(Electronic BMS Project Engineer – Controlworks Pty Ltd)

1. Tell Me About Yourself

Thank you for the opportunity. So, I'm an **Electronic and Controls Engineer** with **over 12 years of experience**, mainly working across **embedded systems, smart automation, and buil2ding-control type solutions**, plus a lot of hands-on work in **control panels, site support, and commissioning**—which I think aligns really well with a **BMS Project Engineer** role.

In terms of technical skills, I've worked with controllers like **STM32, ESP32, Atmel and PIC**, and I'm strong in **C/C++ firmware development**, including using AI tools to speed up debugging and development. I'm also experienced with **Altium, AutoCAD, MATLAB, and Proteus**, and I'm very comfortable using test equipment like oscilloscopes and multimeters for troubleshooting and validation.

Right now at **Wabtec**, I'm designing and developing electronics for **intelligent relay monitoring systems**—everything from PCB design and optimisation to performance testing, safety validation, and building Automated Testing Equipment (ATE) that are used in production and field environments. I also support fault diagnostics and live system issues, so I'm used to working under pressure and coordinating with different teams to get results quickly.

Alongside my professional role, I continue advanced work in **embedded systems and building-automation-oriented controls**, where I design **ESP32 and STM32-based controllers, I/O modules, energy-monitoring devices, and communication interfaces**. Through this, I've gained hands-on experience with **HVAC-relevant protocols such as Modbus RTU/TCP, BACnet/IP, BACnet-MS/TP, and MQTT**, as well as **RS-485 and Ethernet-based system architectures**. I've also developed **PC-based engineering and commissioning tools**, closely mirroring modern BMS workflows.

What attracts me to **Controlworks Pty Ltd** is the company's strong reputation for delivering **high-quality BMS and HVAC automation projects**, and its emphasis on **engineering excellence, structured project execution, and long-term client relationships**. I'm particularly motivated by roles that span the **full project lifecycle**—from design review and control logic development through to integration, commissioning, optimisation, and handover.

I see myself as someone who **bridges electronics engineering, control systems, and on-site delivery**. I'm comfortable reading schematics, working with field devices, coordinating with contractors, and commissioning systems to specification. I'm now looking to bring that combined skill set into a **dedicated BMS Project Engineer role**, where I can contribute immediately and continue growing within a technically strong organisation like Controlworks.

2. About controlworks pvt ltd

“From everything I’ve seen, ControlWorks has a really strong engineering-focused culture, and that genuinely connects with me. The company has a reputation for being collaborative, hands-on, and committed to delivering high-quality BMS solutions using open protocols and modern control technologies. I really like that the team works closely across design, integration, and commissioning, because that’s exactly how I’ve built my career—taking ownership of the full lifecycle and solving real issues on site.

I’m also really drawn to the company’s reputation for integrity, transparency, and long-term client relationships. That matches the way I work: clear communication, taking responsibility, and making sure the system performs the way the client expects in the real world.

And the focus on continuous improvement and new technologies fits me perfectly. I’ve always been someone who learns quickly, adapts fast, and looks for smarter ways to optimise control strategies or improve system reliability.

So both culturally and technically, I feel very aligned with ControlWorks. It’s the kind of environment where I can contribute straight away, but also keep developing and growing as a BMS engineer.”

3. Leaving your current employer, and why do you want to join Controlworks Pty Ltd?"

I've really valued my time at **Relay Monitoring Systems**. It's been a strong environment for developing my core electronics skills—particularly in hardware troubleshooting, monitoring systems, testing, and working with field-deployed equipment. I've gained solid experience in reliability-focused engineering and real-world fault diagnostics, which I believe is a strong foundation.

However, as my career has progressed, I've become increasingly focused on **control systems, building automation, and integrated BMS/OT solutions**. At Relay Monitoring Systems, the scope is more specialised around monitoring and diagnostics, and there are limited opportunities to work deeply across **PLC programming, HVAC/BMS integration, commissioning, and end-to-end project delivery**.

