

Worleyparsons Harnesses Integrated & Intelligent Design Engineering Systems

To manage the challenge facing the Engineering, Procurement, and Construction (EPC) market of managing huge and complex projects within budget and on schedule under increasingly demanding conditions, WorleyParsons is harnessing integrated and intelligent design engineering systems. These systems have already been successfully deployed on a number of projects for major local and global customers.

“WorleyParsons has chosen to work at the cutting edge of this technology, which filters down into efficient project execution, benefiting our customers from the lower risk associated with the execution schedule,” says Russell Du Plessis, Project Engineering Manager, WorleyParsons RSA.

“We’re able to achieve integrated project delivery all the way from basic engineering to project close-out, covering the entire virtual project cycle for both greenfield and brownfield projects. The results we’re achieving are demonstrated in improved productivity and efficiency, which help address time and cost restraints and improve data and document management quality.”

Errors and related rework are minimised through the principles of centralised relational data management of multiple design environments. Scope changes during the project lifecycle are also managed automatically to accomplish seamless updates to all engineering deliverables associated with the changed data.

WorleyParsons’ integrated design systems interface to commercially available off-the-shelf CAD design products to ensure that bi-directional, spacial and dimensional data are transferred between visual 3D design environments and a relational database.

The information captured during the design lifecycle is integrated into the manufacturing, logistical management (transport and warehousing) and construction phases. Through this process, tagged items (major mechanical items, piping, electrical and

instrumentation) and untagged bulk materials, such as mass concrete and structural steel, can be procured and expedited against automatically defined bills of quantities generated in the intelligent design environment.

Accurate detail is also available to generate construction schedules through sequenced reverse decomposition of the 3D design models, to component and unit process level of definition. WorleyParsons customers also benefit from the rapid 3D visualisation, including virtual reality environments, of options on required mine and processing facilities early in project lifecycles, which helps them reduce risks.

Mushir Khan, Manager of Engineering at WorleyParsons RSA, comments: “There are very few companies implementing the full intelligent design suite and WorleyParsons is leading the field in the mining industry with an integrated application of this technology. Its power lies in the fact that it delivers myriad downstream benefits, including meeting budgets, coming in on schedule, reducing rework, minimising contractors’ standing time, implementing JIT procurement strategies and implementing logistics.

“We’re moving to a point where we can execute a fully integrated design from input, and take it through construction to handover of the plant to the customer. The system is data centric and engineering driven, resulting in far less rework and a smoother construction cycle, where the risks are well defined. There is also an error checking facility and the interface for the different disciplines is visual, providing a 3D pictorial view of the whole process.

“The technology concentrates all the data into one environment that is used in several dimensions in different engineering disciplines. This single repository of data effectively eliminates the risk of multiple disciplines manipulating data and introducing errors.”

WorleyParsons is currently deploying a fully integrated design with its work on the greenfield copper-gold Wafi-Golpu Project in Papua New Guinea, which will be the first intelligent underground design in the world. All systems infrastructure will be executed with an integrated and intelligent design and be modelled in 3D.

“Backed by our depth of mining engineering capability and operational skills which feed into this technology, we’ve established a real competitive edge in the market,” concludes Khan.

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