

- ◇ Design
  - ◇ Manufacture
  - ◇ Supply
  - ◇ Install
- ◇ Bulk Handling
  - ◇ Power
  - ◇ Rail
  - ◇ Water

**Engineering Excellence**  
*Serving Heavy Industry*



# The Greenbank Advantage



## Enhancing Performance

Greenbank develops business relationships built on trust, understanding, cooperation and collaboration. As a result, it has developed the capability to enhance the performance of plant and equipment operated by its customers.



**Understanding + Cooperation + Collaboration + Capability = Benefit**

The Greenbank Group UK Ltd Comprises of:

Greenbank Engineering Services Ltd

Franklyn Yates Engineering Ltd

Greenbank Terotech Ltd

Ammegen Ltd

GAIM Ltd

- ◆ **Aggregates**
- ◆ **Bulk Handling**
- ◆ **Energy from Waste**
- ◆ **Food**
- ◆ **Petrochem**
- ◆ **Power**
- ◆ **Transport/Rail**
- ◆ **Water**
- ◆ **Waste Water Treatment**

*Serving Industry*

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**A multi-disciplinary independent  
engineering, design, manufacturing  
and installation company**

- ◆ **Dedicated**
- ◆ **Focused**
- ◆ **Adaptable**
- ◆ **Responsive**

*Delivering Improvement*



## The Group

### What we do

- ◆ Renowned for its work with power generation plants across the globe, the award-winning Greenbank Group has over many decades such as a proven track record in the bulk handling, steel and heavy engineering sectors and more recently, leisure, transport, rail, water and waste-water treatment.

Throughout its history the Greenbank Group has constantly evolved, responding to customers' needs through modernisation and legislative changes whilst reacting quickly to opportunities in new markets.

- ◆ Originally established in 1954, the UK-based Greenbank Group has built a global reputation for delivering engineering excellence across a broad range of industrial sectors.

Its design and manufacturing facilities in Derbyshire, Nottinghamshire and Flintshire provide bespoke engineering services to support its customers' on-going requirements for both product supply manufacturing and site-based turnkey projects.

The Group is able to support its customers on a wide variety of electro-mechanical projects from concept to completion offering detail design, manufacture, installation and commissioning.



### Greenbank Group UK

Hartshorne Road  
Woodville  
Swadlincote  
Derbyshire DE11 7GT  
United Kingdom

T: +44 (0) 845 0707 092  
E: [info@greenbankgroup.com](mailto:info@greenbankgroup.com)  
W: [www.greenbankgroup.com](http://www.greenbankgroup.com)

*Engineering Excellence*



# About Us



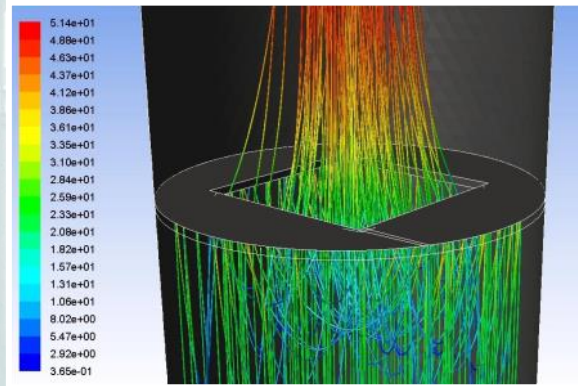
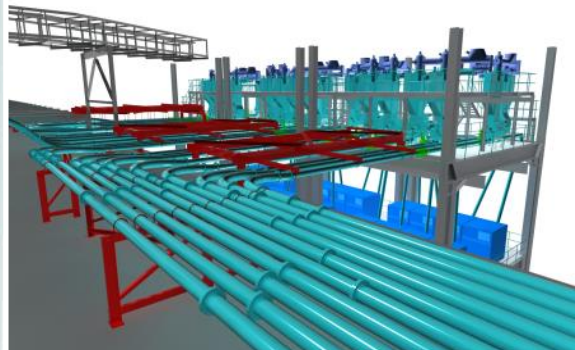
## How we work

### By understanding our customer

- ◇ Developing strong stakeholder relationships
- ◇ Longstanding experience in business
- ◇ Technical and commercial partnerships
- ◇ Access to a broad range of expertise
- ◇ Adaptable, flexible and responsive

### By providing solutions

- ◇ Research and innovation
- ◇ Development of products and systems
- ◇ Process and detail design
- ◇ In-house manufacturing
- ◇ Field support and services



