

BUSINESS PORTFOLIO

For



MARKET SECTORS

COMPANY PROFILE

Invictus Control Solutions Limited was formed back in 2018 to provide specialist Trend controls engineering expertise for electrical and mechanical plant Control with over 20 years' experience within the BEMs industry, providing support to Trend partners and end user clients alike.

We can offer a complete service package from design concept through to control panel design, planned maintenance and repair or refurbishment of existing HVAC control systems.

In addition, we provide a consulting services aiming to provide solutions to any ongoing issues through investigation into control system operations issues.

CONTACT

Anthony Fealy
Director/Project Engineer

PHONE:
01268 768700
07458 302537

EMAIL:
tony@invictuscontrolsolutions.co.uk

WEB:
www.invictuscontrolsolutions.co.uk

RETAIL

Retailers are large consumers of energy for lighting, heating, and refrigeration, making the rising costs of energy a major concern that needs to be addressed. A building and energy management system is a key tool in managing energy consumption whilst maintaining a pleasant and comfortable environment.

COMMERCIAL

In the modern commercial environment Building, Energy management systems play a key role in satisfying the aspirations of a developer, a tenant, and an owner-occupier for cost effective and comfortable environment.

SCHOOLS

Schools, and Further and Higher Education institutions are finding energy and other utility costs are having a progressively greater impact on their expenditure. Therefore, having the right BMS design in place for the purpose of saving energy, plays an important role in reducing these costs.

ENERGY CENTRES

Keeping site services running to meet the demands on energy supply whilst ensuring running costs are kept to a minimum is critical in the consumption of energy usage.

Building and Energy management systems put energy control and management into the hands of the facilities team.

LEISURE CENTRES

Leisure and Entertainment facilities are large consumers of energy for lighting and HVAC, often running 24/7. Therefore, the need of BMS control support is crucial to sustaining low energy output in non-peak hours.

CONSULTANCY SERVICES

Interrogation and validation are one important factor when checking for energy levels, operation of plant and control philosophy. Therefore, having a consultancy service to cover all aspect of BMS control to determine the best solutions to obtain low energy levels is one of the main factors of getting the best out of your BMS.

CASE STUDIES

WEMBLEY STADIUM

The FA had contracted a project to upgrade all of the stadiums Honeywell's EBI controllers on their HVAC plant, so it was requested by Engie for us to oversee on a consulting basis, that the migration was carried out to the design agreed. We were to ensure software and graphics were updated to the current plant design by witnessing of plant operations and graphic design when completed and to report back to the FA of any changes to the design that maybe required. We were also tasked to report any defective plant or controls items that would have a detrimental effect to the new design, to be replaced.

DEPTFORD FOUNDRY

Deptford Foundry was a new build that included a new Energy Centre that housed a CHP and 4 main boilers that provided heating via a district circuit to several new build blocks. We were task by a Trend Partner to conduct the software design and commissioning of the new installation and witness the operation once completed.

338 EUSTON ROAD

We were requested by a Trend Partner to conduct software and graphic modification to an existing IQ Eco system and 963 that controlled new and existing VAV terminal units on three floors. The Trend IQEco's were re-programmable controllers that required some modifications to suit master and slave set ups.

PLANTATION HOUSE

We were requested to take part in a new fit out carried out by Overbury on behalf of Accenture and tasked with the re-installation of new MSTP network and additional new VAV terminal units for new meeting rooms that were controlled via new WMB wall sensors on an existing IQEco control system. Software and existing graphic modifications were conducted to the new design and commissioned in conjunction with the design air flow Vmin and Vmax designs.

TEVA PHARMACEUTICALS

We were required to upgrade several wall sensors for new meeting rooms and re-locate wall sensors for new office areas for master and slave Fan Coil Units on behalf of an interior design company. This also included in providing a new design to cover existing meeting rooms that had no sensor control or that were controlled from another area.

EON ENERGY

This is an ongoing consultation and validation process of one of Eon London based energy centres. The task for us is to evaluate and discuss several reported issues with the on-site operation team and management and to provide via a report to their current plant operation. This includes evaluating current software set up to original design specification and investigating plant operations and to provide a solution for future operation.

