

FOR IMMEDIATE RELEASE

Automatic Route-Planning System for Crane Transportation of Large Components in Large-Scale Plants

Helping to Shorten Construction Periods and Enhance Workplace Safety

Tokyo, November 4, 2014 – Hitachi, Ltd. (TSE: 6501, “Hitachi”) today announced the development of an automatic route-planning system that speedily plans routes for cranes to transport large components, such as pipes and apparatus, into plants during construction or maintenance work. Hitachi plans to further enhance the system and apply it for reactor decommissioning work at nuclear power plants in the future.

The system uses three-dimensional (3D) models of large-scale plants prepared using CAD (computer-aided design) or other instruments. Simply by designating the starting point and ending point of the component installation or replacement on the model, the system automatically searches for the optimal route within a minute. The system also mitigates the risks of components colliding with building structures and other objects. Thus, the system shortens construction periods and enhances workplace safety as well as significantly reducing the time required for route-planning.

For construction or maintenance work of large-scale plants, such as thermal power stations, the route-planning for crane transportation of pipes, apparatus and other large components into plants is usually prepared manually by plant designers using 3D CAD system produced blueprints. In the case of large-scale plants with as many as 600,000 items arranged in a complex manner, this method required over half a day to plan the route even for a single component. Moreover, collisions with objects often occurred on the actual worksite when changing the posture of large components during transportation. This lead to many setbacks in work due to having to split large components into smaller parts.

The new automatic route-planning system developed by Hitachi can address this, up to now, unresolved issue. The system employs a route-searching technology that takes into account the posture changes of components during crane lifting in a plant. It also incorporates GPGPU (general-purpose computing on graphics processing units)*¹ technology, which is used for such applications as image processing and can perform fast computation. This combination has enabled route-searching within a minute for the moving of large components into large-scale plants that incorporate as many as 600,000 components.

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Using the 3D models of the plants, this route-searching technology computes the interference of components with building structures due to changes of their postures, such as making turns, and searches for all spaces the large components can pass through. It then finds the most efficient route for conveying them by minimizing the number of rails to hang crane.

The system also has functions to support operations on the worksite. It can cope with unexpected obstacles in the plant, which did not exist on the 3D models when preparing the route-planning, by generating multiple alternative routes. The determined routes are provided to the worksites as work instructions in the form of video files or maps.

Hitachi has tested the system in actual operations of replacing plant components, and confirmed that it can reduce conveyance operation man-hours by 25% compared with conventional methods.

Going forward, Hitachi will work on increasing the number of conveyance methods the system can accommodate, such as using caddies, and on making other enhancements. The company plans to apply the system to the route-planning for removing components in reactor decommissioning work at nuclear power plants that are expected to take place in the future.

Hitachi will present the technologies related to this system at the Through-life Engineering Services Conference (TESCONF) to be held on November 4, 2014 in the U.K.

*1 GPGPU represents implementation of general scientific computing using graphics processing units. It achieves fast computation by incorporating massively parallel processing functions.

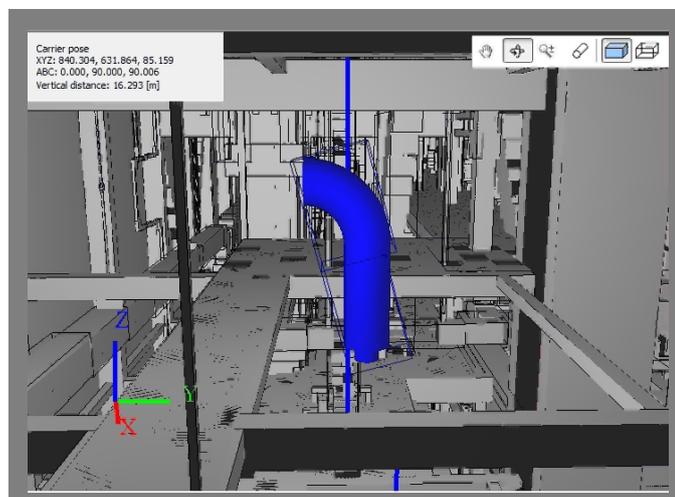


Image of system generated route for transport by crane

About Hitachi, Ltd.

Hitachi, Ltd. (TSE: 6501), headquartered in Tokyo, Japan, delivers innovations that answer society's challenges with our talented team and proven experience in global markets. The company's consolidated revenues for fiscal 2013 (ended March 31, 2014) totaled 9,616 billion yen (\$93.4 billion). Hitachi is focusing more than ever on the Social Innovation Business, which includes infrastructure systems, information & telecommunication systems, power systems, construction machinery, high functional materials & components, automotive systems, healthcare and others. For more information on Hitachi, please visit the company's website at <http://www.hitachi.com>.

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