## Greenbank's infrastructure and delivery model

- ◇ Definition & Scoping
- ◇ Research & Develop
- ◇ Site Survey
- ◇ Design
- ◇ Engineering
- ◇ Procurement
- ◇ Manufacture
- ◇ Supply
- ◇ Installation
- ◇ Commissioning

*Exceeding our customers' needs*

# Vision & Mission

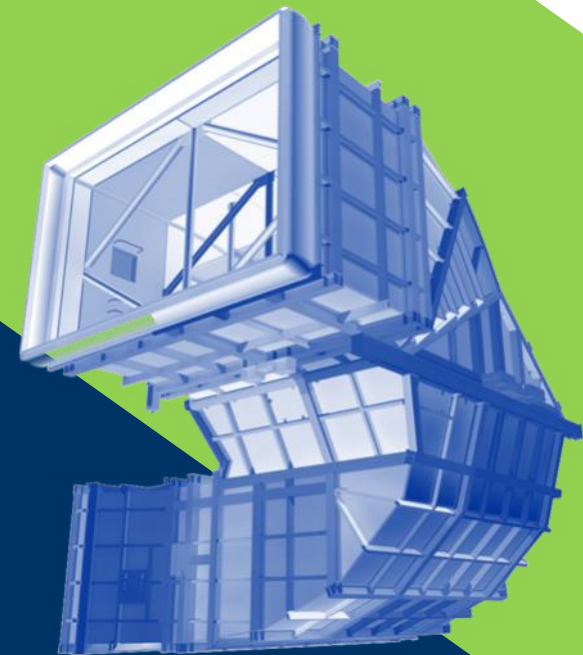
## ◆ Vision

To invest in, develop and refine our engineering business and our people to a level of excellence, in order to deliver benefit and add value to an increasing customer base, with the aim of becoming their preferred choice of working partner.

## ◆ Mission

To grow the business annually by developing our innovation, design, product, manufacturing and installation services. The business strives to enhance the performance of their customers' plant and equipment and deliver added value by providing engineering excellence and technical superiority in the provision of:

- ◇ *Aggregate Separation Technologies*
- ◇ *Combustion Products and Systems for Large Generating Plants*
- ◇ *Computational Fluid Dynamics and Discrete Element Method Modelling Services*
- ◇ *Continuous Weighing and Material Handling Products and Systems*
- ◇ *General Manufacturing Services*
- ◇ *Heavy Industrial Fabrication*
- ◇ *Installation and Commissioning*
- ◇ *Pipework Systems and Processes*
- ◇ *Research, Development and Product Innovation*
- ◇ *Wear and Erosion Protection Products and Systems*





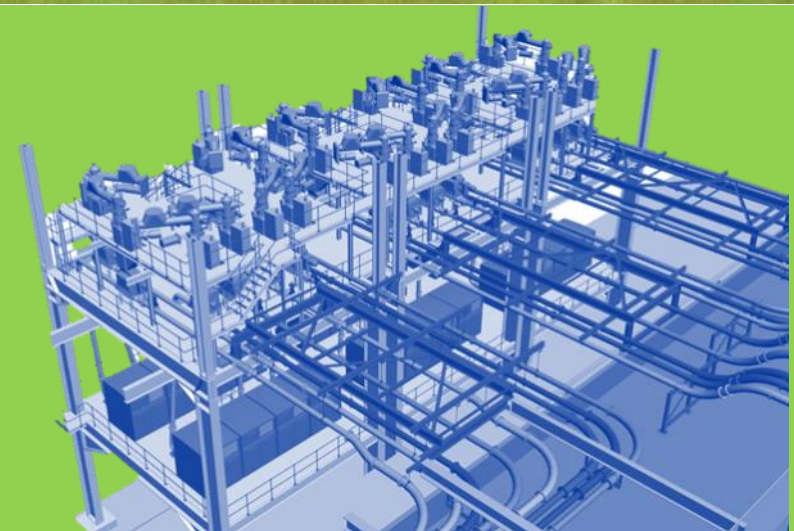
## ◆ Principles

Greenbank's core values are central to the way it operates and conducts its business.

It is of paramount importance that its employees understand what the business is trying to achieve.

## ◆ Values:

- ◇ To develop the company by training and innovative thinking.
- ◇ To empower its people to respond to customer needs.
- ◇ To work in a safe and healthy environment with good welfare facilities.
- ◇ To recognise and reward good contribution.
- ◇ To promote environmental improvement to help protect future generations.
- ◇ To develop the company through a culture of continuous improvement.



