To extract additional reserves from an aging well stock offshore Italy, a customer had been performing conventional sidetracked operations followed by stacked cased-hole, frac-pack completions. Despite continuous efficiency gains, the frac-pack operations were too time consuming and costly, and the system designs inherently limited how the wells could be completed. Multiple vertical wells had to be drilled to intersect the multilayered pay zone, and only three to five large, evenly spaced intervals could be completed per well. The well profiles were also limited to low inclination due to gravel pumping.

These practices went on for many years until declining economics—derived from a combination of unfavorable market conditions and high-cost workover operations—paved the way for a new approach.

Ready for a radical change, the customer began collaborating with sand control experts from Baker Hughes, a GE company (BHGE), and the teams identified the GeoFORM™ conformable sand management system as a viable option. Unlike conventional sand control techniques, the GeoFORM system leverages unique shape-memory-polymer (SMP) material—a filtration media that expands downhole and conforms to the borehole wall. Compared to conventional gravel-and frac-pack completions, GeoFORM system deployment is faster and offers much greater completion design flexibility. Optimistic about the simplicity of the new approach, the customer planned a four-well campaign to evaluate its effectiveness.

The 6¼-in. inside diameter wells were drilled with water-based mud and displaced to filtered calcium dichloride (CaCl₂) Interval lengths ranged from 77 m (275 ft) to 358 m (1,175 ft). With water zones and multiple sand layers varying in thickness from a few centimeters to a few meters, the reservoir needed a completion design made to fit. To maximize reservoir contact efficiency, each GeoFORM system incorporated 12 to 14 strategically placed REPacker™ reactive element packers and MPas inflatable packers to isolate water zones and to segment from four to six zones that could be selectively produced. The modular GeoFORM SMP media cartridges were spaced according to the reservoir data.

Deployment and expansion of the GeoFORM systems went smoothly and as planned. Each operation was completed in a single trip, and no sand control pumping was required. Additionally, switching to an openhole
completion scheme allowed the customer to avoid casing, cementing, perforating, and well cleanup operations.

By using the GeoFORM system, the customer reduced operational time by 40% and cut overall well costs by 35%. At the conclusion of the campaign, all four wells were producing sand-free with steady gas and minimal water.

At the conclusion of the successful four-well campaign which saw significant reductions in rig time and efficiency gains, the customer planned additional GeoFORM system installations in the near future.