VAE GROUP | SMARTER HVAC SOLUTIONS
Built in certainty

BRISBANE AIRPORT

Domestic Terminal Building (DTB) - Fire Control Upgrade

LOCATION
Brisbane

COMPLETION DATE
2018

CLIENT
Broad Construction

VALUE
$1.7M

THE PROJECT

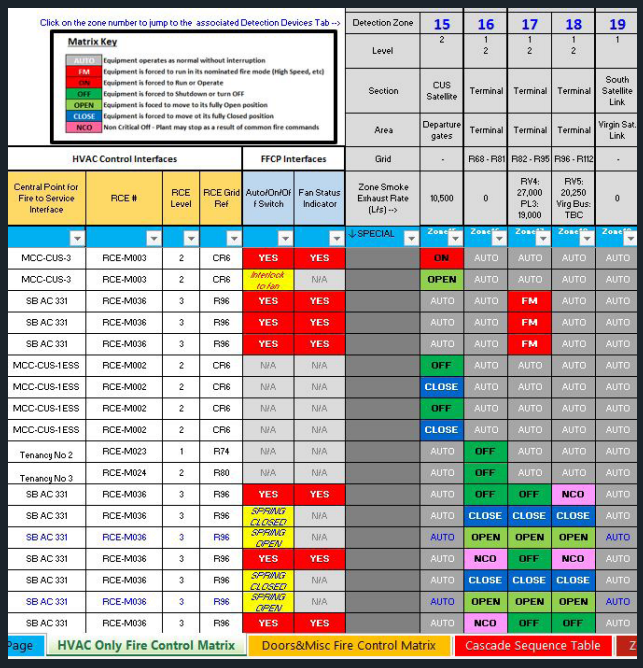
As part of a sitewide project to upgrade and future proof the Domestic Terminal Building's Essential Services Systems, VAE Group were engaged by Broad Construction and Brisbane Airport Corporation to review and upgrade the critical interfaces between the building's new dry fire detection system and all of its complex HVAC, BMS and security system elements.

VAE works included the identification, audit, redesign, modification and testing of controls interfaces in excess of 40 complex switchboards, 480 HVAC devices and 400 access control devices. All works were required to be completed without disruption to passengers or flight schedules within a live airport that operates 24 hours per day, and handles over 1.4 million passenger movements a month. Adding to the complexity of this project, all airside works involved restricted access and ASIC clearance for all VAE employees and subcontractors.

A key deliverable of the project was safely supporting the transition of the facility's original fire control strategy (7 zones) into the new modernised fire control strategy (22 zones), with the resulting zone overlaps and translations carefully managed as part of a detailed and coordinated cutover strategy.

KEY ACHIEVEMENTS

- ✓ Project completed within a live environment with limited time to perform critical life safety related works.
- ✓ No disruption to airport passengers.
- ✓ Delivered a comprehensive audit report including a lifecycle status of their plant.
- ✓ Introduced AS1851 compliant Master Fire Matrix document for ongoing client use.
- ✓ Audit & modification of existing complex switchboards without extensive downtime.



Click on the zone number to jump to the associated Detection Devices Tab -->

Matrix Key

AUTO	Equipment operates as normal without interruption
FM	Equipment is forced to run in its nominated fire mode (High Speed, etc)
ON	Equipment is forced to Run or Operate
OFF	Equipment is forced to Shutdown or turn OFF
OPEN	Equipment is forced to move to its fully Open position
CLOSE	Equipment is forced to move ot its fully Closed position
NCO	Non Critical Off - Plant may stop as a result of common fire commands

