There is much more here than an engineering challenge. It is vital that we eliminate risk when offering new products to market and our investment in ANSYS will lead to an increased level of scrutiny of mechanical simulation and better risk assessment of new products. Not only does this increase confidence but it will also mean quicker project turnaround as there are fewer unknowns. There is also financial benefit as further down the line we expect to see long-term cost savings by eliminating expensive post manufacture design corrections.

Richard Barlow  
Operations Manager  
Mirage Machines
Mirage Machines extends simulation capability with ANSYS

Mirage uses detailed structural simulation at the front end of the design process for portable machines to ensure that the solution being offered to the company's clients is sufficiently robust and holds no risk of failure. In addition, extensive use of FEA vastly reduces the risk for potentially costly rectification. The company was performing FEA simulation using SolidWorks® Professional and Premium packages but the capabilities of these packages were limited because Mirage could only conduct FEA on single parts and small assembly models.

Business Challenges
A recent contract was to develop a gantry that used a series of magnets to attach steel rails. When Mirage initially undertook the project, the fabrication was to be base metal. This requirement changed and a layer of paint was introduced. Following investigation with magnet suppliers it became clear that that adding paint introduced an air gap, reducing the magnets pull force by 40 percent. Mirage needed to understand what impact the paint thickness would have on the pull force of the magnets and in turn the integrity of the structure, as the arms moved along the base rail.

Technology Used
ANSYS® Professional™ NLS, ANSYS geometry interface for SolidWorks and ANSYS® DesignModeler™

Engineering Solution
• Import the geometry for the gantry assembly from Solidworks into ANSYS DesignModeler.
• Employ DesignModeler to prepare the geometry for simulation.
• Perform simulation on the assembly of mixed materials, body types and mesh types using ANSYS structural dynamics software.

Benefits
• ANSYS Professional NLS overcame the limitations of the FEA software used previously and greatly improved both the accuracy and the performance of the simulation.
• Simulation allowed the company to increase throughput and reduce risk in the design of the gantry.

Company Description
Mirage Machines manufactures many types of portable machines for a wide variety of industries including oil, gas, power generation, ship build and repair, mining and construction. These machines span a range of applications including hot tapping, drilling, tapping, milling, pipe and casing cutting, line boring, and bespoke requirements.