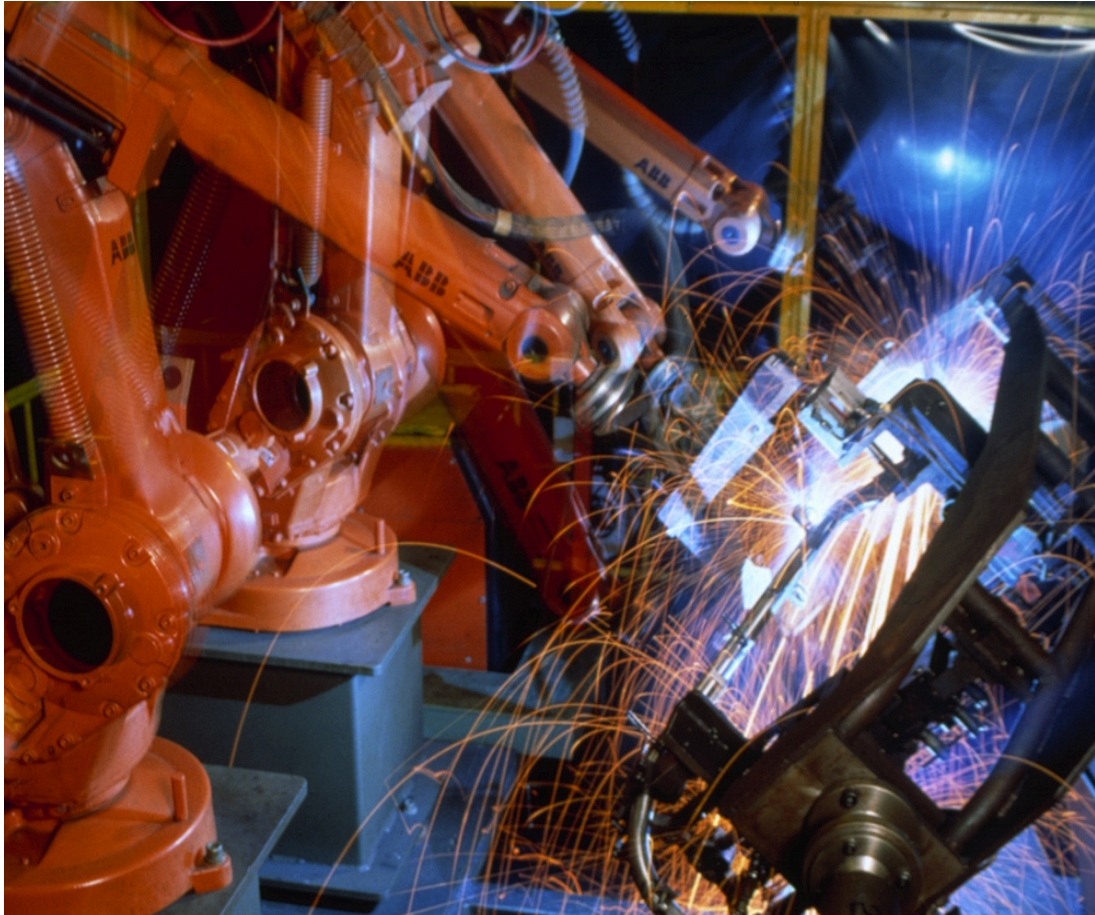


CSR excels in accuracy tests with ABB robots



As several large automotive manufacturers and their immediate suppliers try to select appropriate software for their all-important robot simulations, there is a constant requirement to correlate the accuracy of the predictions, obtained from the simulation, against the actual observed performance of the robots.

CimStation Robotics [CSR] currently in use with several automotive companies and their key Tier 1 and Tier 2 suppliers, is a popular choice for simulation and offline-programming of a wide variety of robot types. CSR can handle and link in sequence multiple robots and accurately predict reach, and cycle-times. For quick calculations, as a simulation is developed, CSR's own path planner is able to predict cycle-times within 10% of the subsequent actual reported times.

In the automotive manufacturing business an important factor in the success of any new model will be the cycle-time for the line when it is built - this will determine a number of factors, not least the efficiency and performance of the line.

Customers frequently report predictions closer to 5%. Even this is not close enough for the accuracy demanded by the industry, however. AC&E, the author of CimStation Robotics , alongside major robot manufacturers and key automotive manufacturers, have a systematic approach to this problem called RRS. RRS, an acronym for Realistic Robot Simulation, provides a standard interface between the robot manufacturer's motion control and the simulation vendor's simulation system. RRS allows the simulation to take into account the special features of that particular robot, including real factors such as joint performance and wear; thus resulting in an accuracy of at least 3% of predicted cycle-times.

The tests and results

One of the largest producers of robots, ABB, has a well-proven RCS 'black box' (the robot end of the interface with RRS). CSR has worked well with this over many years, achieving good correlation of actual times with predicted times. However, as new customers ask about the combination of CSR with ABB they understandably like to see tests to prove the accuracy standards are achievable.

ABB has tested CSR at its robot manufacturing facility in Västerås, Sweden to see how close CSR could predict the actual observed cycle-times of a real robot under controlled conditions. A loaded robot was taken through several prescribed movements and a simulation undertaken to replicate the actual robot actions with CSR on a laptop, nearby. For comparison, ABB replicated the simulation with another proven simulation system. The tests were exhaustive and lasted the whole day. The results, however, were impressive, and showed CSR using RRS was within 1.2% of the actual values. Even more impressive, CSR performed the best of the simulation systems under test.

From these results ABB and AC&E were able to demonstrate to customers the accuracy of CSR simulations using RRS when applied to the ABB robots. In addition to its accuracy , CSR has several other features making it popular for simulation and OLP (offline programming). For example, CSR's fast, intuitive interface makes it easy for robot engineers to learn and operate. It runs quickly on PC, and can handle multiple robots linked in their simulation, exactly as they would be in the real workcell. For many years CSR was considered expensive, however, since AC&E took over the responsibility for CSR's development, it can be acquired at a much more affordable cost. Once the true productivity benefits of simulation/OLP have been fully understood, the case for simulation with CSR is overwhelming.

For more information on CSR visit www.acel.co.uk and contact AC&E on +44 (0)1925 830085 and e-mail sales@acel.co.uk.