# Corporate Social Responsibility



## Corporate Social Responsibility



At Greenbank we believe that acting in a socially responsible manner goes to the heart of what we do. We want our employees to be proud of who they work for, suppliers to be keen to do business with us and customers to choose Greenbank for its expertise, quality of products and services.

Greenbank also recognises the importance of playing a positive role in our local community through the impacts of our business and will seek opportunities to do so.

Greenbank sets five goals for our Corporate Social Responsibility to measure how well we are managing the environmental, social and economic impacts of our business.

**All of our operations are guided by the following key principles that are continually monitored for improvement and progress:**

### **Environment**

Greenbank will record data for our environmental impact and improve our energy consumption, waste recycling and overall sustainability.

### **Health & Safety**

Greenbank will report annually our H&S statistics and progress and focus on improving our performance where required.

### **Community**

Greenbank will aim to source and recruit locally, be aware of the impact of our factory on neighbours and support staff with charitable events.

### **Workplace**

Greenbank will invest in staff training and development, encourage staff to engage more in the business and continually improve its working environment.

### **Technology**

Greenbank will work with its customers and collaborate with its business channel partners aiming to deliver new technologies and processes.



# Goals and Expertise



## Summary of Goals

- ◇ Organically develop and grow the business year on year
- ◇ Maintain core business and develop related opportunities
- ◇ Increase and develop in-house manufacturing capabilities
- ◇ Increase exports, particularly with combustion-related products and systems
- ◇ Develop our technical skills, abilities and capabilities
- ◇ Diversify into other industrial markets
- ◇ Seek and find new opportunities with other businesses whether via partnership, licensing or acquisition.



## Area's of Expertise

- ◆ **Combustion Optimisation**  
Pulverised fuel distribution, measurement and balancing systems.  
Combustion optimisation products and systems. SOx and NOx reduction systems.
- ◆ **Corrosion and Erosion Protection**  
Advanced design, manufacture and application of bespoke lining systems for bulk handling, waste and water treatment.
- ◆ **Heavy Industrial Engineering**  
Pipework, ductwork and supporting systems, general heavy fabrication, bespoke fabrication, tooling, jigs and fixtures.
- ◆ **Materials Handling Systems**  
Design and supply of aggregate segregation technology.  
Gravimetric weighing systems. Controlled flow chutes and transfer points.
- ◆ **Turnkey Projects**  
Design, manufacture, supply, installation and commissioning of a wide variety of electro-mechanical projects in power, bulk handling, waste and waste-water treatment facilities.



# Greenbank Terotech Ltd

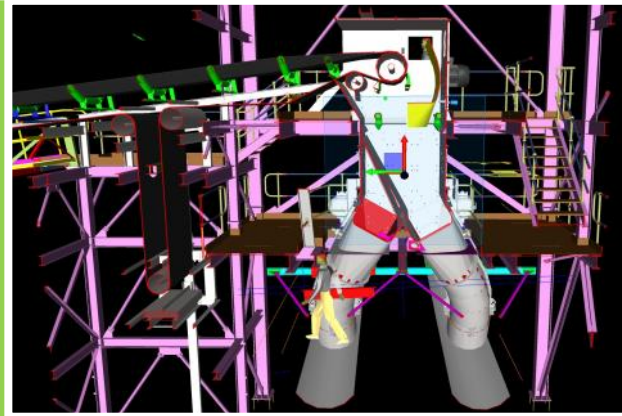
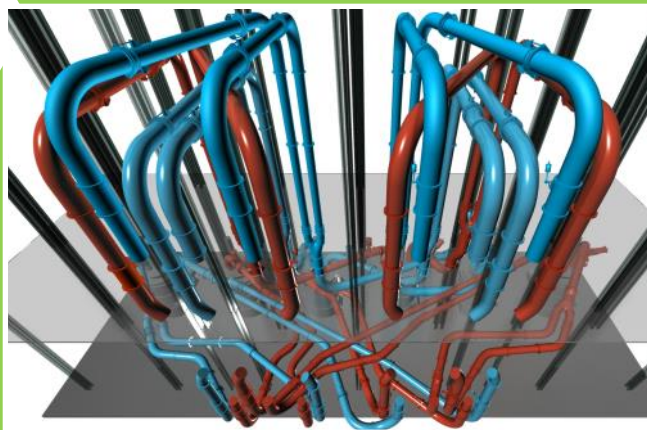
## Innovation at Work

**Greenbank Terotech Limited (GTL)** is a first-class heavy industrial engineering company serving the power, coal, steel, cement, bulk handling, paper, mineral, rail, automotive, glass, and food industries in the UK and overseas.

