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Remote fleet monitoring

[Construction Machinery] × [ICT Solutions]

ConsSite
Consolidated Solution for Construction Sites

Global Expansion

Hitachi Construction Machinery Group
ConSite services were introduced in Japan on October 2013, with further deployment to other countries from April 2014. By the end of the same fiscal year, there were 1,299 machines contracted to ConSite. Two years later, the ConSite service was available for over 35,691 machines globally. This is 8.3 times more than the forecast. Yes! In just two years the result had exceeded more than initial projections. We believe that this is the right time to answer one fundamental question: Why is ConSite being adopted so rapidly worldwide? Let’s dive together and look at the secret of ConSite’s global expansion.

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Photographer (perspective) / Shinya Kojima

Global Expansion

ConSite

Consolidated Solution for Construction Sites

ConSite Way! Win-Win for Customers and Dealers

“The vision of Hitachi Construction Machinery serves as a framework for ConSite roadmap and guides every aspect of our direction and strategies to continue achieving sustainable quality growth. We believe that customers with a strong focus on machinery maintenance and their management heavily interested in ICT are the primary target users of ConSite.” Yoshiya Hamamachi, General Manager of ConSite Development and Promotion Department in Life Cycle Support Operations Group.

ConSite was launched in Japan on October 2013, with test operation and service delivery commencing globally in 2014. The service far exceeded the expectations of Hamamachi and his team. Initially, ConSite Team projected 4,300 machines to be covered with ConSite contract by the end of fiscal year 2015. The actual number of contracts was over 35,691 which is 8.3 times more than the forecast. Obviously, there were reasons for these tremendous performances. According to the “Innovator Theory”, for a new product to achieve rapid growth, it needs to gain a market penetration of roughly 15%, Hamamachi and his team expected this would take four to five years from the launch date. But in reality, Hamamachi explains: “It appears to have been a great deal of latent need among customers for more efficient machine operation.” Of course, it was Hamamachi’s team’s efforts that made it possible to realize these latent needs.

ConSite is a service program developed out of the Global e-Service, which uses machine operation status information, positioning information and the like, obtained from sensors in Hitachi Construction Machinery hydraulic excavators, wheel loaders, and other machinery, transmitted via a communication system, to perform remote management.

Warranty contents and maintenance contents can be customized to fit customer needs on an individual construction machine basis. The driver of the tremendous service expansion, however, has been the data report service. This service automatically transmits machine operating conditions and faults in a report format to email addresses registered by the customer. The data report service can be used to analyze various operating conditions, such as daily operation time, fuel usage, monthly operating oil temperatures, swing ratios, idle time, and more. This information is presented in Monthly Report using graphs and charts that provide easy to understand monthly overviews, and Alarm Reports, which report urgent alarms which could result in machine failure.

ConSite Monthly Report includes not only operation data, but also improvement suggestions automatically generated as based on trend analysis and engine operation time forecasts for the following year, assisting with maintenance cost reduction and maintenance planning. This helps keep machine asset values high.

When issues are detected, ConSite Alarm Reports are sent to multiple addresses registered by the customer, making it possible for management staff to be aware of construction machinery problems even when not on-site. This information is also sent to dealers to address problems quickly through sharing construction machinery status between dealers and customers.

Basically, a customer that encountered a problem would call their dealer, and the dealer would send service personnel on-site to confirm the situation. When a malfunction was discovered, the dealer would arrange for replacement parts, and once the parts were ready, they would finally begin repairs. With ConSite, on the other hand, the dealer can bring up emergency response measures using links in the Hitachi Construction Machinery database tied to the Alarm Report. This helps minimize machine downtime, enables even service personnel with little experience to rapidly and accurately handle problems, and makes it possible to provide a consistently high level of service quality around the world, without regional disparities. This service provides tremendous advantages to customers and dealers alike.

