LONTRA

Multi-platform Systems

After joining Lontra in 2022, I set to work re-designing and building their systems. For some, it was a case of creating a better UI and migrating these into a more robust codebase, whereas others were designed and built from the ground up.

The initial work was carried out during 2022-2023 and initially took roughly 4 months of primary exploration, planning and design. I will cover the general outline of the project here, as some parts cannot be shown due to an NDA which I had to sign when starting with the company. I will touch on the areas I am able to, which will give an insight into some of the technical and design consideration along with business decisions.

My involvement with the project was to figure out the UI and UX, explorer the use-cases, to design, integrate and ultimately code out the front-end. Back-end development was handled by three other colleagues. I was assisted on the front-end by another colleague in an advisory capacity.

CONSTRAINTS

Considerations for the project

Mobile friendly

This was essential, as two of the projects required European CE approval. The applications were required to work easily and reliably on Android, Apple and Microsoft OS' without introducing any incompatibilities with platform specific quirks; such as connectivity.

Clean and modern

Curved and softening of the elements to allow for a comfortable viewing experience, distinct elements using a tight colour palette, primarily using a soft white with Lontra brand blue and green to tie in with branding across the projects.

The same, but not the same

While each project kept a similar feel, they were still to be unique in their own right, in terms of both design and function. Tablet applications kept a feeling of familiarity while being able to allow it's differences to better help engineers, the portals were aimed more at the end user and development applications kept simplistic for the development engineers.

Simplicity

A clear focus on ease of use, I took the approach that people could find things in easy reach. I personally don't like overcomplicated or bloated software, complex actions were broken down and allowed the user to have the choice to pull in more information rather than overload them. This allowed for the design to remain concise and provided a better overall user experience; from the feedback received.

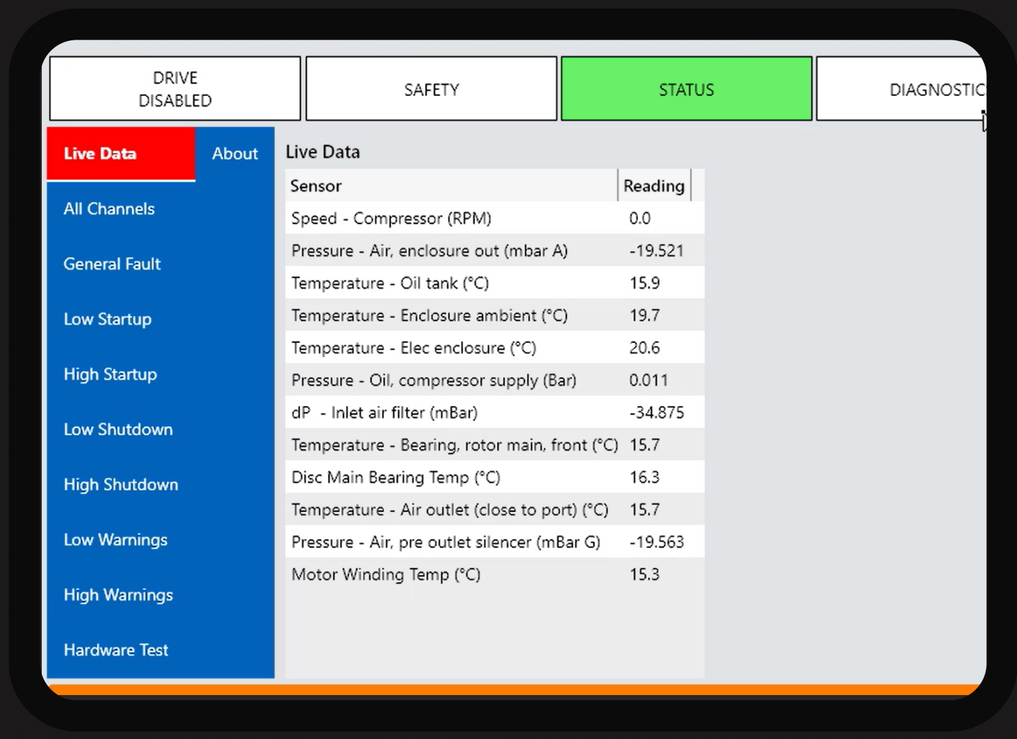
WHAT'S THE PROBLEM

HMI and Service Tablet

The existing HMI (Human Machine Interface) and tablet system was built on a framework called Avalonia, which was extremely limited in being able to deliver a nicely rendered result across various platforms.

