PROFESSIONAL PROFILE

Control Systems Specialist

19+ YEARS

5 PATENTS

6 INDUSTRIES

This consultant has around 20 years of experience in industry and is an expert in designing software for control systems and data collection. The consultancy has delivered solutions using C and C++ for embedded platforms, Model-Based Design with Matlab/Simulink, and comprehensive automation systems. Additional competences include systems modelling, database design, IoT infrastructure, and software development with CI/CD workflows in an agile context. Today the consultancy delivers production software written by AI coding agents. The consultant directs the work and validates every outcome against tests and real-world measurements.

DELIVERED VALUE

Selected Projects

2026

Real-Time Telemetry System for industrial process plants

Systems Architect and Software Engineer

Designed and implemented a cloud-based real-time telemetry system monitoring a fleet of process plants. Sensor readings, pressures, flow rates, and alarm events are collected from each system via compressed MQTT streams, processed by a Python ingestion service, and stored in a TimescaleDB time-series database with automated multi-resolution aggregation, compression, and retention policies. On-site collector services read live data directly from the plant controllers, and a compression bridge reduces uplink bandwidth by more than 90% on metered connections. Operational metrics and alarms are visualised through custom Grafana dashboards in a web browser. Cloud infrastructure sizing was derived from measured production data, achieving a sustained compression ratio of 40–53× on stored time-series data. The daily flow of data points is in the range of 3 millions.

Python | C++ | MQTT | Beckhoff protocol | TimescaleDB | PostgreSQL | Grafana | Docker | Time-Series Data | Cloud Architecture | AI-assisted Development

2026

Status Reporting Service for Industrial Process Plants

Software Specialist

Developed a service running on the plant PC that reads live process data from the Beckhoff controller, computes plant status and inventory, and reports to an external partner API, replacing a defective OEM component. Delivered with AI-assisted development under close engineering direction and validated against physical measurements before going live. In production across multiple sites, deployed and updated remotely.

C++17 | Beckhoff protocol | Windows Services | REST | AI-assisted Development

2026

Hardware-in-the-Loop Test Bench for Climate-Control Devices

Test System Engineer

Designed and built a HIL test bench for a Danish climate-control company: a real-time thermal simulation of a radiator, room, and building envelope drives a temperature-controlled cabinet, so real devices are exercised against simulated buildings. Includes a web dashboard, time-series storage, and automated, repeatable test campaigns delivering client-ready comparison reports.

Python | Thermal Modelling | HIL Testing | NiceGUI | InfluxDB | Grafana | AI-assisted Development

2025

Grid Simulation in an Embedded C++17 Environment

Control and Software Specialist

Extended an existing C++17-based wind turbine simulator with a new component for synthesizing grid voltage, enabling simulation of a multitude of operational and failure scenarios. Designed and implemented an API with a Python counterpart for automated testing.

C++17 | Signal Processing | Grid Simulation | Python

2024

Grid Simulations Using Plecs

Electrical System Engineer

Using the Plecs electrical simulation tool, Fault-Ride-Through (LVRT/HVRT) scenarios were tested and validated on an existing model adapted for the specific requirements.

Plecs | Grid Electrical Modelling | Grid Requirements

2024

Python-Based Web GUI for HIL Systems

Software Specialist

Designed web-based user interfaces for multiple hardware-in-loop test systems, including real-time controls and data visualisation. Delivered rapid prototypes leveraging AI-assisted development.

Python | NiceGUI | AI-assisted Development

2024

Automatic Configuration of Network Routers for HIL Systems

Network Engineer

In a large-scale HIL system with multiple network routers, designed the network layout and created a Python-based tool for deploying configurations. Component archetypes defined in YAML were converted into RouterOS commands for automated router provisioning.

Python | TCP/IP | RouterOS | YAML

2023

Web-Based GUI with Logging for CAN-bus Device

Software Engineer

Developed a web-based user interface for an automotive device controlled via CAN-bus on an embedded Linux system. Implemented data logging to Azure IoT Hub with downstream storage in PostgreSQL and created Grafana dashboards for device state and performance monitoring. Coordinated external subcontractors for cabling and enclosure design.