Number of Machines with ConSite Contracts

<table>
<thead>
<tr>
<th>Number of Machines</th>
<th>Machines</th>
</tr>
</thead>
<tbody>
<tr>
<td>5,000</td>
<td>15,300(30%)</td>
</tr>
<tr>
<td>10,000</td>
<td>20,500(41%)</td>
</tr>
<tr>
<td>15,000</td>
<td>25,700(53%)</td>
</tr>
<tr>
<td>20,000</td>
<td>30,900(61%)</td>
</tr>
<tr>
<td>25,000</td>
<td>36,100(73%)</td>
</tr>
<tr>
<td>30,000</td>
<td>41,300(87%)</td>
</tr>
<tr>
<td>35,000</td>
<td>46,500(95%)</td>
</tr>
<tr>
<td>40,000</td>
<td>51,700(100%)</td>
</tr>
</tbody>
</table>

* Numbers in parentheses

ConSite contract numbers continue to grow beyond expectations. Full-fledged deployment has started in developed countries and regions such as Japan, Europe, and Oceania, and in emerging countries such as China, India, Kazakhstan, Korea, South Africa, Thailand, Malaysia, and Indonesia. Customers in Europe and Oceania, including the U.K., Asia, and Oceania are especially interested in fuel consumption monitoring.
Hamamachi and his ConSite team certainly believe that in order to attain significant market share, ConSite services must be fully localized in the languages of target countries. It is a vital process of adapting ConSite to various markets worldwide for local customers to feel that ConSite services were planned and developed for them and is adapted to their language, culture, and needs.

Also, Hamamachi explains, while language localization is performed by translating from Japanese into English and then from English into the local language, the first step was “translating from Japanese into Japanese.” What does that entail?

“Japanese itself is often a vague language, so once you translate it into English, there’s a limit to what you can do to correct it. In order to completely eliminate errors and vagueness, first we translated the Japanese in the report into English which would be easier to translate into English.”

A single translation project could involve almost 20 steps.

“It is important to understand that the opportunity of penetrating a large market usually presents itself only once. Therefore, we highly consider the quality of ConSite’s language localization to be its greatest advantage. In the future, we will deploy automated translation technology for the initial translations. This is going to help us achieve even greater translation speed and precision.”

There are now ConSite contracts in 29 countries and regions around the world. ConSite is available in 32 languages, and in the future it will be rolled out to 42 countries and regions (target for end of fiscal 2016 = Contracts for approximately 50,000 machines, establishing contracts for approximately 40% of all ConSite potential machines).

ConSite Localization

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What’s next?

As penetration rates rise, customer and dealer interest are shifting towards lowering lifecycle costs and monitoring machine conditions to proposing new services which assist with preventive maintenance.

“Customers are looking forward to what kinds of proposal services dealers can provide based on these reports. There have already been numerous successful examples of expanding the range of faults detection patterns used.

Hamamachi emphasizes that improving the proposal strengths of dealers will be a major topic going forward.

What customers expect from us are overwhelming proposal strengths that look at entire lifecycles. To achieve this, dealers need to constantly produce concrete ideas they can propose to customers. They need to further improve the quality of communications and use customer feedback and ideas even more in new model development. I hope we can further broaden the scope of our proposals, both in the areas of services and product development.

We will use the Hitachi Group’s AI and data science to further enhance ConSite, continuing to make great strides so that we can issue accurate proposals to our customers around the globe. ConSite still possesses tremendous potential.”
The Hampshire-based TJ Group specializes in waste management, recycling and transport. It has a fleet of five Hitachi medium excavators and four wheel loaders working across several sites in Southern England. The TJ Group was introduced to ConSite almost two years ago by HCM (UK), and deployed the service inside the UK soon after its launch. Managing Director John Gosling says, “ConSite brings a cost benefit, so it affects our purchase decision. ConSite means lower running costs over the lifetime of each Hitachi machine.”

The amount of data in the Monthly Report can be customized according to individual requirements, but Gosling prefers to access all that is available. “It builds a database, so we can learn more about our equipment and operation. And it’s available at the click of a button, for health and safety, maintenance and budgeting purposes. From a budgetary point of view, we need to predict when the next service is due and when we need to replace our fleet.”