While it had the base functionality, it wasn't going to allow for flexibility in the future so this was dropped in favour of a Blazor, .NET, C# combination to allow advantages from Azure for future deployment.

The old UI



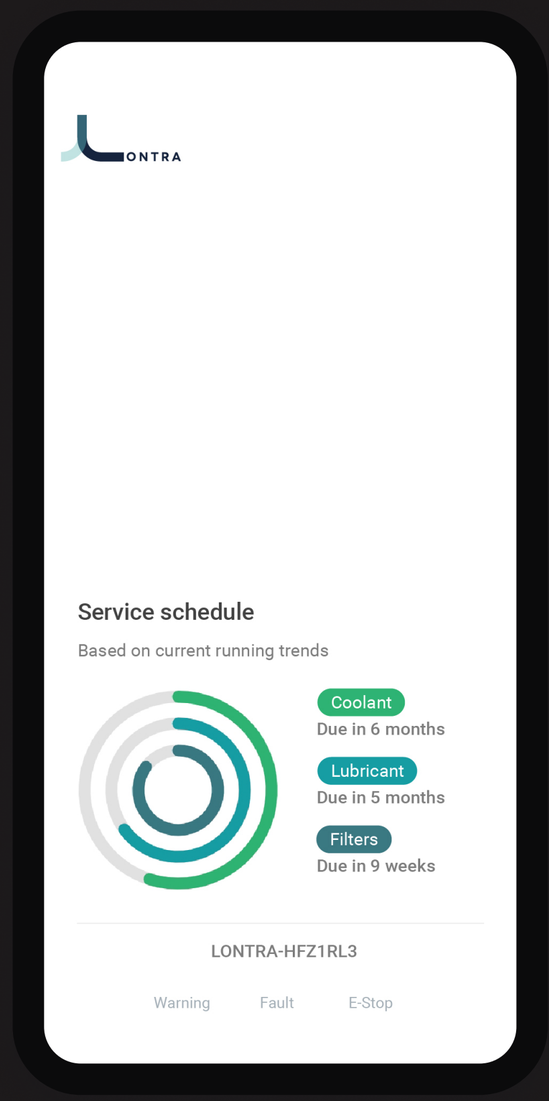
WHAT'S THE PROBLEM

Phone App

The phone app was very undeveloped when I joined and needed a quick turn around for CE approval within a couple of months. This meant stripping things down to it's bare function, which was to allow the phone to scan a QR code from a label and display the current gauge operation.

The old UI wasn't user friendly with limited functionality such as needing to restart the app in order to connect to a different machine.