KEY CONTRACTS

MIDCITY PLACE, LONDON (FOR ETON ASSOCIATES)

Installation and commission of Cylon's UCC4, UC8, UC32's and UC16's range of controllers in a brand new multi tenanted building. This also included a front-end PC that provided a graphical view of the plant within the building.

EXCHANGE TOWERS, DOCKLANDS (FOR ICS LTD)

Trend IQ233 series controllers maintained in two multi tenanted buildings that consisted of 16 floors per building. Each floor had an air handling unit with heating and cooling coils and a variable speed fan that was controlled via a pressure sensor located further down the ducting within the false ceiling. Off each spigot there was a VAV unit with a control damper which controlled the temperature and air volume within the area it served via a return air sensor within the main return air duct. Also controlled was the humidity and supply temperature which was compensated to the OAT so a balance was maintained where free cooling or recuperated heat could be used.

ROYAL MINT COURT, TOWER HILL (FOR LLORET CONTROLS)

This project consisted of surveying for manufacture and installation, new control panels, including Trend IQ2 controllers and upgrading and commission existing moduline unit controllers which housed IQ90's These were upgraded to IQ212 controllers. Also, the existing Trend 945 front end software and PC was upgraded including graphics to a new Trend 963 system.

A Maintenance program was also in place to carry out maintenance to Trend IQ1 and IQ2 series controllers. There were a various number of plant rooms that were being controlled and monitored. This included 4 York Chillers, 7 AHU's, 6 Boilers, 3 generators and various electrical panels. The building was owned and occupied by Barclays Bank PLC and maintained through JCF.

WELCOME TRUST, CAMBRIDGE (FOR SYSTEM 4 LTD)

Carried a validation process and reporting on problem controllers and field equipment on a newly installed Trend IQ3 control system in a newly built research facility. Also included was a complete replacement of all Trend TB/H sensors.

MICROSOFT, PICCADILLY (FOR LLORET CONTROLS)

Maintaining the Trend 963 BMS system that controlled the 2 AHU's, 3 boilers and pump sets. This included testing the pump changeovers via the software on failure, checking flow signals and alarms, boiler sequencing and temperature control. Sensors were calibrated where offsets were needed.

CAPITA, VICTORIA (FOR CBM LTD)

Maintaining the Trend BMS system that controlled the 2 AHU's, 3 boilers and pumps set. The Fan coil units that were located throughout the building had small IQL 11+ controllers that worked on a Trend LON network and was networked through a LINC to link on to the main LAN network.

25 COPTHALL AVENUE, LONDON (FOR MULTI-TECH LTD)

Re-connection of Lon Works for IQL's to existing fan coil units that were moved for a fit out of new offices on the 5th floor. Also, installations on 12 number of adjustable room sensors, re-commission and install master and slave control. Install 2 x IQ2 series controller, commission and design and install software for a new communications room. And installation and modify graphics to suit on the 963 PC in building managements office.

INSTITUTE OF NEUROLOGY, LONDON (FOR MULTI-TECH LTD)

Installation of 963 software for the main PC. Design and installation of new graphics, validation, and software modifications.

BARCARDI, MARYLEBONE (FOR MULTI-TECH LTD)

Installation and removal of existing IQL11+ controllers and re-commission all fan coil unit's inputs and outputs. Also, installation of wall sensors with pot control and engineer IQL software to look at the wall sensors for temperature control. Plus, master and slave units in all partition offices.

BIRBECK UNIVERSITY, LONDON (FOR PA COLLACOTT)

Upgrade of existing IQ151 controller to a new IQ3 Excite controller that was controlling 3 new condense boilers, heating pump sets, VT pump sets and HWS primary and secondary pump sets, and VT and HWS valves that was to be compensated to the OAT.

Installation, design, and application of strategy of a new IQ3 excite controller and enclosure to control a set of CT and VT pumps, HWS pump, VT valve and HWS valve. This project also included picking up various fault signals and monitoring points, so modification to the existing control panel was required.