Python | Git | MQTT | AI-assisted Development | Grafana | Azure IoT Hub | Linux | CAN-bus

2016–2018

Electronic Radiator Thermostat — Award-Winning Product

Control Systems Engineer/Specialist

Key figure in the inception of the product concept, focusing on wireless connectivity, usability, and control design. Introduced Model-Based Design to the heating segment. Part of a 3-person software team, focusing on heating control and data collection for a Cypress PSOC4 ARM Cortex-M0 target. Led control performance certification by a Notified Body. The product received multiple awards and has surpassed 1 million units sold.

C | Cypress PSOC4 | Matlab/Simulink | Model-Based Design | DFMEA

2015

AI / Neural Network in an Embedded Platform

Control Systems Engineer

Leveraged a large dataset to train a neural network, which was then deployed on an existing low-cost, battery-powered embedded platform. Evaluation was performed using Matlab and Python against real-world datasets. Implemented using the Deep Learning Toolbox.

AI/ML | Neural Networks | Matlab | Simulink | C | Python

Additional Projects

2024	Application and test software development	2022	Docker-based OPC-UA data logging to Azure IoT Hub
2022–2023	Control system for a hydrogen refueling station	2020–2022	IoT backend infrastructure
2020–2022	Fueling retail application and backend	2020–2021	Sensor gateway for ATEX environment
2018–2020	ZigBee-connected radiator thermostat	2018	Central climate control device
2016	Hydrogen fuel cell operation consultancy	2015	Control systems design for a hydrogen compressor
2013–2014	Hydrogen fueling stations for vehicles	2010–2013	Fuel cell system for forklifts
2008–2010	LabVIEW-based HIL test system for wind turbine control	2008	Electrical hardware for turbine blade delamination detection
2007–2008	Matlab xPC Target based HIL test system maintenance		

University Projects

2007 — 10th semester Grade: 11

Modelling and control of the hydraulic pitch system of a 3.6 MW wind turbine

Master's thesis in collaboration with a major wind turbine OEM. Real-world data was acquired by performing tests in a turbine, then used to fit physical equations to real-world characteristics. Two observer-based friction-compensating controller designs were implemented, both outperforming existing proportional control in simulation.

2006 — 9th semester Grade: 11

Reducing on/off cycles of refrigeration compressors

Collaboration with a major manufacturer of heating and climate solutions. Applied hybrid systems analysis tools to avoid synchronisation of inlet valves on cooling furniture. Implemented two new methods and investigated a novel stability analysis approach for hybrid systems.

2006 — 8th semester Grade: 11

Load shifting of supermarket refrigeration systems

> Collaboration with a major manufacturer of heating and climate solutions. Evaluated energy savings by exploiting cheaper nighttime electricity. Two Model Predictive Control solutions were implemented in Matlab/Simulink and xPC.

TECHNICAL CAPABILITIES

Skills & Expertise

Programming Languages

EXPERT

C | Matlab | Simulink | LabVIEW | Stateflow | Python

INTERMEDIATE

C++17 | C++ | JavaScript | Structured Text

BEGINNER

C#

Development Tools

EXPERT

Matlab | Simulink | Stateflow | Linux

INTERMEDIATE

Simulink Test | TwinCAT2 | Node-RED | Azure IoT Hub | PostgreSQL/TimescaleDB | Grafana | Prometheus | Docker | Podman | Git | GNU Make | CMake | NiceGUI | Flask | InfluxDB | MicroPython | Visual Studio Code | Azure DevOps CI/CD | Forgejo CI | GitHub CI/CD | IAR WorkBench | Jira

BEGINNER

TwinCAT3

AI Engineering

EXPERT

Claude Code | AI-assisted Development

INTERMEDIATE

MCP Servers | Agent Skill Design | Anthropic API | GitHub Copilot | Ollama | Image Recognition (Meter Reading)

