

What we do

Axion Consulting has extensive hands-on technical experience and commercial knowledge of a wide range of industrial and chemical processes. Our process and product development team has the skills, connections and capacity to develop novel processes from concept to initial business case quickly and efficiently.

Our unique approach to process development uses third-party laboratories and pilot facilities to test the different steps of the process separately by moving samples between locations. This has proved to be much more flexible and cost-effective than the conventional approach of building a lab or pilot facility to test the whole process and enables our clients to move more quickly to commercial evaluation of a business opportunity.

We offer:

- Front end process design, often based on no more than a sketch or a verbal instruction
- Initial review of design options for safety and environmental compliance
- Practical laboratory, technical and small pilot scale process trials
- Preliminary technical and commercial evaluation of full scale processes based on pilot data
- Commercial and technical evaluation
- Preparation of first business case including financial projections.



Axion Consulting regularly handles projects ranging in value from £5k to £500k. In the course of this work we have initiated projects for clients which have resulted in capital spends over £20m.

Who are we?

Axion Consulting is a division of Axion Recycling Ltd. Axion Recycling was founded in 2001 by Directors Keith Freegard and Roger Morton to develop and operate advanced processing solutions for recycling waste materials. Prior to founding Axion Keith and Roger gained high level process development and business management experience in a wide range of process industries.

The consulting division was created in response to increased demand from a wide range of clients within the process industries for practical development of new processing and collection methods. Although we started Axion by developing advanced processes for recycling plastics by pyrolysis, solvent based methods and physical separation we find increasingly that clients demand our services for process development outside the recycling sector.

Based at Bramhall, the 18-strong consultancy team works with clients to develop novel processes and trial innovative collection methods for a variety of industrial and commercial markets.

Axion Consulting's strengths lie in process and project development work for all types of processes, including complex advanced chemical processes. Our principle areas of process development activity are:

- Speciality and inorganic chemicals
- Energy recovery
- Mineral processing
- Pyrolysis
- Recycling separations

Our team's process experience also includes:

- Cement and lime
- Packaging
- Biofuels
- Combined heat and power
- Paper
- Food and drink
- Soap and detergents
- Anaerobic digestion for power
- Silicones
- Sodium silicates
- Flavours & fragrances
- Mining separations

Meet the team

Heading the team are Directors Keith Freegard and Roger Morton, who between them have over fifty years of experience in the process industries. They have held senior management positions in the manufacture of a wide range of products including household bleach, cement, textiles, biodegradable packaging and speciality chemicals. The team has now grown to include a total of six chemical engineers, four of whom are very experienced, two experienced polymer scientists and three project co-ordinators. The team also makes use of the laboratory facilities and logistics skills of Axion's own advanced polymer recycling business in Salford. Axion's team has particular expertise in:

- Process design
- Initial evaluation of design options
- Controlling experimental work at third party laboratories and pilot plants
- International shipment of chemical samples
- Commercial evaluation of potential projects
- Safety and environmental assessments

We also have experience in a number of other areas that support the process development service including:

- IPPC applications
- Quality accreditations
- Production management
- Maintenance management
- Due diligence and negotiation in acquisitions and divestments, contract manufacturing and technology licensing

Why use Axion Consulting

Axion Consulting supplies the capacity, knowledge and skills to implement projects in the process industries, which are both environmentally sound and economically viable.

Manpower constraints and other demands on management time can make it difficult for in-house teams to develop early stage ideas into productive reality in the way that is essential for the future of many businesses.

Axion provides this outsourced capacity with practical, efficient and friendly service.

Examples of Clients and Projects

Axion's team have carried out consultancy work in both the public and private sectors, including:

- Evaluated 6 different processes for biodiesel in the UK, recommending two candidate process suppliers together with market evaluation and business plan for investors. Resulted in construction of UK's largest biodiesel plant for Greenergy at Immingham.
- Developed a novel extrusion process for production of biodegradable foamed packaging chips, working with Brunel University. Resulted in establishment of new business - Green Light Products Ltd.
- Designed a semi-continuous polyacrylate process from an existing batch process. Novel steps included continuous evaporation and drying system to remove residual solvent. Plant was built in USA and is operating successfully.
- Developed a production process for a pharmaceutical intermediate. University facilities were used for measurement of reaction kinetics leading to kilo scale production on a third-party industrial pilot plant. A design package and 100kg sample were provided to the client for commercial decision and testing with their downstream customer.
- Developed a solvent-based polymer recycling process. Following laboratory screening of 12 potential processes with evaluation of likely full scale capital cost and operating economics, two selected processes were tested at tonnage scale pilot facilities within Europe to obtain design data for key unit operations and to refine capital cost, economics and life cycle information.
- Developed an anaerobic digestion process for treatment of packaged food waste. Tonnage scale trials on separation of food from plastics and on digestion were carried out at a UK pilot facility to establish design data and capital cost. Collection method trials were conducted with supermarkets and a full business case developed.
- Prepared a process scheme, selected equipment and wrote the business case for an in-vessel household food and green waste composting facility to be built by a UK local authority.
- Developed a novel fluid bed pyrolysis process to convert mixed plastics to oil using pilot facilities in Germany, leading to detailed equipment design, capital cost, market testing and business case.
- Developed a novel production route for veterinary antibiotic for a Swiss multinational company. Chemical synthesis was reduced from 7 steps to 4 and individual reaction conditions were optimised at kilo scale. Samples were submitted to the client for regulatory testing. Scale-up process design developed and evaluated commercially.

Contact us

For more information about Axion Consulting and our consultancy services, please contact Roger Morton or Keith Freegard, Directors, at:

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