

# Japan taps US robots for reactor cleanup help

JACOB ADELMAN - Associated Press - Associated Press

In this country of break-dancing androids and artificially intelligent pets, nuclear cleanup crews on the tsunami-ravaged northern coast are depending on U.S.-made robots to enter damaged reactor units where it is still too dangerous for humans to tread.

Utility workers seeking to regain control of the troubled Fukushima Daiichi nuclear power plant are deploying robots from Bedford, Mass.-based iRobot Corp. to measure radiation levels, temperatures and other conditions inside the reactors.

With its tractor-like base and wiry frame topped by cameras and sensors, the so-called PackBot robot vaguely resembles the metallic protagonist of the 1986 film "Short Circuit" — minus the wisecracks. An earlier version of the PackBot was used a decade ago in the aftermath of the 9-11 terrorist attacks.

Takeshi Makigami, an official with Tokyo Electric Power Co., which is the operator of the crippled nuclear plant, said humans must still do the sophisticated engineering needed to stem the radiation, but robots can go in first to monitor when it will be safe for people to enter.

"We have to check where to go and what to do," he said.

TEPCO spokesman Shogo Fukuda said the company has only now begun using the robots because it took several weeks for crews to learn how to operate the complex devices.

Although Japan has a sophisticated robotics capability, most of its development is in household applications rather than disaster recovery.

So far, just one of the two provided PackBots has been used, said Minoru Ogoda, an official with Japan's Nuclear and Industrial Safety Agency, which is monitoring TEPCO's remediation efforts.

The robot's foray this week into several damaged reactor units was the deepest entry yet by man or machine since the first of several explosions rocked the plant the day after the March 11 earthquake and tsunami.

The PackBot is already a veteran of several other disaster zones.

After the Sept. 11, 2001 terrorist attacks in New York City, the robot was sent to search through the rubble of the collapsed World Trade Center.

Another of the company's robots has disarmed roadside bombs and sussed out buildings and caves in Iraq and Afghanistan.

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iRobot also helps out with disasters of a more domestic nature: it's the manufacturer of the disc-shaped Roomba vacuum cleaner robot.

TEPCO spokesman Shogo Fukuda said the company hadn't anticipated using robots in the power plant until they were offered by iRobot.

The company was lending the two PackBots for free, so Fukuda did not know how much the company charges for the use of the units.

A TEPCO employee in a different building with a remote controller was able to make the robot open a set of double-layered doors Sunday and move some 130 feet into a passageway in the complex's reactor Unit 1, officials said.

The robot attempted to enter reactor Unit 3, but was impeded by broken chunks of ceiling and walls blown off during hydrogen blasts, officials said.

The PackBot spent about an hour in Unit 2 on Monday, but officials had no immediate details about what it found there.

iRobot is offering up two additional robots of a heavier-duty type — the Warrior — which workers are being trained how to use.

British defense contractor QinetiQ Group PLC has also provided four robots, which are not yet being used, Fukuda said.

Applied physics professor Shuji Hashimoto, who directs the Humanoid Robotics Institute at Tokyo's Waseda University, said he was not surprised to see Japan depending on robots from abroad, despite the sophistication of his country's robotics research.

He said countries such as the United States have developed robots for use in disaster situations because their militaries fund the development of the devices for war zones. Japan's military is restricted by the country's post World War II constitution to self defense and activities such as U.N.-led peacekeeping missions.

In Japan, best known for robots such as Sony Corp.'s robotic Aibu dog and Honda Motor Co.'s chummy Asimo, development tends to foster domestic uses.

"In Japan, there are many people who think the market for robots are in the family or the house," he said. "Researchers do research to develop robots that can be used by children or the grandfather or grandmother."

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Associated Press writers Noriko Kitano and Mari Yamaguchi contributed to this report.

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