

Design Technology to Realize Pleasant Product Sounds

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Sounds from electric appliances such as vacuum cleaners cannot be disregarded in the development of quality products. It is not easy to obtain pleasant mechanical sounds, however, when electric appliances are designed according to the conventional trial-and-error method.

Toshiba has developed a design methodology to obtain pleasant mechanical sounds and applied it to products. This methodology incorporates four steps as shown in the Figure 1. The first step is to extract the voice of customer (VoC) data considering diverse customer's Kansei(*) needs. The second step is to define the metrics for product sound by mapping the psychological metrics and physical metrics. The third step is to set the target sound in terms of the metrics by considering the tendency of the current product development process. The final step is to realize the target sound by applying mechanical design technologies.

Figure 2 shows two types of vacuum cleaners developed based on design for product sound quality. In order to realize the target sound, a newly developed supporting system and brush mechanism were applied in these products.

(*) Kansei is a Japanese word that refers to the human sensitivity of a sensory organ at which sensations or perceptions take place in response to stimuli (e.g. a product) from the external world. Kansei includes evoked senses, feelings, emotions and impressions.

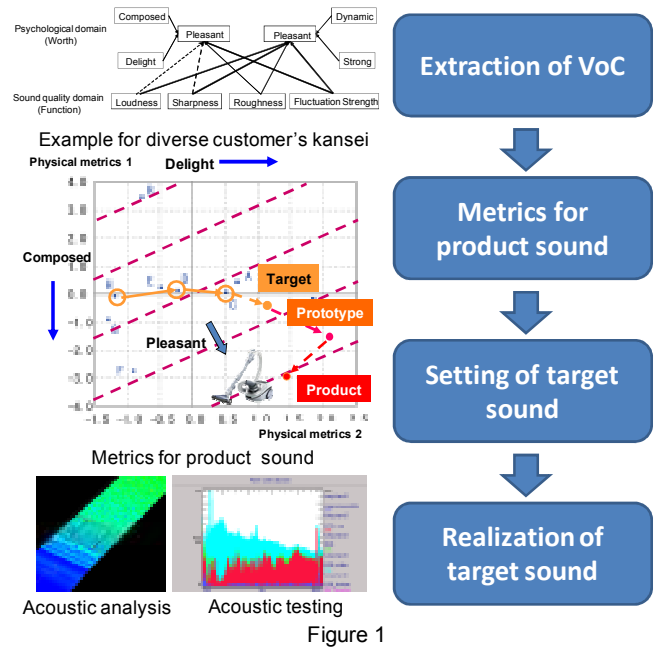


Figure 1 Procedure for realizing pleasant product sounds



Cyclonal cleaner Quiet™ VC-3000X



Paper bag cleaner Quiet™ VC-PS300X

Figure 2

Figure 2 Vacuum cleaners incorporating sound quality design