GTL's heritage and long-term core business specialises in the design, manufacture and application of abrasive- and corrosive-resistant products in bulk material-handling and electricity generation.

In 2000, a brand new era of the business was initiated, to design technology that improved and enhanced the operation and efficiency of combustion-generating power plants. The emphasis behind this was the growing requirement for cleaner, more efficient technology and control of emissions.

Since then, Greenbank Terotech has become a world leader in the development of unique combustion optimisation technologies.



**Greenbank Terotech Limited** operates the Group's core design and manufacturing facilities and provides the engineering support and design to produce bespoke steel fabrications, abrasive- and corrosive-resistant lining systems, bulk material-handling systems and innovative custom technologies designed and engineered to minimise operational downtime, increase efficiency and optimise process and plant performance.

The company is renowned worldwide for its expertise in providing cost-effective solutions and piping systems for pulverised fuel, furnace bottom ash, fly ash, grit, dust and wet slurry piping systems together with all the associated equipment like chutes, valves, diverters, dampers, distributors, supports and secondary steelwork.

GTL is a unique engineering and manufacturing company which thrives on developing itself, its products and its employees to a level of excellence.

### GTL Offers:

#### ♦ Engineering Design

Detailed site survey and measurement routing  
3D modelling and structural assessment  
General arrangement and installation drawings  
Feasibility, assessment and engineering studies

#### ♦ Wear Protection Systems

Abrasion and corrosion lining systems  
Advanced vacuum bonding system  
Site and shop-based wear protection relines

#### ♦ Piping Systems

Lean phase conveying  
Pipework, supports and structures  
Lined and unlined valves and dampers

#### ♦ Technical Fabrication Services

EN 1090-1:2009+A1:2011: Execution of steel and aluminium structures  
EN 15085: Manufacture of railway vehicles and components certification level 1

#### ♦ Site Services

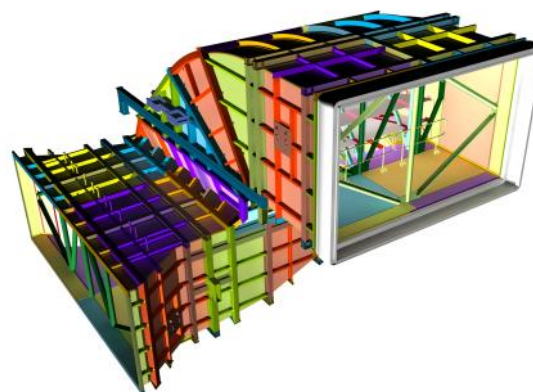
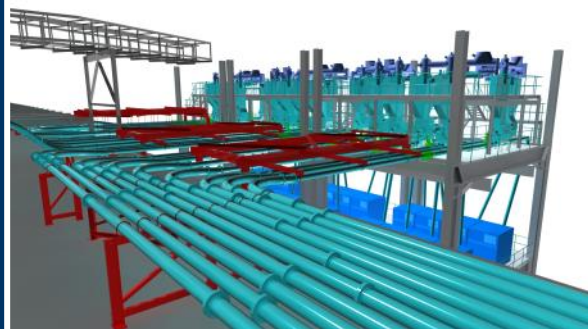
Installation and field support services





## Greenbank Terotech has four operating divisions:

- ♦ **Heavy Industrial Division**  
Delivering heavy industrial fabrication, piping systems and wear protection solutions
- ♦ **Systems Division**  
Delivering innovative solutions for combustion measurement and control
- ♦ **Materials Handling Division**  
Delivering continuous weighing products and bulk material handling solutions
- ♦ **Aggregate Technology Division**  
Delivering blending and segregation technology and solutions



## Greenbank Terotech provides:

- ♦ Aggregate segregation technology
- ♦ Biomass conveying systems
- ♦ Bulk handling systems
- ♦ Electricity generating boiler combustion products and systems
- ♦ Gravimetric weighing systems
- ♦ Pipework and conveying systems
- ♦ Pulverised fuel balancing systems
- ♦ Technical fabrication
- ♦ Site and installation services
- ♦ Valves and dampers
- ♦ Wear protection systems

**Contact GTL on:**

T: +44 (0) 845 0707 092

E: [info@greenbankgroup.com](mailto:info@greenbankgroup.com)

## *Delivering Technical Fabrications*



### About Greenbank Engineering Services

GES offers bespoke and specialised fabrication services and can provide a fast turnaround on new-build, product assembly and refurbishment work.