					Detection Zone	15	16	17	18	19
					Level	2	1 2	1 2	1 2	1
					Section	CUS Satellite	Terminal	Terminal	Terminal	South Satellite Link
					Area	Departure gates	Terminal	Terminal	Terminal	Virgin Sat. Link
HVAC Control Interfaces				FFCP Interfaces	Grid	-	R68 - R81	R82 - R95	R96 - R112	-
Central Point for Fire to Service Interface	RCE #	RCE Level	RCE Grid Ref	Auto/On/Off Switch	Fan Status Indicator	Zone Smoke Exhaust Rate (L/s) -->	10,500	0	RV4: 27,000 PL3: 19,000	RV5: 20,250 Virg Bus: TBC	0
						↓SPECIAL	Zone 15	Zone 16	Zone 17	Zone 18	Zone 19
MCC-CUS-3	RCE-M003	2	CR6	YES	YES		ON	AUTO	AUTO	AUTO	AUTO
MCC-CUS-3	RCE-M003	2	CR6	Interlock to fan	N/A		OPEN	AUTO	AUTO	AUTO	AUTO
SB AC 331	RCE-M036	3	R96	YES	YES		AUTO	AUTO	FM	AUTO	AUTO
SB AC 331	RCE-M036	3	R96	YES	YES		AUTO	AUTO	FM	AUTO	AUTO
SB AC 331	RCE-M036	3	R96	YES	YES		AUTO	AUTO	FM	AUTO	AUTO
MCC-CUS-1 ESS	RCE-M002	2	CR6	N/A	N/A		OFF	AUTO	AUTO	AUTO	AUTO
MCC-CUS-1 ESS	RCE-M002	2	CR6	N/A	N/A		CLOSE	AUTO	AUTO	AUTO	AUTO
MCC-CUS-1 ESS	RCE-M002	2	CR6	N/A	N/A		OFF	AUTO	AUTO	AUTO	AUTO
MCC-CUS-1 ESS	RCE-M002	2	CR6	N/A	N/A		CLOSE	AUTO	AUTO	AUTO	AUTO
Tenancy No 2	RCE-M023	1	R74	N/A	N/A		AUTO	OFF	AUTO	AUTO	AUTO
Tenancy No 3	RCE-M024	2	R80	N/A	N/A		AUTO	OFF	AUTO	AUTO	AUTO
SB AC 331	RCE-M036	3	R96	YES	YES		AUTO	OFF	OFF	NCO	AUTO
SB AC 331	RCE-M036	3	R96	SPRING CLOSED	N/A		AUTO	CLOSE	CLOSE	CLOSE	AUTO
SB AC 331	RCE-M036	3	R96	SPRING OPEN	N/A		AUTO	OPEN	OPEN	OPEN	AUTO
SB AC 331	RCE-M036	3	R96	YES	YES		AUTO	NCO	OFF	NCO	AUTO
SB AC 331	RCE-M036	3	R96	SPRING CLOSED	N/A		AUTO	CLOSE	CLOSE	CLOSE	AUTO
SB AC 331	RCE-M036	3	R96	SPRING OPEN	N/A		AUTO	OPEN	OPEN	OPEN	AUTO
SB AC 331	RCE-M036	3	R96	YES	YES		AUTO	NCO	OFF	OFF	AUTO

Page | HVAC Only Fire Control Matrix | Doors&Misc Fire Control Matrix | Cascade Sequence Table | Z

BUILT IN CERTAINTY

VAE's promise of "Built In Certainty" is never more important than when dealing with critical life safety services, and VAE's work on the BAC DTB project has ensured the airports capability to provide for it's passengers safety both during project delivery and into the future.

VAE'S SMARTER HVAC SOLUTION

As a critical facility with strict operational requirements, VAE worked closely with BAC and Broad to precisely plan and manage critical system modification works in a manner that ensured the continued safety and protection of airport users without disruption of flights.

VAE's internally developed AS1851 compliant Master Fire Matrix format was utilised to great advantage on the project, allowing users to easily sort, filter and print customised reports and compliant test sheets as required.

Our off-site production of prefabricated wiring assemblies was crucial to achieving the required complex modifications of the site's 30+ year old switchboards within the short cutover timeframes allowed. In addition, VAE's management and coordination of incumbent technical sub-trades such as BMS and 3 x separate access controls contractors was pivotal to the success of the project.

VAE achieved this goal through our **Engineer** / **Construct** / **Manage** approach:

1. **Audit**: Initial audit of all HVAC across the site, identifying all scheduled plant plus any previously unscheduled plant.
2. **Review**: Detailed review with the designers to ensure that the functionality of every associated system is clearly defined.
3. **Rectify**: Identification and rectification of any existing field issues that would otherwise prevent correct fire mode operation
4. **Transition**: Planned cutover of systems from the old fire control to the new fire control arrangements without disruption of operations.
5. **Prove**: Regimented testing and proving of all simple and complex system functions to ensure end-to-end functional integrity

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SWITCHBOARDS MODIFIED

480+
HVAC PLANT ITEMS AUDITED, MODIFIED AND TESTED

400+
ACCESS & DOOR FIRE CONTROL INTERFACES AUDITED, MODIFIED & TESTED

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LTI's OR INCIDENTS

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