Installation and commission of 3no IQL13+ controllers on new fan coil units, including adjustable wall sensors for each unit.

UBS BROADGATE CAMPUS, LIVERPOOL STREET (FOR ABEC)

Project managing various projects on the Broadgate Estates campus including installation and commissioning of a new AHU located within 100 Liverpool Street, installation and commissioning of new IQL's on 6 floors in 2 Finsbury Avenue, Installation and commissioning of new Chillers located within the basement of 100 Liverpool Street and installation of a new kitchen AHU located on the roof of 100 Liverpool Street. My duties involved survey of specification of the project, culminating prices from the desired contractors based on our original cost for the scope of works, raising PO's to all suppliers and contractors, and ensuring the project was run within the time scale allocated by the consultant's program and that all expenses are within budget. This was to cover an opening whilst the BMS Company employed a full time Project Manager.

UBS BROADGATE CAMPUS, LIVERPOOL STREET (FOR ABEC)

Maintenance on all Broadgate sites maintaining IQ1's, IQ2's and IQ3's controllers and 945 and 963 head end PC's.

SENTRUM DATA CENTRES, CROYDON, WATFORD & HAYES (FOR ABEC)

Maintaining IQ3 controllers within several Data Halls for the likes of Rabo Bank, Deutsche Bank and BT. These were critical plant that the Trend system was controlling and monitoring with critical alarm schedules that I was required to ensure was operating correctly, with regular maintenance visits and backups.

There were also several small works and modification carried out to the clients request that involved installation and commissioning to plant areas.

SONY MUSIC, LONDON (FOR MITIE TFM)

IQ212 upgrade to IQ4 controllers, modify strategy and graphics. Carrying out surveys of control panels and field item to be controlled and writing a description of operation based on the original equipment installed. Modifying the control description and strategy to cater for the new Trend IQ's and any new loose controls to be installed. Modifying graphics on the 963 head end, from backdrops to graphic points, commissioning the new strategy and witnessing the project when completed.

BEDFORD HALL, BEDFORD (FOR MITIE TFM)

Removing old Pneumatic system and installing a new IQ3 control system to various plant rooms. Attending client meeting to discuss progression and any additional cost required to complete the works etc.

BEDFORD ATHLECTIC STADIUM, BEDFORD (FOR MITIE TFM)

Removing old redundant Klimo Controls and installing and commissioning a new Trend IQ3 system to the boiler and HVAC controls.

LLOYDS BANKING GROUP, LONDON (FOR MITIE TFM)

Carrying out Interfacing with a new Mitsubishi VRF system via Trend IQ3 Exact/BACnet controller. Installing the Device instances and points for the BACnet negotiation.

ESSEX COUNTY COUNCIL, CHELMSFORD (FOR MITIE TFM)

Carry out surveys of existing control panels and establishing what equipment is being controlled via the existing Honeywell Excel 500 system that is to be upgraded to a Trend IQ3 system. Writing a points list to each panel for the installers and writing a description of operations to suit the new controls design and writing the software to the Des of Ops. Attending client meetings to discuss any anomalies and costs for approval, and progression based on a program of works.

VIRGIN MEDIA, BIRMINGHAM (FOR KSD GROUP)

Carrying out a validation process of all 420 FCU's that have IQL10 controllers fitted and loose controls and reporting on any defects that require further attention/rectification.

IKEA, COVENTRY (FOR KSD GROUP)

Carried out a validation process to the existing packaged AHUs that were sitting on a Trend networked BMS system with a 963 head end. The AHU had their own heating and cooling system via compressors but were controlled by the Trend BMS system. There were some issues regarding heating and cooling from these units, plus damper control issues and sensor calibration problems that needed clarifying. A solution to resolve them was required so by carrying out this validation I could provide that solution. A report was issued based on our findings and what the next steps were required to move forward.

ESSEX COUNTY COUNCIL (FOR KCL LTD)

Carrying out installation and commissioning of 7 new meeting rooms with damper controlled air supply via wall mounted adjustable sensors via an IQ3/96 Excite controller plus engineering the software and 963 graphics followed by witnessing and handover.