### GES offers

- ◆ Design and drafting services
- ◆ Bespoke workshop repair, modification and manufacture services
- ◆ Project management, operation and maintenance services
- ◆ Laser cutting and machining services
- ◆ Mechanical plant overhaul, maintenance, installation and spares management
- ◆ Pipework refurbishment, modifications welding and testing
- ◆ Structural design, fabrication and construction projects.

### Contact GES on:

T: +44 (0) 845 0707 091

E: [info@greenbankgroup.com](mailto:info@greenbankgroup.com)



**Greenbank Engineering Services Ltd.** (GES) is a Nottinghamshire-based heavy industrial engineering company with many years' experience in machining, fitting, fabrication and welding.

GES is proud of its reputation for reliability, timeliness, quality and competitiveness with our customer base and the wider heavy industrial engineering industry.

The combination of a friendly and professional service and the ability to meet tight and difficult delivery programmes enables a secure and bespoke service for our growing customer base.

GES' goal is to develop customer services and customer relations to become the reliable and obvious choice for its customers' needs.



# Franklyn Yates Engineering Ltd



## *Delivering Electro-Mechanical Contracting Services*

**Franklyn Yates Engineering Ltd (FYE)** is an experienced mechanical, electrical, instrumentation, control and automation (MEICA) company with extensive experience in water, waste-water, power, petrochemical, food and pharmaceutical sectors.

FYE is able to support its clients from concept, through detail design, to installation and commissioning, utilising lean principles and project management methodologies, ensuring that the client's expectations are always achieved.

The company can provide a complete project-managed turnkey service for its clients on all aspects of new, repair and maintenance contracts within the water and waste-water treatment industries.



**Franklyn Yates Engineering** has extensive experience in all aspects of design, manufacture and installation of various items ranging from water storage tanks to stainless steel, ductile iron, carbon steel and UPVC pipework along with the pipe supports and pipe bridges.

FYE can also supply and install other plant items such as:

- Blowers
- Motors
- Flow meters
- Switches
- Access steelwork
- Compressors
- Mixers
- Instrument gauges
- Sample and dosing boards
- Support steelwork
- Pumps
- Valves

FYE is supported by its own specialist workshops at Connah's Quay in North Wales. The workshop provides specialist manufacturing services fabricating pipework and structures from both carbon and stainless steel.

**Contact Franklyn Yates Engineering on:**

T: 01283 740216

E: [info@franklynates.com](mailto:info@franklynates.com)



# Ammegen Ltd

## Combustion and Environmental Solutions

**Ammegen Ltd** is a joint venture combining the strengths of Greenbank Group (UK) and Reaction Analytic Solutions Corporation (USA) to bring performance enhancement and advanced air pollution control solutions to the global market for the reduction of NO<sub>x</sub>, CO, SO<sub>2</sub>, SO<sub>3</sub> and HCl. This includes both pre- and post-combustion technologies.

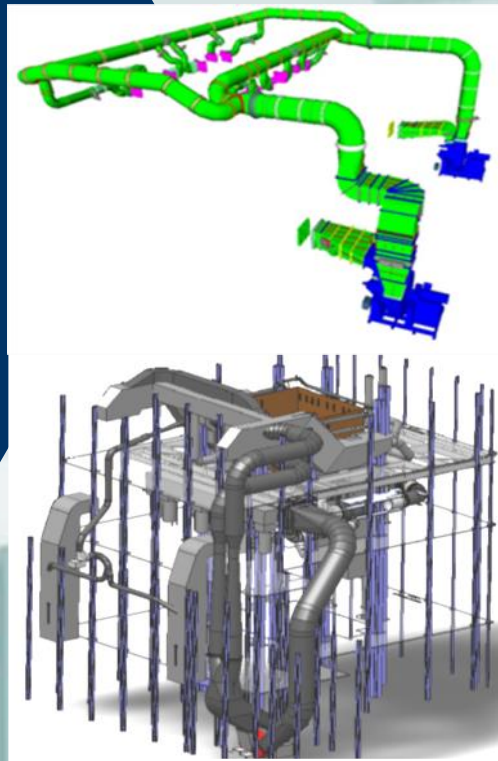
The company provides an integrated solution to plant operators incorporating computational fluid dynamic study and analysis with the technological solutions tailored to optimise furnace combustion and air pollution control, all backed up by guarantees.

It also delivers a unique portfolio of combustion improvement products and technologies, together with a wide range of technical solutions, aimed at increasing efficiency and reducing greenhouse emissions at small and large thermal power generating plants.