That's where **Controlworks Pty Ltd** really stands out to me. Controlworks has a strong reputation in **BMS, HVAC control, and large-scale automation projects**, and I'm particularly drawn to the way the company delivers complete solutions—from design and programming through to commissioning and long-term support.

I see this as a natural next step where I can bring my strengths in **electronics, embedded systems, field troubleshooting, and protocols like Modbus and BACnet**, while also growing into deeper exposure with **BMS platforms, PLC-based control, and project engineering**.

Ultimately, I'm not leaving my current role because of dissatisfaction—but because I'm looking for **broader technical responsibility, more complex systems, and long-term career growth**, and Controlworks aligns extremely well with those goals.

4. Want to join ControlWorks as a Project Engineer:

I chose to join **Controlworks** because it's one of the few companies where you can genuinely work **end-to-end** on challenging, real-world **automation and BMS projects**, and at the same time grow into stronger **project leadership**.

What really attracted me is Controlworks' reputation for delivering **high-quality building management and integrated control solutions**, especially in complex commercial and industrial environments. As an Electronic and BMS-focused engineer, I want to be in a role where my technical decisions actually make a difference—things like **system performance, energy efficiency, reliability, and client outcomes**—and Controlworks clearly provides that kind of platform.

Another big reason is the **engineering-driven culture** here. Controlworks seems to value ownership, problem solving, and hands-on involvement across both hardware and software, which fits perfectly with my background in electronics and control systems. I'm especially excited about working with advanced BMS technologies, integrated controls, and client-focused project delivery, because that's where I can contribute the most value and where I see the industry moving.

Overall, I joined Controlworks because I want to grow not only as a strong engineer, but also as someone who can lead projects—from concept and design through to commissioning and handover. The technical standards, team environment, and variety of projects make it an ideal place for long-term growth in building automation and controls.

5. PLCs in BMS Experience and applications used

“Yes, I do have solid hands-on experience with PLCs in different environments, and that background translates really well into BMS applications. In my current role, I work with automated testing and calibration systems that are PLC-controlled, and I’ve made major updates to the control logic and test sequences whenever product variables change. So I’m very comfortable modifying, troubleshooting, and optimising PLC-based control processes.

At Alstom, I was directly involved in wiring, installing, and commissioning control panels for HVAC systems and locker control panels, which gave me practical exposure to how PLCs drive building-related equipment. And earlier at the Ceylon Electricity Board, I worked on commissioning power-plant systems where PLCs from Siemens, Allen-Bradley, Mitsubishi, Schneider, and Omron were used to control generation and transmission equipment, all tied into SCADA for monitoring and control.

So overall, I’ve worked with PLCs across industrial automation, HVAC, and large-scale power systems, and I understand exactly how they’re applied in BMS for equipment control, sequencing, safety interlocks, and system integration.”

6. Troubleshoot a complex issue.

⭐ **(STAR Method)**

Situation

While working at the Ceylon Electricity Board, I supported an automation and monitoring system at the Automation Control Centre that monitored zonal HT power meters. The meters communicated via IEC-101, with data bridged to the control system over Modbus TCP.

Task

The system became unstable under high data load, causing crashes, data loss, and incorrect timestamps, which led to miscalculated trends and alarms. My task was to restore stable, accurate, real-time monitoring.

Action

I investigated the full data path and identified two root causes:

- **Buffer overflows, where incoming IEC-101 data overwrote unprocessed frames**
- **Poor time synchronisation, which caused events to be logged out of sequence**

To fix this, I introduced circular buffers to control data flow, implemented timestamp normalisation at the gateway, and added buffer-health monitoring, exception handling and logging to detect issues early.

Result

The system became stable and reliable, crashes stopped completely, and data accuracy was restored even during peak traffic. Operators could trust trends and alarms again, and the solution was later reused as a standard design approach.