BEXLEYHEATH CIVIC CENTRE (FOR KENDRA ENERGY)

I was requested to carry out a validation survey into the newly installed Trend BMS system. This involved checking and testing all items associated with the Trend BMS, the Boiler plant, Chiller Plant, AHU's, Chilled Beams and FCU's. I was also requested to check the Alarm logs and provide a printed report of the Alarms that occurred from last May to date. I then had to issue my finding on a report including graphic snapshots of any anomalies that were found.

METROPOLITAN POLICE SPECIALIST TRAINING CENTRE, GRAVESEND (FOR KSD GROUP))

Installation of temporary power to a temporary Cold-water tank Pod and having it certificated. Removal of existing water tank high- and low-level switches from a redundant water tank, installing new water tank high and low-level switches into a new water tank and commission them back to the Trend BMS system. Removals of the temporary power from the temporary water pod for decommission.

GRANGE PRIMARY, WICKFORD (FOR INVICTUS CONTROL SOLUTIONS LTD)

Removal of existing York Control System and replaced with a new Trend IQ3 Control System including an IQView colour display and IP Ethernet cabling and Trend loose controls. Modified control panel to suit new install and engineered the strategy software to maintain a more efficient energy usage to heat the school in the winter months.

RESORT WORLD, NEC, BIRMINGHAM (FOR ABEC LTD)

Commissioning of several IQEco controllers fitted to FCU's located throughout the Resort World Casino hotel rooms. This involved setting up the LAN's that they were sitting on, addressing them, and commissioning the heating and cooling valve actuators.

LITTLEPORT ACADEMY, ELY (FOR IMTECH ES LTD)

I was contracted as a project engineer/Manager on a new build contract located in Littleport, near Ely, Norfolk, engineering a new BMS installation at a new constructed academy. The design and graphics were carried out by others and the full package was given to me to implement and delegate. I arranged for the control's installation team, carried out by Imtech's BMS installations engineers to go through the concept of the project to ensure that we were installing to specification and that they understood the health and safety procedures. This included lone working, working from heights, and locking off MCB's when the main power for any of the field item requiring 240/415V power was completed. This was only to be energised under a strict safety procedure control and was managed by Imtech's Electrical Management team.

I was asked to delegate the installation of cabling to the package systems that were specified, a Monodraft Ventsair system, a Uponor underfloor heating system and a Flakt Woods AHU system. The package systems were to be commissioned by others, but it was required that all cabling and terminations be carried out correctly to what was specified. This required me to go through each system drawing and mark up the floor plans to show what cables were required and location and terminations, this information was gathered through Tech Subs and information through discussion with the systems manufacturers. There was also a BMS enable required to the Uponor underfloor heating system, where the BMS will provide an enable signal to the underfloor heating pumps to circulate the heating around the zones that the manifold fed. It was also required to provide a weekly progress report on the status of our remit on the project and to attend financial meetings, normally on site, to assess expenditure, against forecasts of the original order price. I was originally taken on to head up the service and maintenance department on a small number of contracts that Imtech have. The original role that was offered, was to build the service and maintenance department up from its current £95,000 per year income to a £400,000 income by the end of 2018, but this was put on hold due to several changes within the company, until it was announced that Imtech were closing the Controls Department in Cambridge and moving it to Nottingham, so I decided to move onto pastures new.

ANGLIA RUSKIN UNIVERSITY, CHELMSFORD (FOR INVICTUS CONTROL SOLUTION LTD)

I was contracted to Anglia Ruskin University as their BMS Support Engineer/Manager. This role required me to oversee the maintenance and remedial works required including call outs to our current BMS support companies. My duties also include compiling a list of items for either repair or replace and assessing the cost to carry out these works and requesting quotations from our framework of companies that are assigned to the Universities list of BMS Engineering support. My other duties also include carrying out validation and surveys on the current BMS systems in place, looking at areas where we can improve the efficiency of these systems and the field items, they serve to achieve a reduction in energy cost that we can improve on. I will also delegate this to energy companies to carry out the surveys to provide a report on areas we are over exceeding our energy levels, where we need to improve this, what needs to be done and the relationship between the cost and savings ratio if the works were to be carried out.