The old UI



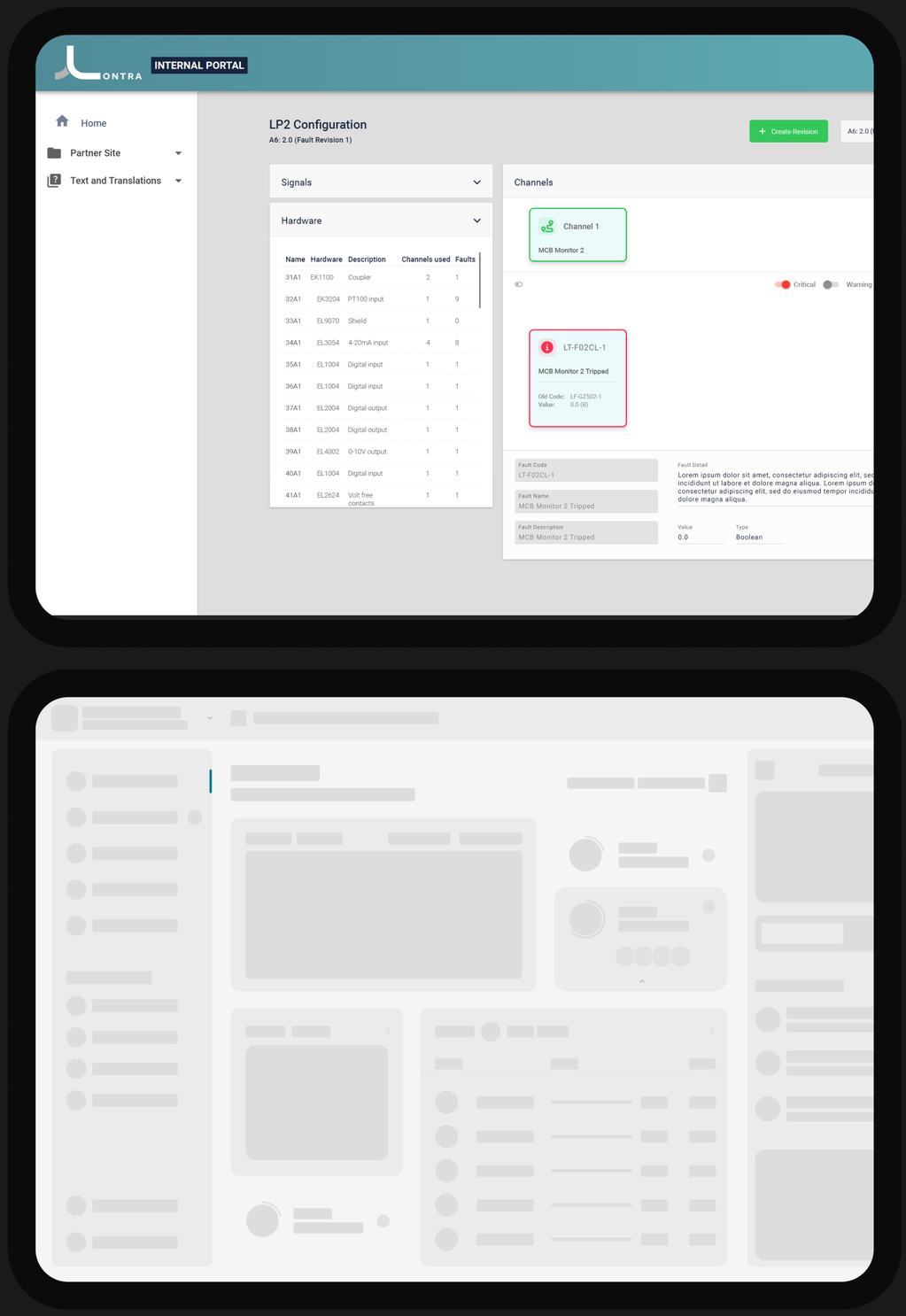
WHAT'S THE PROBLEM

Portals

The existing portal was a quick throw together of the basic MudBlazor UI elements. One of the first tasks was creating a LP2 Configuration viewer in order for the engineers to keep track of fault revisions.