Learning (Reflection)

This taught me that in automation and BMS systems, data integrity and time synchronisation are just as critical as communication itself, and they must be designed in from the start.

7. Meet a tight deadline on a complex project.

In my current role at Wabtec, I had a situation where we needed to deliver a critical upgrade to an intelligent relay monitoring and calibration system under a very tight deadline, because it was tied to a scheduled test window and production release. The challenge was that it wasn't just one task — it involved **hardware validation, firmware control logic updates, test automation, and system-level verification**, all while ensuring compliance and reliability.

Chamil Resume Electrical Engine…

My responsibility was to lead the technical execution from testing through to final verification, and make sure the solution was stable enough to ship without delaying the program. I quickly broke the work into clear priorities — what must be fixed for functionality, what must be verified for safety, and what can be improved after release.

To meet the deadline, I took a structured approach:

- **Created a fast test-and-validation plan** to isolate the highest-risk failure points first
- **Ran parallel workstreams**: firmware/control changes while validating PCB and signal integrity
- Used engineering tools like **oscilloscope and instrumentation** to validate timing, noise margins, and communication reliability
- Built quick **automated test sequences** so we could repeat tests faster and eliminate human error
- Coordinated closely with the project team and technicians so that debugging, retesting, and documentation moved together—not in separate stages

Chamil Resume Electrical Engine…

The result was we delivered the upgraded system on time, passed the required testing, and avoided any production or deployment delays. More importantly, the system became more stable because I also documented the root cause and improvements so future builds could be verified faster and more consistently.

What I learned — and what I bring into BMS work — is how to stay calm under pressure, prioritise the risk, communicate clearly with stakeholders, and deliver a working, fully tested system within a deadline. That same mindset is exactly how I approach BMS projects: align control intent, verify performance, and commission confidently within the project schedule.

8. Mistake you made on a project and how you handled it.

Situation

In my current role at **Relay Monitoring Systems (Wabtec)**, I was involved in commissioning an **embedded monitoring and control system** that interfaced with multiple field devices and supervisory software. The system had passed functional testing, but during **late-stage site validation**, we noticed inconsistent data behaviour under certain operating conditions.

Task

My responsibility was to identify the cause quickly and ensure the system was **stable, reliable, and ready for deployment**, without delaying commissioning or impacting the client schedule.

Action

On investigation, I realised that I had **assumed a default configuration would hold under all load conditions**, rather than validating one specific edge case related to communication timing and polling frequency.

I immediately **owned the issue**, informed the project manager, and paused further deployment. I reviewed logs, reproduced the fault in a controlled test environment, and confirmed that the issue stemmed from a configuration oversight rather than hardware failure.

I corrected the configuration, implemented additional validation checks, and updated the **test and commissioning procedure** to explicitly cover this scenario. I also documented the lesson learned and shared it with the wider engineering team to prevent recurrence.

Result

The system was successfully commissioned **without further issues**, and there were **no field failures or warranty returns** related to that behaviour. The updated validation step was later adopted as part of the standard testing process, improving overall product reliability.

What I Learned

This experience reinforced for me that **assumptions—especially around integration and timing—can become risks if they're not explicitly validated**. Since then, I've been more disciplined about verifying edge cases during FAT and commissioning, particularly in systems involving **protocol integration, live data, and real-world operating loads**, which is directly relevant to BMS projects.

9. Manage multiple projects at the same time, and how have you adapted?”

In my current role at **Wabtec**, I often handle multiple projects at the same time—new development, production support, and field troubleshooting. I manage it by staying **structured, priority-driven, and clear with communication**.

I break each job into tasks with deadlines and dependencies, and track progress using tools like **MS Project, Planner, JIRA, and Excel task trackers**. I prioritise by **risk and impact**—safety and compliance first, then customer or production-critical issues, then improvements.

To stay efficient, I use **time-blocking** for deep engineering work and set daily check-ins to keep progress moving. As workloads increased, I adapted by using **repeatable checklists, strong documentation, and early escalation of risks**, so projects stay on track without compromising quality.

