenient and expensive | Some appliances need more visits per year, others fewer |
| Appliances become inefficient and expensive to run | Contractors miss evolving and hidden problems |
| Useful product life is shortened | |

This gulf encourages conflict between contractor and customer. Contractors earn from visits so insist planned maintenance is essential. Customers see this as a ploy to tie them into expensive contracts and push back on price. Contractors cram in more visits per day to make up the revenue shortfall.

It's been a race to the bottom on price and service delivery. Market disruption is long overdue.

Enter Intelligent Appliance Monitoring

Intelligent appliance monitoring is an 'Internet of Things' (IoT) technology that enables predictive maintenance: delivering the right maintenance to the right appliance at the right time. How does it work? You buy a 'smart' appliance with embedded sensors, hook it up to the Internet in a couple of clicks, collect its performance data and bingo! You monitor its performance and your maintenance woes are over. Sadly, no.

Hyping IoT in this way is problematic because it oversimplifies something that is complex, but which does work if done right.

Artificial Intelligence

Collecting performance data for just one appliance is not useful. How do you know if the readings are good or bad? Typical or unusual? You need to compare its performance against thousands of similar appliances. This involves analysing huge amounts of high-resolution sensor data in real time - an impossibility for humans with generic business intelligence tools.

You need an artificial intelligence (AI) engine that autonomously learns behaviours and trends in the collected data. NoWatt's AI engine has been designed for this. It autonomously learns and reports on unlimited amounts of sensor data to predict evolving conditions and avert failures. As the number of installed sensors increases, so does the pool of data from which our AI learns. Teach the AI which patterns interest you and it will hunt for them.

This AI delivers accurate, predictive analytics on the operation and performance of appliances being monitored. In maintenance terms, teach the AI what a failing XYZ appliance looks like and it will find all other failing XYZs in its database. This approach is revolutionising maintenance:

| Benefit | Contractors | Customers |
|-----------------------------|--|----------------------------------|
| Cut unnecessary visits | Justify visits with performance reports | Base decisions on real data |
| Increase appliance life | Faults shorten the life of appliances. Fix issues early to avoid bigger ones | Maximise asset value |
| Reduce emergency calls | More predictable schedules | Avoid breakdowns. Save money |
| Reduce cost of parts | Smaller problems = cheaper parts = happy customer | Save money |
| Improve scheduling | Cluster visits to reduce travel time | Choose convenient times |
| Triage problems offsite | Go to site better prepared | Higher probability of prompt fix |
| Pay for performance | Prove problem was fixed | Pay only when problem is fixed |
| Reduce energy | Failing appliances cost more to run | Save money |
| Cut total cost of ownership | Help customers maximise ROI | Save money |

Disrupt or Be Disrupted

Intelligent appliance monitoring is changing the world of maintenance. It will become the norm.

Contractors who refuse to change will see their businesses eclipsed by new competitors not prepared to negotiate on price alone. New incumbents will use technology like NoWatt's AI to work more efficiently and get close to their customers. It's as inevitable as the domination of electric refrigeration over iceboxes.

The question left facing maintenance contractors is which camp are they in? Icebox or electric refrigeration? The disrupted or the disruptors?