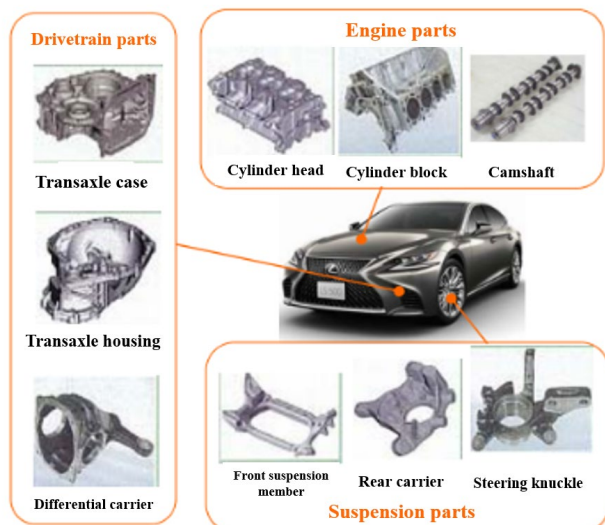


Creating immersive promotional videos through expert drone piloting and cinematography



Example of parts used in the Raw Material

◆What type of work do you do?

We work in the Raw Material Development Division. We are one of the departments within the Manufacturing Development Center, bringing together specialists in a wide range of material processing technologies, including casting and forging. As a result, we are involved in virtually every aspect of vehicle production. More specifically, we work in the die casting section, which specializes in a casting process similar to injection molding. Under the leadership of Mr. Ikeda, our team is responsible for the mold design and quality of tooling used for new products.

◆Tell us about the challenges you face in your work

Our primary focus has been on unit components, handling medium-sized products such as cylinder blocks and drivetrain case housings. However, as the industry shifts toward electrification, focusing solely on components for gasoline-powered vehicles is no longer sufficient. We have therefore expanded our efforts to body components and are working on giga casting technology for single-piece underbody structures. These components are roughly two to three times larger than those we have traditionally handled, making them unlike anything we have worked with before. This has presented us with difficult challenges on a daily basis. Manufacturing sites are often treated as confidential in the manufacturing industry. However, in recent years I have noticed that overseas manufacturers have been very effective at promoting themselves by showcasing their production facilities on platforms such as YouTube. We were undoubtedly inspired by these examples. Opportunities to build a project from the ground up are rare, so we decided to seize this chance and take on the challenge. Our casting operations have a long history, but many people on the vehicle development side are not familiar with aluminum or casting as a manufacturing process. We therefore decided to use video as a way to introduce and communicate these technologies more effectively.

Toyota Motor Corporation

Die Casting Engineering Dept., Raw Material Development Div.



Mr. Ikeda



Mr. Sotozaki

Parts we have worked on before were of a size that was relatively easy to visualize, but what we worked on this time is much larger. Simply saying that it is larger is not enough to convey its sheer scale and impact. You have to see it in person to appreciate its sheer scale.

However, during the prototype stage, it was not practical to invite many people to the site, and some people were unable to visit due to scheduling constraints. We therefore needed a compelling way to introduce and explain this sheer scale through video. By documenting projects like this on video, we also hope to help people understand how our work progresses and how vehicles are built by showing the entire process from start to finish.



Filming with a handheld camera (source: TMC)

◆What were the key requirements for solving these issues?

We used three types of cameras for filming: a fixed-position camera, a handheld camera, and a drone. Using a fixed camera would have been fine, but with a lack of movement, it wouldn't have been able to portray the sense of realism we were aiming for. The camera would also have had to be positioned outside the safety fence to get the angle we wanted. As a result, we couldn't capture close-up, impactful footage or clearly show what was actually happening. We tried to capture immersive footage from inside the safety fence, but simply didn't have the equipment to do so, and were only able to film a portion of what we wanted. A fixed camera makes it difficult to take all the shots we want, so it became necessary to use drones to capture footage freely from the angles we wanted.

Rapid video production preserving the safety of people, machines, and facilities



(Left) Conventional stamped structure
(Right) Giga cast structure
(Source: TMC)

◆ Tell us why you chose TTDC

First we needed internal confirmation that we would be able to use a drone. After getting the OK, we realized we didn't have the materials we needed. When faced with this predicament, we had only been working within the boundaries of the technical department. However, we realized TTDC would be able to conduct the filming we needed, so we contacted them. Since TTDC is a group member of Toyota, and is permanently located in Toyota, it operates under Toyota's rules and safety procedures, which was very reassuring. Collaboration with an outsourced company would have required wasting time on explanations and applying for permission to bring them on premises. But with TTDC, all of that was unnecessary, which was a huge help. Another key factor of our decision was due to TTDC's experience recording in the technical department on a regular basis. They also have a track record of using drones at proving grounds during other past projects, which naturally put our minds at ease. TTDC's support proved to be invaluable, as this was our first time attempting such a project. They even proposed ideas for what we would need to prepare.



Myochi Plant: Die casting machine for prototypes
(source: TMC)

◆ What were the benefits of adoption?

If it were simply a matter of recording and editing material, we could handle it ourselves. However, TTDC created a video that clearly showcased the content we wanted. By intentionally flying the drone between the dies used to manufacture the parts, we were able to create dynamic, impactful footage that even first-time viewers would find impressive. It was an impactful video, even for us, and we received comments from those who work closely with die casting, who expressed their surprise at such excellent footage.

There aren't many opportunities to work on a video shoot like this, so when it came time to unveil the finished product to the parties involved, we received such a positive response as well as many questions about drones and filming and editing footage, from both inside and outside our department.

Since the content is quite confidential, we were thinking of limiting the video to internal use only.

However, it ended up being good material for explaining the die casting process. When we used the footage at the Toyota Technical Workshop and Toyota Engineering Society (TES) during our presentations, the feedback we received was very positive.

◆ Were you satisfied with the speed and quality of the work?

We shared the basic concept, which included a storyboard and overall narrative, but I don't think it would have been possible to create such a video without a concrete understanding of the actual manufacturing process. We were very grateful that they came in person to examine the equipment and actually see how it works. Their response speed was also excellent, which was another thing we were grateful for. Not only that, but they left no detail untouched while communicating during the editing phases, which was another relief. They were also able to adapt to our sudden demands on the spot.

◆ Could you tell us about your plans for the future?

As the first project has been successfully transformed into a video, we will be moving on to doing the same with the next project. Since personnel outside of our department and within the center were also able to understand the content, we believe the requests for similar videos will increase moving forward. As a suggestion for the future, we think it would be helpful if you could provide visual materials in advance, specifically showing how the drone will be flown, why the operation is safe, and the size of the drone, so that it is clear there is no risk of damaging equipment or products. This would make it much easier for us to request filming cooperation from the relevant departments.



(Back row from the left) Mr. Yamada (TTDC),
Mr. Nishihara (TTDC), Mr. Matsutori (TTDC)
(Front row from the left) Mr. Sotozaki, Mr. Ikeda