Computer Networking

EXPERT

TCP/IP | Network Design

INTERMEDIATE

Mikrotik RouterOS | Caddy Reverse Proxy | DNS Management | TLS & Certificates | SSH | Firewall Rules & Policies | Network Address Translation (NAT) | Basic Security Principles | Authelia SSO | OIDC / OAuth 2.0 | UniFi | Socket Programming

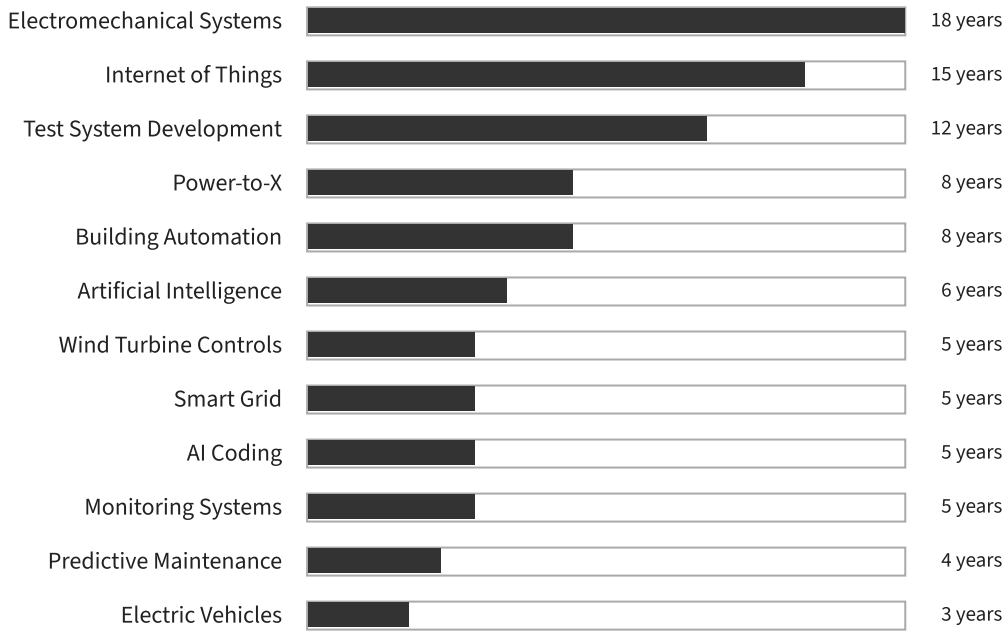
Protocols & Communication

TCP/IP | UDP | MQTT | AMQP | OPC-UA | Bluetooth Smart | ZigBee | IEEE 802.15.4 | ProfiNET | ProfiBUS | CAN-bus | Beckhoff protocol | EtherCAT | Modbus RTU/TCP | RS232/RS485 | REST

Languages

Danish	English	German
Native	Full professional proficiency	Basic reading proficiency

Domain Experience



TRACK RECORD

Career

2023–PRESENT

Consulting in Control Systems and Software Development

Vestervang Engineering ApS

The consultant founded Vestervang Engineering ApS, offering specialist consultancy across a broad spectrum of control systems, test systems, and software development.

- Designed a complete monitoring solution process control systems on multiple sites collecting and storing 3 million data points, storing them at full resolution for years while keeping them easily accessible in Grafana dashboards.
- Full-time engagement for two years at a leading global wind turbine manufacturer, working in the converter software department
- Ongoing support for fueling forecourt controllers and control systems at hydrogen refueling stations for a Nordic hydrogen infrastructure company
- Status-reporting service for industrial process plants, reading Beckhoff controllers and reporting to an external partner API, built with AI-assisted development
- Hardware-in-the-loop test bench for a Danish climate-control company, where real devices are tested against a simulated building
- Troubleshooting automation systems for a technology startup

2020–2023

Control & Automation Specialist

Nordic hydrogen infrastructure company

During this engagement the company grew from 14 employees to over one hundred. The consultant delivered key projects across control systems, IoT, and data infrastructure while also managing supplier contracts and customer relationships.

