**FEATURED PROJECT FOR SYSTEMS ENGINEERING - GREENFIELD & BROWNFIELD & DAD**

**FORTESCUE METALS GROUP SOLOMON IRON ORE PROJECT**

I&E Systems deliver total systems engineering and integration

**PROJECT OVERVIEW**

The Fortescue Metals Group (FMG) sixty million tons per annum Solomon Iron Ore Project in the Western Australian Pilbara region includes the development of two new iron ore mines, three primary and secondary crushers, two ore processing facilities, fifteen kilometres of overland conveyors and a two-canyon stockyard from where the ore will be shipped to FMG’s Port facility at Port Hedland in the north of Western Australia. This fast track project is divided into several Design and Construct (D&C) packages contracted to different contracting companies. FMG specified that for all the D&C packages, I&E Systems must be engaged to do all the control system integration and implementation work, and that all electrical, control and communication system designs must be done using I&E Systems’ DAD - System Information Modelling software.

**OUR SERVICES**

The scope of our work for this project includes:

- PLC/SCADA systems engineering, coding, integration, testing and commissioning for all the individual D&C packages and project-wide integration and system software standardisation of these systems.

- Provision of DAD System Information Modelling software licences, training and application support for the electrical, control and communication systems for all D&C packages.

- Two of the D&C contractors for the ‘Overland Conveyors’ and ‘Stockyard’ packages sub-contracted the electrical and control systems design to I&E Systems.

Please visit our website at [www.iesystems.com.au](http://www.iesystems.com.au) for further information or contact our Business Development Managers:

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**OUR SERVICES - IN DETAIL**

**Control System Design & Integration**

Complete control system integration includes the design and commissioning of over fifty GE Cimplicity HMI workstations, fifteen servers and forty PLC’s to operate the total facility from the Crushing ROM pads to the Train Load-Out (TLO) facility.

The control system design is based on the clients preferred vendor GE and their new platform Proficy Plant System (PPS). I&E Systems designed a total of 15,000 I/O points using the DAD software. This was done in conjunction with FAT and SAT documentation to generate accurate test procedure checklists aligning with all instrumentation and cable schedules.

As the control system engineering service provider, I&E Systems has the on-going responsibility for total system integration tying the D&C packages into the communications system backbone, providing technical support to the client’s IT department so as to enable remote operations and to provide onsite control systems commissioning support.

**DAD – System Information Modelling for Electrical, Control and Communication Systems Design**

FMG specified that DAD software be used to design the electrical, control and communication systems for all D&C packages.

DAD software allows for system design to be done digitally instead of on paper with CAD drawings. The digital models created in DAD are commonly referred to as a Systems Information Models (SIMs) and have a 1:1 relationship with the physical system. Systems design using the DAD software yields significant improvements in design accuracy and substantial cost savings.

I&E Systems was responsible for providing the software licenses to the individual D&C design teams and for providing training, application support and auditing / coordination services to ensure FMG standards were maintained.

**Electrical and Control System Design for Overland Conveyors and Stockyard packages.**

For maximum efficiency, the D&C contractors for the ‘Overland Conveyors’ and ‘Stockyard’ packages sub-contracted their electrical and control systems design to I&E Systems. Our knowledge and understanding of System Information Modelling using DAD meant that we could deliver economical systems design and enhance their accuracy.

**CURRENT STATUS**

**Control System Design & Integration**

The commissioning work for the crushing plants and overland conveyors has been successfully completed. For the other D&C packages, work is in progress at different stages from coding to factory acceptance tests (FAT) and site commissioning work. All stakeholders have expressed satisfaction with our quality of work and our adherence to the schedule for this fast-tracked project.

**DAD – Electrical System Design**

Electrical, Control and Communication systems design by the various D&C contractors, including the sub-contracted portions to I&E Systems, has been successfully completed and approved for construction.

DAD SIMs of all systems in all the D&C packages have been installed on a server at FMG headquarters in Perth and are currently being used by the commissioning teams at the Solomon site.

**OUTCOMES**

The flexibility inherent in the DAD software has enabled us to respond to the client’s requirements with speed, efficiency and precision. The software has allowed highly accurate system designs to be completed within the fast-tracked schedule.

Fortescue Metal Group and I&E Systems have set a new benchmark in the cost and time required to deliver the design and construction of highly accurate complex electrical and control systems.

The accuracy of the SIMs and the functionality of the DAD software have enabled our system engineering and integration teams to complete their work quickly and accurately.

The DAD SIMs are being “as-built” as part of the commissioning phase. These “as-built” models will be transferred to the DAD Operations Portal for on-going lifecycle management. The DAD Operations Portal is a software extension that enables the management of activities specific to operations and maintenance.

**CONTACT US**

For further information about System Engineering – Greenfield or Brownfield services or the DAD software please contact our Business Development Managers:

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You can also visit the DAD at [www.dad.net.au](http://www.dad.net.au) to learn more about our Systems Information Modelling productivity suite.