



Scompi models 345 and 330

Scompi Robot

Robotic System for Generating Station Work

Scompi technology is the result of a major R&D program initiated by Hydro-Québec in the late 1970s to fight cavitation, a phenomenon which damages the steel surface of turbines and entails costly repairs. By the mid-1980s, Hydro-Québec's research institute had developed a compact prototype robot able to repair cavitation damage on the largest turbine runners.

Building on that success, work began to design a more advanced robot and especially a more compact one. That work led to Scompi in 1991. There have since been four generations of the robot, deployed by Hydro-Québec to carry out more than 40 major jobs.

Versatility

Scompi is compact (35 kg and 21 cm long) and has five axes of rotation. It can travel along straight and curved tracks, including those with variable curvature. This enables it to work on geometrically complex surfaces and to get to hard-to-reach areas to perform such tasks as welding, gouging, grinding and hammer peening. The robot can automatically perform all required operations in a work area that the operator has previously defined.

Scompi's work is first computer-simulated to check that it is feasible and to plan the entire job. The simulation is used to determine track type (straight or curved) and ideal robot position and configuration, and to design track supports and tools.

Simulation has the advantage of minimizing installation time and optimizing the job so generating unit availability is maximized.



*Simulation of a turbine modification
at Bersimis-2 generating station*

Key advantages

There are many advantages to using Scompi technology, including the following:

- > Increased availability and service life of generating facilities
- > Improved turbine performance
- > Jobs performed that would otherwise be impossible, e.g., simultaneously hammer peening and welding
- > Better quality than with manual work
- > High precision (grinding to tolerances of less than 1 mm)
- > Welding productivity increased by 150% to 200% compared to manual welding
- > Improved worker health and safety

Applications

Scompi can operate in hostile environments, like the very wet areas around hydraulic turbines, and at high temperatures (up to 100°C). It can perform overhead welding and work between blades only 25 cm apart. Scompi can also withstand the vibrations from grinding and hammer peening.

Scompi has numerous applications, particularly the following:

- > Repairing cracks and cavitation damage
- > Reinforcing turbine runners
- > Performing preventive overlay welding
- > Reshaping turbine blades
- > Refurbishing gate embedded parts (powerhouse and spillway)
- > Manufacturing turbines

Compact and easily integrated into processes, Scompi can fill a wide range of needs and an untold number of future applications.

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