- Data orchestration, analysis, and presentation
- Contract negotiation with suppliers
- End customer support and design feedback gathering
- Project management, Scrum master

2019–2020

Control Systems Specialist / Team Leader

Major Danish manufacturer of heating and climate solutions

Promoted to team leader, the consultant guided the organisation toward best practices in control system design, with a particular focus on Model-Based Design methodologies.

- Guided the organizational adoption of Model-Based Design
- Team leadership and technical mentoring

2014–2019

Control Systems Engineer

Major Danish manufacturer of heating and climate solutions

Introduced and implemented Model-Based Design across the heating segment. Brought the first MBD-designed product to market and contributed as inventor on five patents related to heating control.

- First Model-Based Design product brought to market in the heating segment
- Embedded software development on Atmel AVR, Cypress PSOC4, and STM32 platforms
- Inventor on 5 patents on heating control systems
- Award-winning product surpassing 1 million units sold

2010–2014

System Developer

Hydrogen fuel cell systems manufacturer

Responsible for the design and implementation of control systems in PEM fuel cell systems for use in forklifts — including water cooling, gas pressure management, and energy management/hybridisation. Created sophisticated test interfaces using LabVIEW with CAN-bus connectivity. Developed hydrogen refueling protocols compatible with SAE J2601.

- PEM fuel cell system control design for forklift applications
- LabVIEW-based test interfaces with CAN-bus integration
- Hydrogen refueling protocol development (SAE J2601)
- Root cause analysis and system failure diagnostics

2007–2010

Development Engineer

Major wind turbine OEM

Developed simulation software and the hardware setup for Hardware-In-Loop (HIL) test benches in the software department. This engagement provided deep insight into wind turbine control systems and subsystem modelling. Designed, tested, and installed prototype electrical hardware for detecting turbine blade delamination.

- HIL test bench development for wind turbine control systems
- Wind turbine subsystem modelling and simulation
- Prototype hardware design for blade delamination detection

QUALIFICATIONS

Education, Patents & Training

Education

2002–2007

M.Sc.EE, Control Engineering — Specialised in Intelligent Autonomous Systems
Aalborg University

1998–2001

HTX — Technical Gymnasium
Silkeborg

Professional Training

2023 ATEX training focusing on hydrogen

2020 Situational Leadership II

2020 Embedded Coder for Production Code Generation

2018 Professional Communication for Specialists

2018 Essential ZigBee for Engineers

2017 Modelling Physical Systems with SimScape

2016 Stateflow for Logic Driven System Modelling

2016 Simulink Model Management and Architecture

Patents

> **2020** EU EP3418849A1
> Heat Exchanger Thermostat Arrangement And Method For Controlling A Heat Exchanger Valve

> **2020** EU EP3506043A1
> Method For Controlling A Heating Or Cooling System

> **2019** EU EP3508942A1
> Temperature Control System

> **2018** EU EP3255351B1
> Actuator Attachment And Method For Demounting An Actuator Attachment

> **2017** EU EP3246782
> Control Means For A Valve Arrangement, Valve Arrangement, And Method For Monitoring Temperatures

Independent R&D

- Self-hosted infrastructure: reverse proxy, single sign-on, Prometheus monitoring, Forgejo git hosting with CI/CD, and hosted MCP servers
- Accounting automation via the Dinero API, including an agent-safe CLI and MCP server with a non-overridable safe mode
- Clean-room Python implementation of a VNC file-transfer protocol, with a written protocol specification
- KDE Plasma 6 desktop widget (QML) for time tracking
- Web-based GUI and backend for a smart relay using C++ and Drogon (C++14/17 HTTP framework)
- Home energy monitoring system using Telegraf, InfluxDB, and Grafana
- Arduino and ESP32 projects (C++)
- Software-defined radio with RTL-SDR (WM-Bus smart meter reading)
- NB-IoT device programming using MicroPython
- 3D printing and laser cutting for rapid prototyping
- Design and construction of a 342 m^2 workshop with 6 kWp PV plant

Scan for contact