Gosling assesses operation hours, idling time, coolant water temperatures, operation oil temperatures, fuel consumption, CO2 emissions, and other data to make comprehensive evaluations and determine the value of individual machines.

“The hours are useful because equal utilization of machines across the fleet is important in terms of depreciation. One site might have two machines and the operators might favor using one over another, which means one model is clocking up more hours. The hours also show how busy a particular site is. So perhaps we need to swap machines to other sites, look at staffing levels, and check if we have the right model working there.”

Monitoring fuel consumption is also vital for the TJ Group, which has a fleet of 140 trucks for its transport business.

“We have always focused on the fuel efficiency of our lorries, and now thanks to ConSite, we can focus on the fuel efficiency of our construction machinery too. Previously, we had to estimate fuel, but now we can accurately predict it,” says Gosling.

They can also check the amount of remaining fuel levels at the end of each day, making it possible to optimally time refueling without making trucks wait, further improving work efficiency.

The company’s employees fill in time sheets for both hours and fuel used, which can be checked against the ConSite report. This has also had a positive effect.

“They are becoming more diligent in filling out time sheets and how they use the machines. We’re also now encouraging our operators to use the Hitachi fleet more efficiently.”

ConSite’s efficiency improvements are evident at one of the company’s indoor recycling facilities in Tipton, Portsmouth. Approximately 130 trucks visit the site per day, where a ZX300LCN-5 and ZX85US-5 are used to sort mixed waste materials six days a week. The ZX85US-5 loads a hopper that transfers waste and the ZX300LCN-5 is fitted with a grab attachment to select materials for separate stockpiles by waste type.

According to the latest ConSite report, the ZX130LCN-5 has a 20% non-operation ratio, well below the UK average, and an exceptionally efficient idling ratio. The ZX130LCN-5’s fuel economy, operating and idling time are among the variables that Operations Manager Jason Strudwick checks on the ConSite report.

“I want to find out more about the usage of each machine, and try to find the most effective way for them to operate. I love ConSite. At the click of a button, I know what each machine has done that month. We have the knowledge at our fingertips, and it helps to provide training for operators, ensuring we are becoming more efficient.”

ConSite enables the headquarters, branch, and customer to share information immediately, coordinating as they implement measures. This makes it possible for service personnel to accurately predict what machines they will need to implement before they even arrive on-site.

One day, a Tata Hitachi staff member looking at the Monthly Report for the previous month, which indicated the machines’ operating conditions, noticed that the swing ratios and idling times for the machines were high. Together with a staff member from the local dealer, they went on-site and investigated the cause of the high figures in the Monthly Report. They found that a great deal of swing work was involved in loading the dump truck, and there were various factors that contributed to a large amount of idling. They issued a proposal that would minimize the swing angle used when loading the dump truck. The customer was surprised by the results. This led to them asking us to provide training to workforce staff, and we discussed operation methods for improving swing operation and reducing idling time. The customer, Chakochan, also created incentives for teams that achieved actual operation improvements, improving their motivation. This contributed to further fuel consumption reductions, and the deployment of a new construction machine.”

“Thanks to the Alarm function, we can solve dirty and corroded. Thanks to the Alarm function, we can solve dirty and corroded. These factors contributed to connectors becoming dirty and corroded. “Thanks to the Alarm Reports,” said Habanya, “we can solve problems correctly right from the start. The Monthly Report also help us create maintenance plans, minimizing idle time and improving productivity.”

CorSite Monthly Report, which is automatically delivered every month, provide customers with valuable information, while at the same time on the service end, presenting opportunities for improvement proposals based on the reports. Asiswarya Granites, a customer in the Indian state of Kerala, has deployed ConSite for its two ZX220-Gls.

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CorSite created a win-win relationship by cutting expenses for the customer, leading to the creation of an incentive system for operators, and resulting in new machine sales for the dealer.