That same approach fits BMS work at **Controlworks**, where you need to balance multiple jobs while delivering clean commissioning and on-time handover.

10. Commission a BMS/PLC System

My commissioning process is very structured, and it's focused on **safety, accuracy, and smooth project delivery**.

First, I start with preparation. I review the **IFC drawings**, control schematics, I/O lists, and the **sequence of operation**, and then I put together a clear commissioning plan. Before going to site, I also check things like **controller configuration, addressing, and network setup**, so we reduce rework and avoid delays once we're onsite.

When I arrive on site, I begin with a full **visual inspection**—making sure the panels, wiring, sensors, and actuators are installed correctly and match the drawings. After that, I do **point-to-point I/O testing**, so every input and output is confirmed to be working properly—sensors reading correctly and actuators responding the way they should in the BMS or PLC.

Once the I/O is confirmed, I load and verify the **control logic**, test all **safeties and interlocks**, and then run full functional tests on the equipment—things like **AHUs, FCUs, pumps, VSDs**, or plant systems depending on the project. I also work closely with the mechanical and electrical contractors to fine-tune the control sequences and make sure the plant operates exactly as intended.

After that, I validate the front-end side as well—**graphics, alarms, trending**, and I confirm communications over **BACnet or Modbus** are stable and reliable.

Finally, I complete **integrated systems testing** with all trades, document results clearly, and support training and handover so the client is confident operating the system.

Overall, my goal is always the same: deliver a system that's **safe, reliable, compliant, and ready for real-world operation from day one.**

11. “Where Do You See Yourself in 5 Years?”

In five years, I see myself growing into a **senior or lead BMS Project Engineer** at Controlworks—someone who not only delivers strong technical results, but also helps the team succeed.

My goal is to become a **technical person the team can rely on**, especially for complex HVAC control strategies, advanced **BACnet/Modbus integrations**, and high-pressure commissioning work where things have to be right the first time.

I also want to build deeper expertise in platforms like **Niagara and Distech Controls**, along with **energy optimisation** and large-scale BMS architecture. And as I develop that capability, I’d like to support the wider team as well—by mentoring junior engineers and technicians, improving engineering standards, and strengthening commissioning and QA processes.

Over time, I see myself taking ownership of **larger and more complex projects**, representing Controlworks confidently with clients and contractors, and contributing to the company’s reputation for high-quality engineering and long-term partnerships.

12. Troubleshoot a non-functioning electronic circuit or control device?”

When troubleshooting a non-functioning electronic circuit or control device, I follow a **structured, risk-aware approach** to identify the root cause quickly while protecting the system and surrounding equipment.

First, I clarify the **symptom and operating context**—what is not working, when it fails, and whether the issue is permanent or intermittent. I review schematics, wiring diagrams, I/O lists, and any recent changes, because understanding the intended behaviour is critical before touching the hardware.

Second, I start at the **fundamentals: power and safety**. I verify supply voltage, polarity, current capability, grounding, and fusing using a Multimeter or power analyser. Many faults are power-related, so I always eliminate this early.

Third, I perform a **visual and physical inspection**—checking for loose terminals, damaged components, dry joints, overheating marks, or incorrect wiring. This often reveals issues that instruments alone won’t catch.

Fourth, I isolate the problem by breaking the system into **functional blocks**—power stage, input conditioning, processing/control, and outputs. I test each stage independently using known-good signals or substitution, which helps narrow the fault efficiently.

Fifth, I use the appropriate **diagnostic tools**—Multimeter, oscilloscope, logic analyser, or protocol monitor—to confirm signal integrity, timing, and communication behaviour. For control devices, I also verify firmware status, configuration parameters, and communication health such as Modbus or BACnet traffic.

Sixth, once the fault is identified, I apply a **controlled fix**, whether it’s component replacement, wiring correction, configuration change, or firmware update. I then re-test under normal operating conditions to ensure the issue is fully resolved and not just masked.