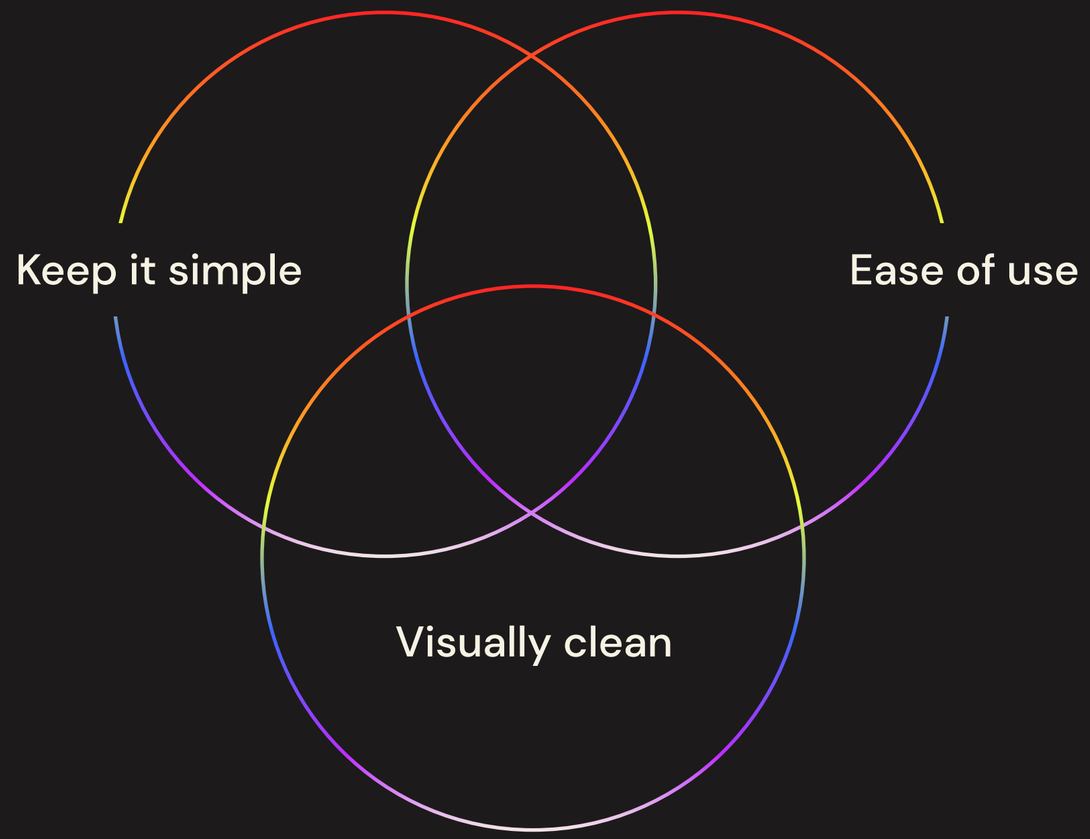
However, while the initial barebones were present, it could be greatly improved. This eventually became a heavy focus on redesigning both the intranet and partner facing sides to control the LP2 system.

