



Design and ENGINEERING

FROM CONCEPT TO 'FIRST BEAM', BUCKLEY SYSTEMS PROVIDES EXCEPTIONAL END-TO-END DESIGN, ENGINEERING AND INTEGRATION SOLUTIONS FOR MAGNETIC SYSTEMS. OUR DESIGN CAPABILITY BALANCES INVENTION WITH PRACTICALITY. WE INVEST IN PREMIUM SOFTWARE AND HIGHLY SPECIALISED PEOPLE. WE COMBINE THIS WITH ENGINEERING CAPABILITY THAT IS SPECIALISED, FLEXIBLE AND ULTIMATELY MANUFACTURABLE.

Electromagnetic Design

MAGNETIC MODELLING

With more than 35 years of experience and technical expertise, Buckley Systems are the industry leaders in magnetic modelling.

We have invested in Opera multi-physics finite element modelling codes – including the TOSCA magnetostatic solve. This means we can provide the reassurance of knowing your magnetic components will work first time, no exceptions, whether validating the harmonic errors of synchrotron magnets, or developing the ion optics of a spectrometer.

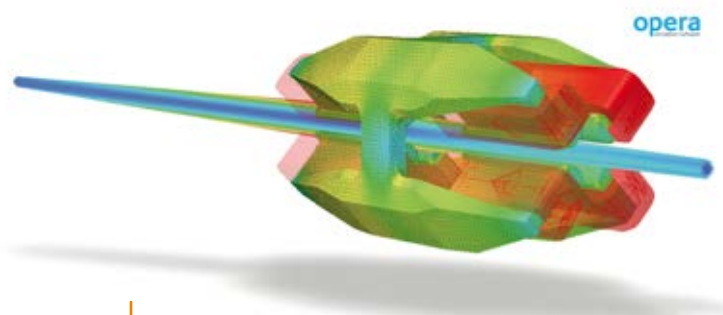
SKILFUL NETWORKS

Buckley Systems employs a full in-house team of physics and specialist engineering staff second-to-none. But that's just the beginning. We also have working partnerships with multiple scientific consultants, including D-Pace, to bolster their expertise in ion optics, magnetic modelling, beamline design, ion sources, beam diagnostics and vacuum systems.

PRACTICAL EXPERIENCE

Theory is most powerful when backed by experience. Since our in-house magnetic design team is highly integrated with our magnetic testing lab, Buckley Systems has a depth of experience in validating our models. We also draw on decades of experience building tens of thousands of magnets.

That allows us to consistently make the smartest choices regarding manufacturability, efficiency and repeatability, from the first stages of design through to production.



This quadrupole doublet was modelled with Opera 3D. The geometry was optimized for weight saving and beam acceptance.



Engineering

SPECIALIST EXPERTISE

Our engineering and drafting teams are fully dedicated to particle beam and accelerator systems including magnets, vacuum chambers and support structures. Using the latest SolidWorks premium 3D CAD software, combined with in depth knowledge of specialist materials, our engineers can quickly develop and evaluate an optimal, reliable solution.

FLEXIBILITY

After working with hundreds of international customers, Buckley Systems has developed highly flexible drawing and data management systems, which can be tailored to fit seamlessly with your own. We also understand that unexpected changes can be inherent to the design process. When design goals shift our engineering team rapidly adapt the solution to fit.

ADVANCED ION BEAM TECHNOLOGY, INC

By optimizing the geometry of a large vacuum box, Buckley Systems proposed a solution that cut machining time by 12 hours per assembly, with no reduction in function – passing on a significant cost saving to the customer.

MANUFACTURABILITY

Buckley Systems has a range of unique machine capabilities. We can help you to appropriately use our cutting edge manufacturing technologies to meet your needs for precision, cost and repeatability. We can recognise common pitfalls and obsolete techniques, and steer you towards a more reliable and modern design.

DEHNEL PARTICLE ACCELERATOR COMPONENTS & ENGINEERING

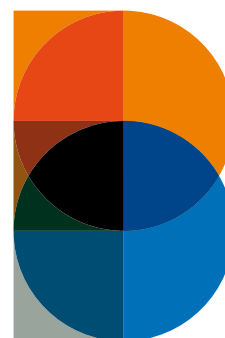
Provided with a design for a novel magnetic spectrometer, Buckley Systems was able to modify the shape of the magnet yoke to reduce material waste by 80%. This was possible due to the close partnership between the steel suppliers and the machine shop. Buckley Systems provided Opera modelling to prove the design changes didn't affect the system's resolution.

AXCELIS TECHNOLOGIES

Working with the Buckley Systems in-house engineering team, Axcelis enjoyed an unprecedented level of responsiveness in manufacturing: A design change could flow to the machine shop instantly; and when a complex cast magnet design was changed, Buckley Systems engineered and drafted complete tooling and canning drawings within days.

AN INTEGRATED TEAM

Our physics, engineering, machine shop, coil shop, assembly, testing and quality control is all in-house. This arrangement offers a huge interdisciplinary advantage: it allows the seamless integration of ion optics technology and cutting-edge manufacturing techniques to design the perfect novel solution to any specification. These integrated teams also ensure consistency in quality control, with critical dimensions and parameters from the design phase seamlessly flowing through to drawing packages, travellers, QC checks, and document packages.



**BUCKLEY
SYSTEMS**

Ingenious at work

To understand how we can forge an ingenious partnership with you, contact us on +1 978 948 3403 or +64 9 573 2200, visit www.buckleysystems.com, or email sales@buckleysystems.com

