



**NISSAN**

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## Welcome to the World of Clay Modelers

The dog looks like it is about to take off running. If you look closely, you can almost feel the energy and life in it, with the skin stretched tightly over its realistically reproduced frame and muscles. A shoe stands ready to kick a soccer ball, the leather supple and the cleats appearing as if they just came off a soccer field. Then there is the delicate bonsai and a dramatic Ukiyoe figure.



Weimaraner made of clay



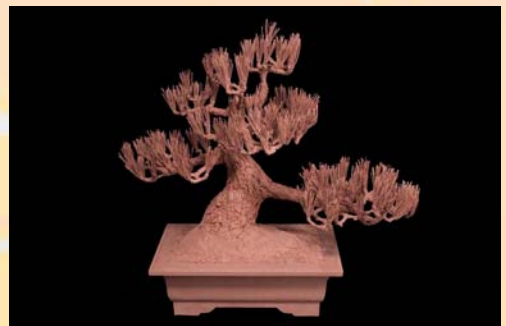
Soccer ball and cleats



Ukiyoe

What do all of these pieces have in common? They are all made out of clay by artists with superb craftsmanship and observation skills. They are all made by "clay modelers."

Nissan's renowned clay modelers' usual subjects are future generations of Nissan and Infiniti cars, but they regularly create pieces such as the dog and the bonsai to further develop and hone their modeling skills.



Bonsai



Makoto Kimura

"I carve and shave while imagining what the subject is like in motion. I try to bring new life to an object. I think that's something that can only be done by human hands," says Makoto Kimura, an acclaimed clay modeler who has been working at Nissan for 35 years.

**What Are Clay Models?**



Clay models are a miniature model made from industrial clay. They are a way to transform a sketch drawn by a car designer into a three-dimensional object so it can be studied and reviewed. The process of designing cars starts with over a hundred of sketches. As ideas are refined, those sketches are narrowed down to a select few, which are then converted to 3D data points by a digital modeler, and then converted into quarter-size clay models with an automated cutter.

From those basic forms, the designers and clay modelers work closely together, adding not just dimension and detail, but adding life to the models. The modelers look for ways, together with the designers, to make full-size clay models more attractive for the reviewers, who ultimately select the final design that move forward as "production" clay models.

"Design is always developing. A clay modeler's role is to bring out the maximum potential in a design. Therefore, the design is refined more and more at every step of the process," Kimura says.

The full-size production clay models serve as templates for the actual production vehicles, so it is necessary for the clay modelers to embody the designers' images with legal, engineering, and manufacturing requirements in mind. The dimensions of the final clay model are measured to create the final data for the manufacturing process.

**Tools for the Clay Modelers**

Some European automakers once used plaster for making three-dimensional objects. Nissan first used oiled clay and then changed to industrial clay. The composition and ingredients in industrial clay have improved in recent years, reflecting the need for more flexibility, durability and recyclability. Many industrial clay formulas have reduced sulfur content for environmental reasons, while used clay and clay shavings are collected and recycled. Reusing clay used to be difficult because completed clay models were coated. Now a new film called Di-Noc™ film, which looks just like metal, is used and this makes clay models more realistic and more recyclable.



Industrial clay



Though the models might look like solid blocks of clay, only the outer layers are. On the base part, called the core, foam material is used to shape rough form and then clay is put on top of the foam. Clay modelers use a variety of special tools, including scrapers and steel plates to work their magic, putting in curves and precisely shaving the clay to shape it into the desired forms. Clay modelers are naturally very peculiar about their tools. Each modeler changes the shapes of tools, which are made from various sizes of metal panels, as they like.

And while clay modelers have dozens of types of implements at their disposal, the sense of touch by their hands might be their most important tool. Surfaces that clay modelers create with their hands change depending on how strong each finger applies force. They keep curving and shaving and then use their sense of touch to see if the shapes are made precisely as they intended.

"We learn information not only from our eyes, but also from the touch of our hands," Hideki Murayama, a mid-level clay modeler explains.



Hideki  
Murayama



**From Images  
to Products**

Haruo Yuuki, a veteran Nissan clay modeler, describes modelers as “3D professionals” who transform images from sketches into vehicles that are appealing to us all. “What’s important is to grasp the designer’s intention and materialize it as a three-dimensional object” so the potential of the design can be better seen.

For SUVs, an expression of solidity and strength is required. Sports cars, on the other hand, require a more dynamic expression. Nissan’s highly skilled clay modelers can materialize various images immediately as three-dimensional objects.



Haruo Yuuki



“For the current Nissan Z, we made the upper bodyside concave and the lower bodyside convex, which made the lower body look more substantial and stout. This is a non-conventional shape for the surface of Nissan vehicles, which I can say is the most distinctive design feature of this vehicle. This was the outcome produced with designers by trial and error,” says Yuuki.

As described above, the surfaces of the clay model are actually applied to a drawing for the production model. Therefore, all the panels must be able to be formed on a manufacturing press. Even if a clay model accurately reflects a design’s intention, it is of no use unless it can also be precisely reproduced. Clay modelers must always pay attention to the assembly of a vehicle, as well as the aesthetic.

In addition, as parts sharing becomes more prevalent among more vehicles, it is becoming more important to display each vehicle's originality. Also, customers are now placing more importance and emphasis on the "emotional quality" of a vehicle's design. As a consequence, the role of clay modelers is now more important than ever in bringing designs to life.

**The Importance of Clay Modelers**

"The relationship between designers and modelers can be compared to that of composers and musicians. Musicians interpret how to play by reading music scores written by composers and play the music. However amazing the music score is, it ruins everything if a musician has poor skills," adds Yuuki. "Clay modelers, as well, interpret sketches drawn by designers and then their sophisticated craftsmanship creates vehicles with wonderful design."

Shiro Nakamura, Chief Creative Officer and Senior Vice President of Design, explains the unique role of clay modelers in the overall vehicle design and development process this way: "Nissan has been promoting digitalization of the processes. We think this is very important in order to shorten the development period and also to provide our customers with high quality vehicles that match their needs. However, we also believe human sense is essential to meet the needs for 'emotional quality,' which customers these days have been putting more emphasis on. In that sense, the role of clay modelers is significant. This won't change in the future. Nissan would like to continuously offer attractive designs which appeal to customers' sensitivities."

**Makoto Kimura:**  
 Manager, Design Realization Department  
 Joined Nissan in 1973. Kimura first learned about the role of clay modelers from the book "Introduction to Design" when he was a student. He was selected as a "Contemporary Master Craftsman" in 2004, which was awarded by the Minister of Health, Labor and Welfare to outstanding technicians. He is also the President of the Japan Car Modeler Association.



**Hideki Murayama:**  
 Design Realization Department  
 Joined in Nissan in 1991. Murayama has been a big fan of sports cars since he was a child. He studied car designing at a vocational school and joined Nissan as a clay modeler. Murayama worked on the clay model of the new Maxima.



**Haruo Yuuki:**  
 Chief, Design Realization Department  
 Joined Nissan in 1978. Yuuki also became interested in the profession of clay modeler as a student, when he was an illustration major. After joining Nissan, when viewing the Fairlady Z, he was moved by the beauty of its shape. He worked on the clay model of the current Fairlady Z.