Finally, I document the fault, root cause, and corrective action, and where possible, implement **preventive improvements**—such as design changes, better protection, or updated commissioning checks—so the same issue doesn’t recur.

This approach allows me to troubleshoot efficiently, safely, and repeatably, which is essential in live building automation and control environments like those managed by Controlworks.

13. Disagreed with a colleague on a technical design. How did you resolve it?”

In my current role at **Wabtec**, I once disagreed with a colleague on a **PCB layout and test architecture** for a relay calibration system. Their focus was keeping the board compact and low cost, but I felt it lacked proper **DFM/DFT**, meaning production testing and future servicing would be difficult.

Instead of arguing, I took a **data-based approach**. I identified the **critical signals that needed test access**, highlighted the assembly and rework risks, and proposed a **minimal compromise**—only adding test points on high-risk nodes and making them production-friendly.

We validated it with a quick pilot test, and the result was **faster debugging, more repeatable testing, and easier servicing**, without increasing cost significantly.

That experience reflects how I handle disagreement: **stay professional, align on the goal, use evidence, and choose the most reliable long-term solution.**

14. Conflict Mange with Coworker

In engineering and project environments—especially in BMS projects where timelines, coordination, and technical accuracy are critical—conflicts can arise. When they do, I follow a structured and professional approach.

First, I address the issue early and privately. I start by listening to the coworker's perspective without interrupting. In my experience, most technical conflicts come from miscommunication, not intention, so understanding their viewpoint fully is the key.

Next, I clarify the root cause based on facts, not assumptions. If the conflict is technical—for example, differences in design interpretation, device selection, wiring practices, or commissioning approach—I refer to project requirements, standards, or system documentation to create an objective baseline.

Then, I focus on collaboration. I propose solutions that align with project goals such as system reliability, safety, and timeline commitments. Instead of focusing on who is right, I prioritise what is right for the project. Often, this turns the conflict into a technical discussion rather than a personal one.

If needed, I involve the project lead or senior engineer—not to escalate, but to ensure alignment with overall project objectives and avoid delays.

Finally, I ensure the resolution is documented and communicated clearly to prevent future misunderstandings.

Overall, my approach is calm, fact-driven, and solution-focused. I see conflicts as opportunities to strengthen teamwork, improve processes, and ensure the project is delivered smoothly.

15. Strengths and Weaknesses

✅ Strengths

One of my key strengths is a **structured, methodical approach to problem-solving**. When I'm faced with an issue—whether it's a control logic fault, a communication problem, or a commissioning challenge—I break it down systematically, validate assumptions, and work through it step by step. This helps me identify root causes efficiently and avoid quick fixes that don't last.

I'm also highly **analytical**. I'm comfortable interpreting schematics, I/O lists, trends, logs, and live system data, which is especially important in BMS environments where multiple systems—HVAC, networking, and controls—interact. This analytical mindset helps me troubleshoot effectively on live sites and deliver reliable, well-commissioned systems.

These strengths allow me to deliver **consistent, high-quality outcomes**, particularly during commissioning and handover, which I know is critical to Controlworks' reputation.

⚠ Weakness

One area I actively manage is that I can sometimes **spend too much time perfecting technical details** because I value accuracy and long-term reliability. While that attention to detail is beneficial in engineering, I'm conscious that projects also have **time and commercial constraints**.

To address this, I've learned to **prioritise based on impact**—focusing on what genuinely affects system performance, safety, and client outcomes, and aligning my level of detail with project stage and deadlines. I also use checklists, peer reviews, and defined acceptance criteria so work is delivered **accurately, on time, and to scope**, rather than over-engineered.

This balance has helped me maintain high technical standards while supporting efficient project delivery.

Thank you for the discussion today. I really appreciate your time, and I'm genuinely excited about the opportunity to contribute to Controlworks projects here in Victoria. Everything you've shared about the role and the work you do aligns really well with my background and the direction I want to take my career.