![aws]

# LG Innotek Shortens Development to Optimize Vehicle Performance with Sonatus

## Executive Summary

Electronic component manufacturer LG Innotek needed an infrastructure solution that could support the lifecycle improvement process for their software-defined automotive components, enabling LG Innotek to deliver continuously evolving products. Sonatus provided LG Innotek with an infrastructure to deliver closed-loop data collection, cloud data aggregation for analysis and optimization, and continuous deployment of updated parameters for ongoing optimization. This allows LG Innotek to stand out while delivering increased vehicle performance to the owner.

## Shaking Up the Standard with Software Defined Components

Since these technologies are constantly developing, keeping current requires in-vehicle updates, but more traditional methods, such as deploying updates over the air (OTA), can be expensive for original equipment manufacturers (OEMs) and inconvenient for owners. Additionally, frequent updates are a challenge to implement, limiting how well electronic components perform over the vehicle's life.

Increasing customer interest in electric vehicles and a necessity to ensure maximum efficiency in every part of design highlight the opportunity for software-defined components (SDC) in software-defined vehicles (SDV) as an avenue to add customer value. Whether tuning components to extend the driving range or introducing new features, the inclusion of SDCs gives OEMs the chance to enhance an owner's experience over the vehicle's lifetime, especially as automotive technology rapidly advances.

LG Innotek was founded in 1970, and it has grown from Korea's first electronic components company to a leading global materials and components company that prioritizes continuous technological development and process innovation. In the automotive sphere, LG Innotek is pursuing SDC technology that increases its agility in responding to market demands for better safety, driver convenience, and improved mileage. Now, instead of being limited by the static nature of components once a part leaves the factory, SDCs from LG Innotek can dynamically update in real time for improved performance.

## Enabling Dynamic Operation Responses for Better Performance

LG Innotek wanted to establish a cloud-connected process and set up the right infrastructure to collect and analyze data to deliver parameters for optimizing one of their SDC products—a motor control ECU to control and optimize motor performance. This new motor design would give their motors the tools to respond to conditions with the most configurations for peak performance in a non-disruptive or intrusive way.

LG Innotek engaged [AWS Partner](#) [Sonatus](#) to deploy a flexible, responsive infrastructure on Amazon Web Services (AWS). This helped them build a process loop that collects relevant data, extracts insights, and then adjusts their in-vehicle component in response. LG Innotek chose to work with Sonatus because of the in-vehicle expertise gained through the large-scale deployment of their products into over a million vehicles spanning more than a dozen models to date from three leading OEMs: Hyundai, Kia, and Genesis.

## Defining the Process Loop for Collecting, Congregating, and Analyzing Data

Running on in-vehicle software and AWS, LG Innotek leverages a process using products from the Sonatus Vehicle Platform, [Sonatus Collector](#), and [Sonatus Automator](#), for its component optimization.

Sonatus Collector runs in vehicle and cloud simultaneously to facilitate precise, configurable, and straight-to-AWS capture of data related to the SDC. Once in the cloud, the data is aggregated and analyzed by LG Innotek, leveraging AWS, to classify operating parameters best suited to different situations that can improve over time. Sonatus Automator then deploys policy updates from the cloud back to the vehicle to tune and update component parameters without needing an OTA update. The result enables LG Innotek's clutch control motor to adapt in real time for optimal vehicle performance.

The Sonatus vehicle platform solution leverages many services, including [Amazon Elastic Load Balancer](#), [Amazon Elastic Load Balancer](#), [Amazon Route 53](#), [Amazon Elastic Kubernetes Service](#), [Amazon Simple Storage Service](#) (Amazon S3), [Amazon Elastic Compute Cloud EC2](#), [AWS Identity and Access Management](#) (AWS IAM), [AWS Secrets Manager](#), [AWS Systems Manager](#), [AWS Elastic Container Registry](#) (ECR).

## About LG Innotek

[LG Innotek](#) is a leading global materials and components company striving to make life more convenient today and advanced tomorrow. They develop vital materials and components for the mobile, display, semiconductor, automobile, and IoT industries. LG Innotek puts customer value first to discover the innovation for the future.

## AWS Services Used

[Amazon Elastic Load Balancer](#)

[Amazon Route 53](#)

[Amazon Elastic Kubernetes Service](#)

[Amazon Simple Storage Service (Amazon S3)](#)

[Amazon Elastic Compute Cloud EC2](#)

[AWS Identity and Access Management (AWS IAM)](#)

[AWS Secrets Manager](#)

[AWS Systems Manager](#)

[AWS Elastic Container Registry (ECR)](#)

## Benefits

- Reduced cost through accelerated update iterations
- Organized data collection and analysis with customizable parameters
- Improved customer experience with intelligent component updates

## Delivering Vehicles Components with The Capability to Evolve

By creating a process that leverages the cloud to execute continuous improvement within their SDCs, LG Innotek accomplished cost savings with shorter development and deployment update cycles and a reduced need for heavy software OTA updates. Using real-world data collection, cloud-based analysis, and in-vehicle automation workflows, LG Innotek has enabled its clutch control motor to ensure it is always calibrated to generate optimal motor efficiency for any stimulus.

In the future, LG Innotek and Sonatus plan to further integrate their solutions with artificial intelligence and machine learning services on AWS to analyze the data from a new perspective and extract additional insight to tune component optimizations further.

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## About Sonatus

Sonatus is accelerating vehicle software innovation and the transition towards software-defined vehicles. The Sonatus Vehicle Platform is made of a diverse product suite that helps empower automotive companies to create the vehicle and vehicle experience of the future today. Using Sonatus, automotive businesses deliver continuous improvements in costs, capabilities, reliability, and user experience over the vehicle's lifespan.

## Learn more

**To learn more, visit aws.amazon.com/automotive**

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