



The key to success: Compact drive technology. Expectations high for even greater reliability.

Tamio Tanikawa
Intelligent Systems Research Institute,
National Institute of Advanced Industrial Science and Technology
Robot Technology Synthesis Research Group
Group leader, AIST-CNRS Joint Robotics Laboratory
Visiting professor and principal researcher, Osaka University

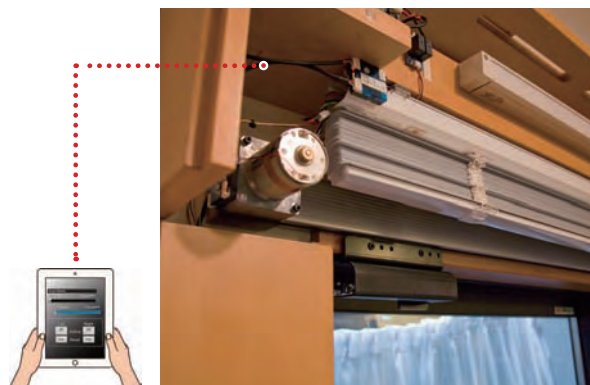
My research is concerned not with humanoid robots, which seems to be what people think of when they hear the word “robot,” but with efforts to incorporate robot technology into human habitats. Imagine a home that’s equipped with sensors to monitor the internal environment, and, based on its own assessment, reacts by automatically opening a door or window. That’s the sort of robot home we’re aiming for.

This isn’t just for the sake of convenience. It will benefit society, such as by lowering environmental burdens through more efficient energy usage and providing support and protection for elderly people who live alone. In the summer time, for example, if you turn on the air conditioning when it’s hot inside the house, you use a lot of electricity, but if you open the windows first and let some fresh air in, you use less electricity. Suppose the windows themselves could detect and evaluate the temperature inside and open automatically, and then if it’s still too hot they would close themselves and turn on the air conditioning. That’s the kind of system we’re trying to create. We already had a standard communications technology, called RT middleware (RT stands for “robot technology”) for this kind of robotic home, but we didn’t have the technology or the expertise for the moving components, so we turned to THK for help.

Right now we’re working on making small modules that function as both sensors and actuators and installing them in windows, doors, and furniture, so that each can move on its own as part of the robotic home. THK’s Seed Solutions, which have highly advanced motors and drivers, have been very helpful in this effort. We had prototypes before but we didn’t have anyone who could properly produce such compact modules. THK made the

device we had envisioned—a unit small enough to be installed in a whole range of devices, to provide the specific robotic functions that meet the user’s needs. They’ve been a great help.

When the time comes for this technology to be put to use, in self-operating robotic windows and furniture in the homes of elderly people, for example, it will have to be guaranteed to be completely safe, of course. For this reason, Seed Solutions have been tested to make sure they keep working in all sorts of situations. Absolute reliability is required to ensure that they keep working properly even if the network becomes overloaded. This will be a big challenge for robotic household technology. We’re hoping THK will make some breakthroughs in the areas of safety and reliability.



Window blinds operable via tablet computer.