My duties also include attending project meetings and gathering information on what projects are due to be carried out and if they have

any BMS implications. This could be either a small office upgrade or a new build, but the BMS element requires stringent examination as any BMS works are required via specification, must comply with the campuses Design Specification for all installations. This is a standard design devised

by many engineers from estates including myself, to ensure that all design specification conform to this so that no installation is different to another. Once a project has been assigned to a contractor, they will award the BMS works to their nominated BMS company, who then must liaise with myself, and give me their Des of Ops, so I can ensure they are conforming to our design strategy, and to ensure no items are missing from the design structure issued.

Another of my duties is to ensure that all health and Safety policies are adhere to. This includes, carrying out risk assessments and method statements, if the work is to be carried out by the University, and requesting RAM's if an outside contractor is to carry out the works. Again, I must ensure that what works are carried out, all relevant paperwork is place and signed before I will give the go ahead to commence the works to comply with health and safety regulation.

DEPTFORD ENERGY CENTRE (FOR COMFORT CONTROLS LTD)

I was contracting through Comfort Controls Systems Ltd who are a well-established Trend TTC based in Hertfordshire. My current activities include, software design from specification and description of operations, Graphic design taken from current design revision planned drawings and commissioning. I am currently working on 2 major projects, Deptford Foundry and Alberfeldy Village which both are energy centres. These energy centres include a CHP engine, multiple boilers, storage tanks and district heating pumps. There are several smaller panels installed within several housing blocks that monitor heating flow pressure control, usage, and faults, that all relate to the control of the main energy centre system.

WEMBLEY STADIUM (ENGIE FACILITIES MANAGEMENT)

I was contracted to carrying out BMS support for Engie FM at Wembley Stadium as their BMS Support Manager looking after the day to day BMS servicing, scheduling, and monitoring. I also carry out Event Control duties that require my assistance on event days within the event's control room reacting to issues such as lighting requests, temperature changes and general FM calls during events such as football matches and concerts. Initially I would set up the lighting and HVAC schedules for the event days and ensure all systems are operational without any issues. These pre-checks are carried out 2 days prior to every event and repairs are carried out if any BMS issue arise before the event takes place. My role also includes managing a migration project being carried out by Chartwell Controls, migrating from Honeywell controllers to Trend controllers, to ensure each segment of the program is carried out, validating any existing plant to overcome any remedials required before the migration of an MCC panel begins. Points lists are produced from existing Honeywell controllers and using existing Des of Ops, the new Trend software is designed, with modifications made to provide a more energy efficient operation to the current one. This is a more FM driven role than your regular BMS role, but using my skills, knowledge, and years of experience of BMS controls software design, the goal is to carry out a migration project with few problems as possible. To help me to achieve this, I am constantly checking the progress of the project and liaise between Honeywell,

Chartwell and the FA's FM project team to ensure communication is a common place and to raise any potential issues that could arise.

FOUNDATION PLACE, LONDON (FOR ACS LTD)

I was requested to design and commission controls to several existing and new VAV terminal units located on the 6th floor of Plantation House in London's Fenchurch Street. The project included installation of new IQEco controllers, modification of MSTP network, which included

additional WMB wall mounted displays, pre-commission, commission, and modification of existing software and writing of new software. There was also some graphic modification to be carried out to mimic the new floor plans and meeting room controllers. I also had attend project meetings to clarify progress and any additional works required and to confirm program time constraints.

EON ENERGY, LONDON (FOR BLACK AND VEATCH LTD)

My task was to carry out BMS support for Black and Veatch, who's client E-On Energy requested qualification and validation to the current set up within their Energy centre located in Farringdon, London. My scope of work was to investigate issues that have been current for a period by interrogating the existing software and comparing this to the original controls' philosophy within the description of operations. There are several field items that are being controlled or influenced to cover and so to be more methodical with my approach, I broke down each bits of plant to provide a report on the condition and controls' operation, such as the CHP's, Pumps and Chillers and explain what links all three together and how they are operating.

