



ACCELERATE. INNOVATE. COLLABORATE.



FARMING BUSINESS INNOVATES FOR FUTURE SUCCESS

Established in 1963, ATG Turnbull Ltd based near Brigg, have been a successful farming enterprise for over 55 years. As an innovative and forward-thinking agricultural business they are now looking to diversify and are working on the next stage development of a new agricultural biomass material that could be a key enabling product for the fourth industrial revolution.

CASE STUDY: ATG Turnbull

Part funded by



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THE CHALLENGE

Anthony Turnbull has always had a keen interest in science and innovation and for years has had a dream of creating a really novel, cutting-edge material from a plant-based agricultural product that will add value to his crop. As a result, he started on a journey to create an environmentally sustainable material with amazing properties and many potential applications, from a plant which could be grown in abundance, which also absorbed CO₂ out of the atmosphere as it grew.

Having found what he thought might be a potential candidate, Anthony approached Innovation Manager, Dave Dawson, at the Aura Innovation Centre (AIC) to seek help in analysing this starting material to understand its specific properties.

THE SOLUTION

Innovation Manager, Dave Dawson, worked with ATG Turnbull Ltd to successfully apply for funded support from the Aura Innovation Centre to explore the chemical composition and potential applications of a biomass material and the project was successfully matched with Dr Maria Grazia Francesconi, a Senior Lecturer and expert in the chemistry of materials from the University of Hull.

The material would be of particular interest and value if it were found to contain graphene. Graphene is a valuable material but still difficult and costly to produce in high purity. Dr Francesconi and her team looked at identifying the main components of the material by comparison with 3 compounds in particular, graphene, graphene oxide and activated charcoal, using a number of different analysis techniques including powder X-ray diffraction, transmission electron microscopy, CHS analysis, inductively coupled plasma analysis and BET surface area analysis.

THE RESULT

Our work has been a vital step in providing ATG Turnbull Ltd with specialist knowledge to contribute towards their ambition of understanding the properties of their starting material and how this could be refined or further developed to work in a number of cutting-edge technologies.

Our scientific research, testing and analysis of the material has provided authenticated evidence that the sample contains potential graphene properties which, when refined, could be produced industrially at scale and commercialised to help reduce waste and significantly increase efficiencies in areas such as battery storage, medicine and construction.

Anthony Turnbull, Managing Director, commented "My dream is to create a really novel, cutting edge material from a natural, abundant plant source and be able to manufacture at scale, creating jobs in a largely rural economy and positively impacting the economic growth of the region." Thanks to the AIC, he is now one step closer to achieving this ambitious vision for the future of his business, the region and low carbon innovation.



LEAD ACADEMIC/ RESEARCHER

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FIND OUT HOW WE CAN HELP YOUR BUSINESS

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