The old UI



DESIGN OUTCOMES

We’re looking around these themes



Keep it simple

Ensure the systems are straight forward; actions are easily located and only provide enough initial information and allow the user to drill down when they deem it necessary.

Ease of use

Emphasis on speed; users should be able to work through the projects from top level categories to end at the area they require while able to move between different areas.

Visually clean

Simple design approach with tunnels and visual aids to help guide a user to the right places while remaining a good experience. Less elements and rounded cards allow for less clutter and clear focal points.

SOLUTIONS

Here’s what really happened

After moving through various design stages and playing with a few ideas along the way, we ended up in a good place.

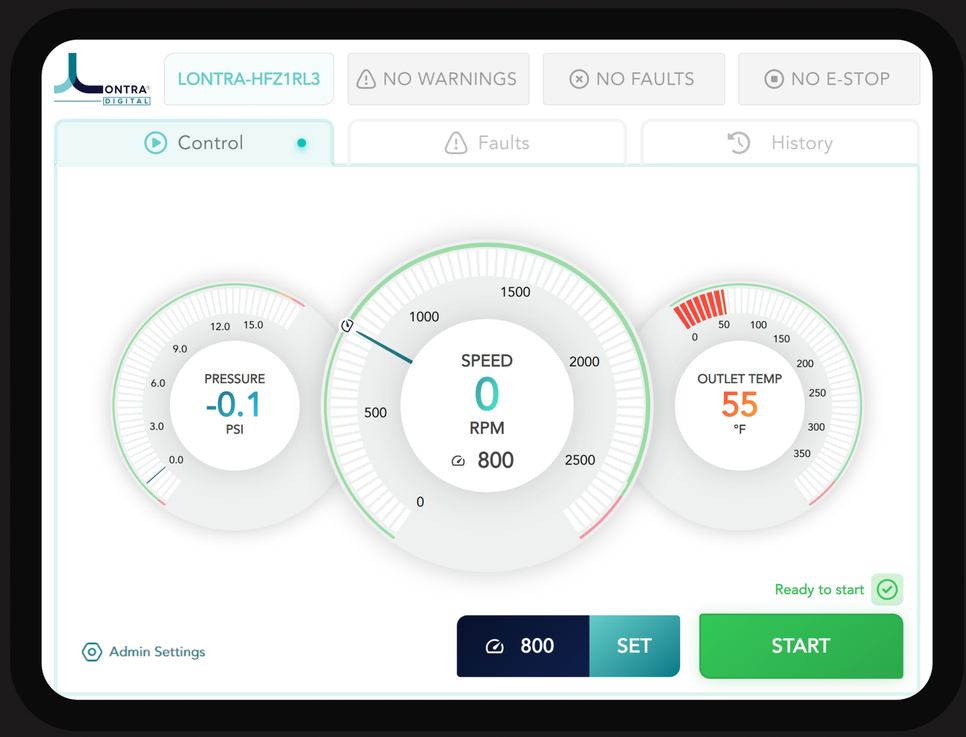
HMI for Humans

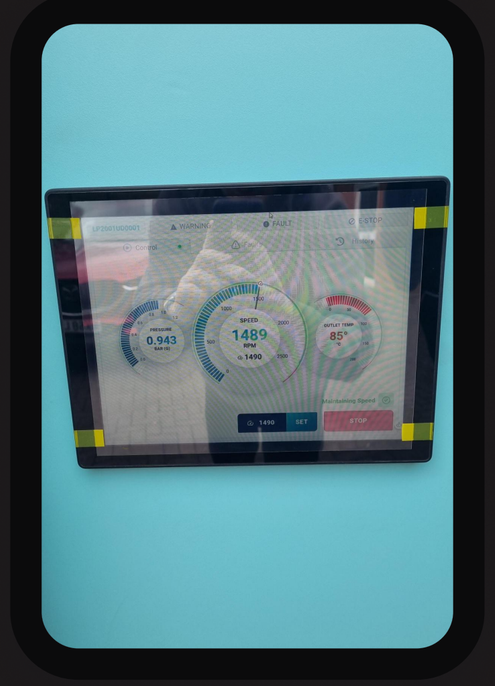
The interface was designed around keeping things clear and functional with key visual items to process information quickly. As well as allowing users to view extra information as required to help with potential diagnostics.

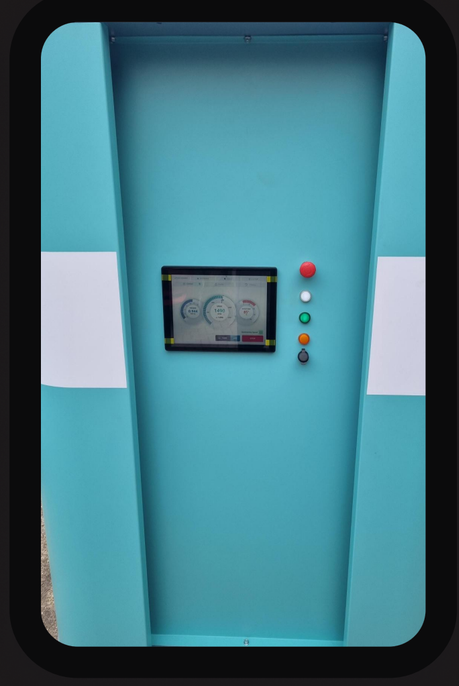
Past, Present, Future

Given the industrial application, engineers wanted to know exactly what was going on at any given time. This meant recording problems as they occurred and showing exactly what the problem was at that point in time. The inclusion of detailed Fault and Run History tabs helped achieve this goal.

The new UI







SOLUTIONS

A more helpful and detailed app

Meeting the basic requirements needn't be too basic when it comes to getting CE Approval granted for the EU market.

Functionality

The first approach was to make the app functional, whilst being able to view the LP2 outputs of the most critical information as well as make the app navigable.

More detail

In addition to viewing readings from the machine, the inclusion of a drawer provided more detail while remaining accessible from other areas within the app.

The new UI (early version)