Utilising proven methodology for the development and delivery of technology for the global market in combustion technologies, the company has also built a reputation for on-time delivery of projects.

Ammegen's services and equipment offer its customers a sustainable model of plant optimisation.

Its integrated solutions, when implemented, empower the customer to manage and monitor their own plant, with ongoing support and spares.



### About Ammegen

With over 18 years of computational fluid dynamic experience, Ammegen can accurately model a wide range of plant systems, from fuel delivery, burner design, furnace combustion optimisation, and flue gas duct design, to proprietary chemistry modelling and sorbent/reagent reactions.

Our engineers have research-driven experience in developing over 90 models on a wide variety of boiler configurations and fuel types. Our customers draw on our reputation for continual technological refinement and bespoke solutions.

### Ammegen offers:

- ◇ Combustion optimisation via improved fuel/air distribution
- ◇ Advanced combustion modelling
- ◇ Combustion on optimisation via burner upgrade or replacement
- ◇ Over-fire air and advanced OFA technology (AOFA®)
- ◇ Selective non-catalytic reduction technology
- ◇ Sorbent injection systems and upgrades
- ◇ Fuel switch design (coal to gas or biomass)

**Contact Ammegen on:**

T: +44 (0) 845 0707 092

E: [info@greenbankgroup.com](mailto:info@greenbankgroup.com)



## *Research & Development, Advanced Instrumentation and Control*

**GAIM Ltd** works both independently and with leading UK research universities and design centres and is dedicated to enhancing Greenbank's product portfolio by developing innovative new technologies which help improve efficiency and reduce the environmental impact of power generation and related industries.

Utilising state-of-the-technology, the company specialises in the development of highly scientific equipment that is designed to characterise, measure and control two-phase fluid flows in the power generation, pulverised fuel (PF), biomass, cement and steel industries as well as many other industrial sectors.

GAIM's techniques of studying and analysing two-phase flows is complemented by a unique test facility assisted by Computational Fluid Dynamics (CFD) and Discrete Element Modelling (DEM).

GAIM also has access to numerous experimental facilities and expert knowledge, having established links with top universities such as Nottingham, Leicester, Loughborough and Cambridge.

GAIM boasts a 1/3 scale PF experimental facility including separating cyclones which lead to weighing systems, bifurcating and trifurcating flow lines and de-dusting filters.

### **GAIM Product Development Rollcall:**

- ◆ **MillMaster®**  
Particle Size Analyser
- ◆ **PfMaster – PFMS®**  
Pulverised Fuel Monitoring System
- ◆ **CoalFlo® Damper**  
Pulverised Fuel Balancing Damper
- ◆ **VARB® and Control**  
Pulverised Rope Breaker
- ◆ **G-CAM® & H-CAM®**  
Online Carbon-in-Ash Analyser
- ◆ **LA200 Series®**  
Acoustic Leak Detection System
- ◆ **GravMaster®**  
Pressurised Gravimetric Feed System

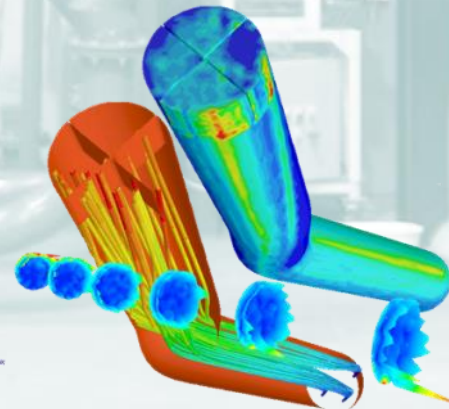
### **About GAIM**

GAIM is a research & development company specialising in the development of advanced measurement techniques and the introduction of novel concepts to solve problems in power generation plants.

GAIM works is funded by a royalty return on products it develops that are marketed and sold by Greenbank Terotech's systems division.

GAIM's capabilities:

- ◆ DEM and CFD capability
- ◆ Monitor and measure current flow lines
- ◆ Design new flow lines
- ◆ Develop electro-mechanical measurement systems
- ◆ Validate current systems
- ◆ Investigate properties of new and current particles on fluidic systems.



**Contact GAIM on:**  
T: +44 (0) 845 0707 092  
E: [info@greenbankgroup.com](mailto:info@greenbankgroup.com)



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## **Greenbank Group UK**

Hartshorne Road

Woodville

Swadlincote

Derbyshire DE11 7GT

United Kingdom