JOHN WILLIAMS SCHOOL, ROCHESTER (INVICTUS CONTROLS)

I was given an order to design and build a new MCC controls panel with a new Trend IQ4 controller including strategy design and installation to control a set 4no new Hamworthy 450Kg Boilers incorporating 4no shunt pumps and 4no back-end valves, A new pressurisation unit, 2no heat plate exchangers with 2 port control valves, 5 no exiting DOL driven 3 phase pumps, 3no gas fired HWS cylinders plus all associated temperature sensors. This project also included picking up 1no heat meter and 1 no mains LV panel electric meter via modbus.

BENYON SCHOOL, STH OCKENDON (INVICTUS CONTROLS)

I was given an order to design and build a new MCC controls panel with a new Trend IQ4 controller including strategy design and installation to control a set 2no new Valliant 250Kg Boilers incorporating 1no shunt pump and 2no zone valves, A new pressurization unit, 1no gas fired HWS cylinders plus all associated temperature sensors.

SHERINGDALE SCHOOL, WANDSWORTH (INVICTUS CONTROLS)

I was given an order for the Installation of a new CAT5e communication cable to pick up new Breath Building Passive vents within several classrooms. The communication went back to a Trend IQ3XNC controller that was linked the boiler control system via a network switch and a ISMA modbus RTU device. Also included was the installation of a new Trend IQView8 display screen for end user interrogation.

ST JAMES QUARTER, EDINBURGH (FOR CHARTERHOUSE ENTERPRISE SOLUTIONS)

I was task to support the commissioning of newly installed control panels that were monitoring several points across a new Shopping Centre in Edinburgh. The controls were Tridium to which gave me some experience working on another system. This project lasted 9 weeks in total.

50 FARRINGDON ROAD (FOR MRE GROUP/ENERGY LOGIC)

I was given an order to design and build two new MCC controls panels with new Trend IQ4E controller including strategy design and installation to control a new Air Handling Unit that had a 3 stage DX System to heat and cool the floors. I was also tasked with the strategy design to allow the BMS to enable and control each stage, switching between heating and cooling mode and monitor any fault signals all mimicked on the AHU controls panel. The second controls panel was to control the car park extract fans and monitor the Fireman's switch and mimic this on the fascia of the controls panel. The project also included picking up over 60 VRV FCU units located on the 3 floors via BACnet using an IQ4NC. There was also a Trend IQVision head end that I designed and engineered.

257 KILBURN HIGH ROAD (COMMERCIAL GAS & HEATING LTD)

I was asked to provide a complete validation and report to a new installation where the developer of the contract had liquidated. It was then requested if I could complete the BMS installation and commissioning with any software modification due to incomplete design and any further loose controls required. There was also a CHP that had not been commissioned and the software was also incomplete. It was requested of me to complete the CHP design and commission with the CHP engineers.

SKILLS

BMS MCC PANEL DESIGN AND BUILD
BMS INSTALLATION
BMS PANEL UPGRADE AND MODIFICATIONS
BMS COMMISSIONING
BMS PROJECT ENGINEERING
BMS SOFTWARE AND GRAPHIC DESIGN
PROJECT AND TEAM MANAGEMENT

MAIN QUALIFICATIONS

TREND CONTROLS SYSTEM ENGINEERING
TREND IQ ENGINEERING
CYLON CONTROLS ENGINEERING LEVEL 1
TREND NETWORK COMMS
TREND LON
TREND STRATEGY DESIGN
TREND 962 AND 963 ENGINEERING
TREND IQ VISION ENGINEERING

GENERAL QUALIFICATIONS

PAT INSPECTION AND TESTING

QHSE ELECTRICAL WORKING SAFELY ASSESSMENT

QHSE ELECTRICAL WORKING SAFELY

GROWING YOUR CAREER

CODE OF BUSINESS CONDUCT

ANTI-CORRUPTION

WORKPLACE HARASSMENT

POSITIVE EMPLOYEE RELATIONS LEADERSHIP

CHANGE MANAGEMENT

ASBESTOS AWARENESS

ETHERNET AWARENESS

IQ3 TRAINING

BACNET OVERVIEW