SOLUTIONS

More than a portal; a control hub

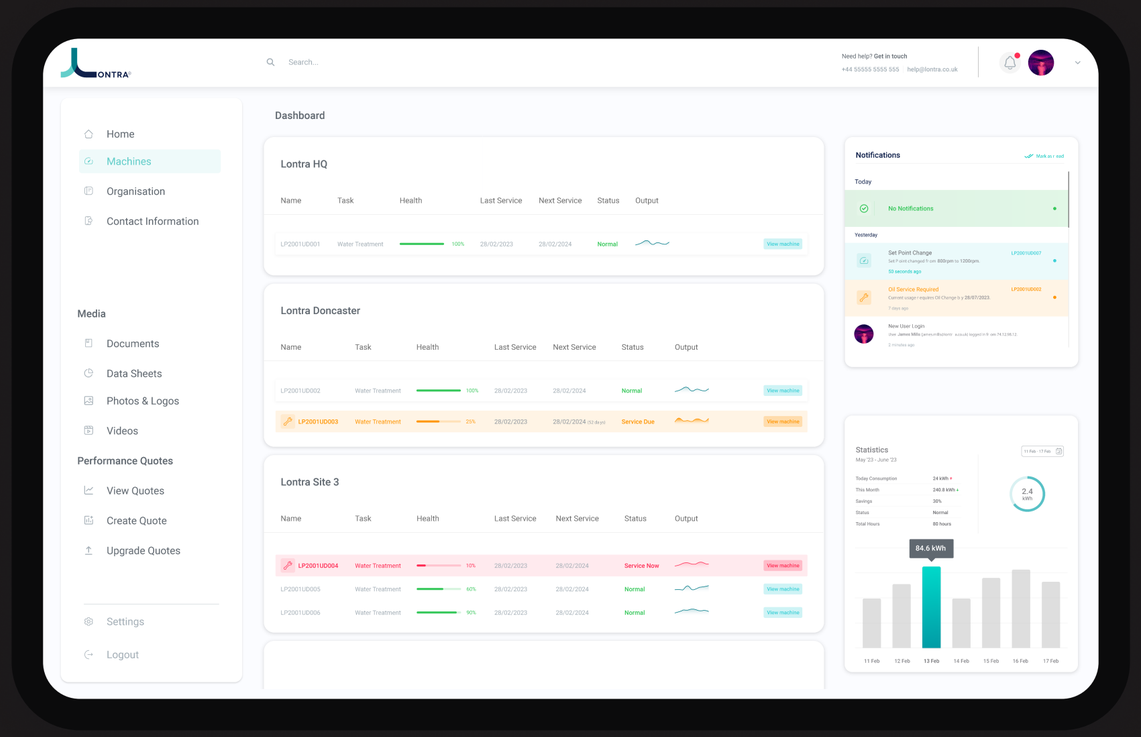
The main hubs needed to be inclusive of end users so the approach was to always provide a layer of confidence across an array of machines.

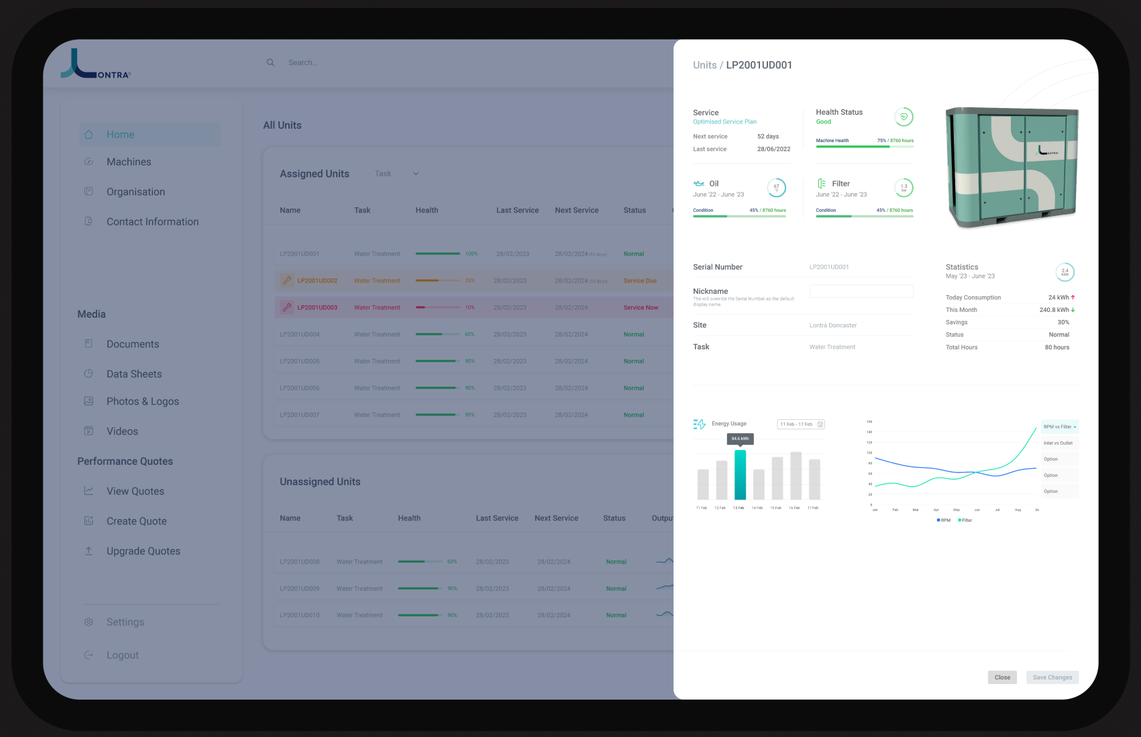
Usability

The majority of the time, a quick check of the portal was to make sure the machine is running and whether a service is required. As things expanded, new areas of concern were added to provide key insights and detailed information within a few clicks.

More detail

The machines could only ever provide so much information, so the advantage of the portal was being able to see servicing information, AI feedback from oil and filter quality and energy use metrics. With the LP2 being more efficient, we wanted to highlight this to the user.

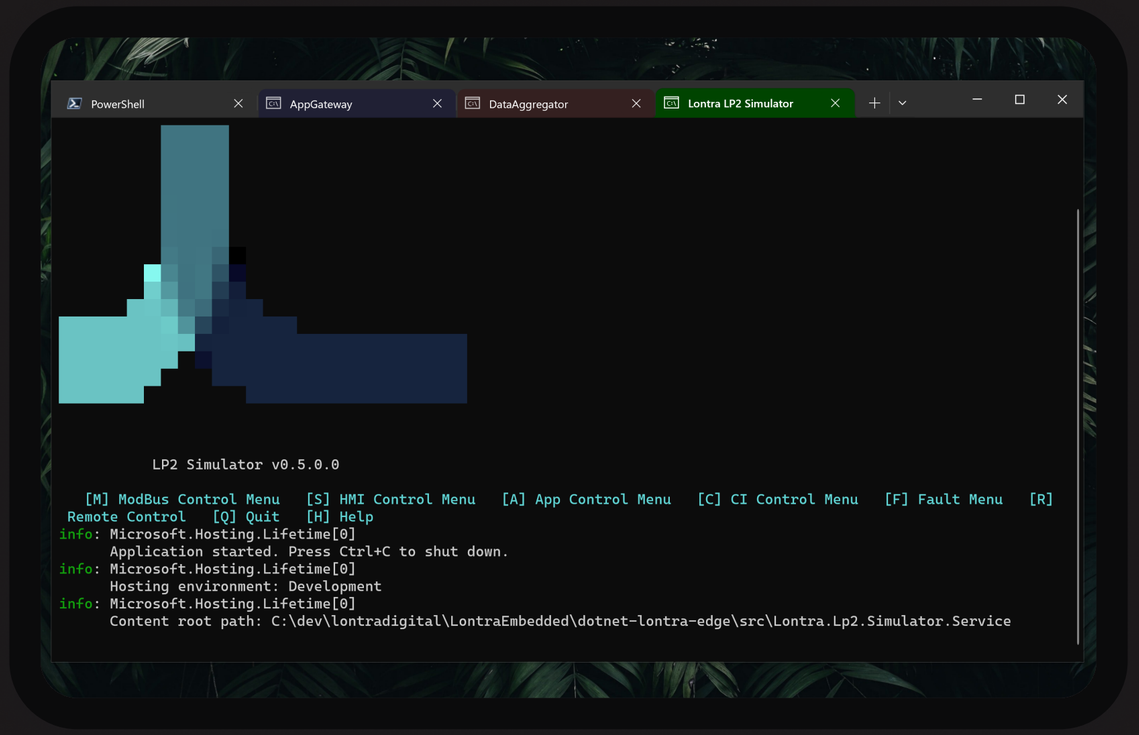




SOLUTIONS

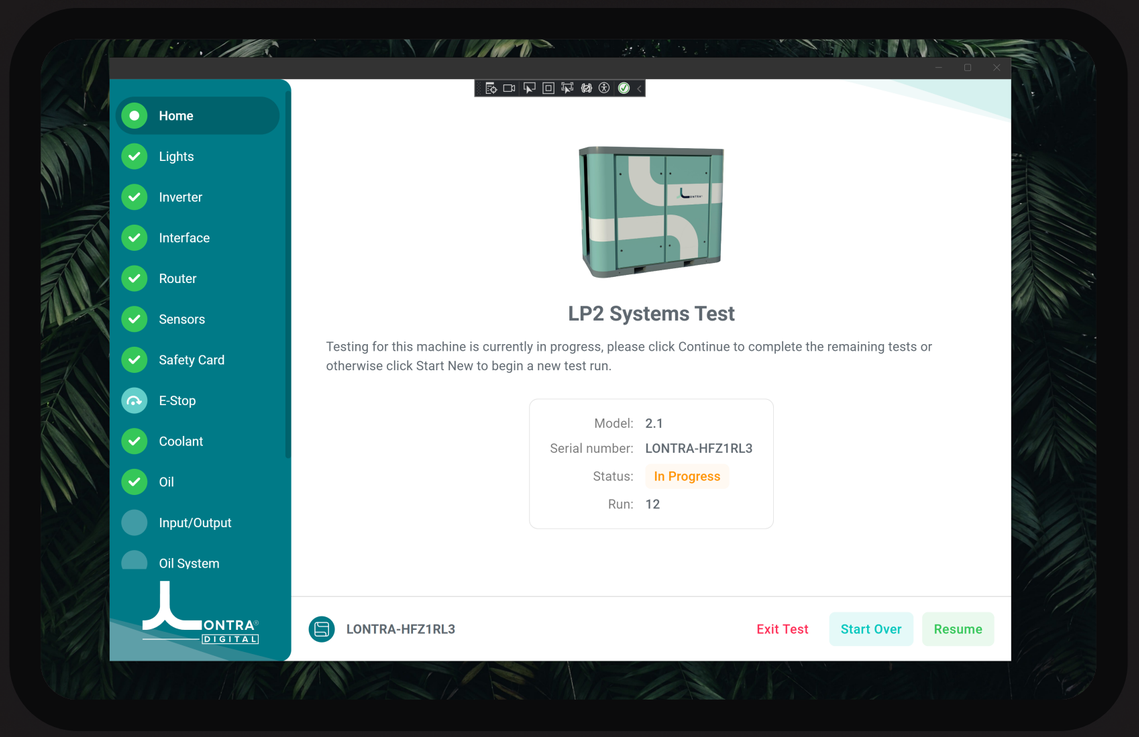
EOL testing made clearer and simplified

Testing of machines on the assembly line was re-tooled so that line engineers could easily carry out testing, without the need for the design team.



Simplicity

The app functions as a wizard and allows quick processing of machine tests in order to both visually and programmatically confirm that each component of the unit is functioning and running in the expected configuration.



Warning and re-testing

If a test failed, the engineer would need to identify the cause and create a message. This was flagged on the portal for the assembly engineers to find out if it was a user error during installation at a previous stage or spontaneous component failure. Coupled with the simulator console app, testing was made straight forward and greatly minimised issues as they were caught early on.

THE CHALLENGES

Not everything went as planned

The initial idea was to approach the project as a re-design, when the initial re-design was complete we pivoted towards the current design

Pivot in approach

Originally the LP2's HMI was optional and a service tablet was to be given out to engineers. However, with the inclusion of an IPC for the LP2's IoT, this meant more could be done on machine. We ultimately decided from an end-user perspective that the service tablet should go on the back burner.

Going forward we decided that all LP2's should have a screen as this heightened the UX in many ways, by always providing an immediate user output if anything were to go wrong and for easy long term factory floor monitoring.

Re-branding

Roughly 9 months into the projects, the firm took on a new marketing team who selected a new logo and colour palette was selected. While this didn't pose too much of an issue as the colours were quite close to the original, some elements were changed slightly to accommodate the new colour scheme.

This led to the development of a centralised icon system and global palette class files. These would be instrumental in achieving a dark mode toggle.

MOVING FORWARD

Progressing the project

The project was progressing in a great way, more functionality was being worked on consistently.

Moving forward, with the imminent completion of the data monitoring back-end, charts and other analytical tools would make their debut into the portal, tablets and HMI. The AI service scheduler would be developed further from its initial inception ideas.

With the expansion into other markets, considerations with using non-Germanic based languages would need to be addressed. Exploration into how the HP2 (Heat Pump) UI would be integrated, as well as how the app would look and function when targeting both home and commercial sectors.

Unfortunately, Lontra entered administration. However, in that short time, we disrupted the market and I was over the moon with the feedback I received from billion dollar market competitors on our systems.

https://www.lontra.com