AEMRI

(Advanced Engineering Materials Research Institute)

Project Description

TWI Wales is delivering an Advanced Engineering and Materials Research Institute (AEMRI). It aims to drive business growth and competitiveness for manufacturing and engineering organisations through identified research into advanced engineering and materials. Its technical facilities are scheduled for completion in 2023.

The Institute will provide a unique facility where a critical mass of equipment, expertise and resources will provide an environment where the limits of performance of advanced materials can be determined, tested and proven. Through the use of advanced modelling and simulation methods, full large-scale mechanical test structures will be designed and built upon finite element analysis (FEA) calculations. Advanced, automated non-destructive evaluation (NDE) techniques to detect critical flaws will be designed, tested and validated, which will save the industry time and production costs as well as minimise the risk of catastrophic structural failures.

Delivery Model

AEMRI will deliver the objectives of this proposal through the following four technical strands which are fully described in technical strands:

1. Modelling and Simulation of High Performance Materials and Structures.
2. Advanced Robotic Inspection of Complex Geometry Structures.
3. Inspection Systems for Very Large Structures for the Green Energy Sector.
4. Nuclear Fabrication Research Centre.

The research environment will combine expertise, equipment and resources for bespoke structural testing and evaluation services designed to determine, test and validate the limits of performance of advanced materials and to find ways of saving time, minimising production costs and reducing the risk of structural failure.

Geographical Coverage

The project will benefit the Cardiff area of the CCR and also Neath Port Talbot and Swansea.

Specific Targets

- £5.4m of business expenditure revenue for research & development BERD projects
- £6m of capital spend
- Future RCUK, STFC and Innovate UK funding by £2.5m
- Total research staff for AEMRI targets - 25

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AEMRI

(Sefydliad Ymchwil Peirianneg a Deunyddiau Uwch)

Disgrifiad

Mae TWI Cymru yn darparu Sefydliad Ymchwil Peirianneg a Deunyddiau Uwch (AEMRI). Nod AEMRI yw hybu twf busnes a chystadleurwydd ar gyfer sefydliadau gweithgynhyrchu a pheirianneg drwy ymchwil a nodwyd ym maes peirianneg a deunyddiau uwch. Disgwylir y bydd ei gyfleusterau technegol yn cael eu cwblhau yn 2023.

Bydd y Sefydliad yn darparu cyfleuster unigryw lle bydd màs critigol o offer, arbenigedd ac adnoddau yn darparu amgylchedd lle gellir pennu a phrofi terfynau perfformiad deunyddiau uwch. Drwy ddefnyddio dulliau modelu ac efelychu uwch, bydd strwythurau profion mecanyddol ar raddfa fawr llawn yn cael eu cynllunio a'u hadeiladu ar gyfrifiadau dadansoddi elfennau penodol. Bydd technegau gwerthuso anninistriol awtomatig uwch o ganfod diffygion critigol yn cael eu cynllunio, eu profi a'u dilysu, a bydd hynny'n arbed amser y diwydiant a chostau cynhyrchu yn ogystal â lleihau'r risg o fethiannau strwythurol trychinebus.

Model Cyflawni

Bydd AEMRI yn cyflawni amcanion y cynnig hwn drwy'r pedwar llinyn technegol canlynol a ddisgrifir yn llawn mewn llinynnau technegol:

- Modelu ac Efelychu Deunyddiau a Strwythurau Perfformiad Uchel.
- Archwiliad Robotig Uwch y Strwythurau Geometreg Cymhleth.
- Systemau Arolygu ar gyfer Strwythurau Mawr lawn yn y Sector Ynni Gwyrdd.
- Canolfan Ymchwil ar gyfer Cynhyrchu Niwclear.

Bydd yr amgylchedd ymchwil yn cyfuno arbenigedd, offer ac adnoddau ar gyfer gwasanaethau gwerthuso a phrofi strwythurol pwrpasol sydd wedi eu cynllunio i bennu, profi a dilysu terfynau perfformiad deunyddiau uwch ac i ddod o hyd i ffyrdd o arbed amser, lleihau costau cynhyrchu a lleihau'r risg o fethiant strwythurol.

Ardal Ddaearyddol

Bydd y prosiect o fudd i ardal Caerdydd o Brifddinas-Ranbarth Caerdydd a Chastell-nedd Port Talbot ac Abertawe hefyd.

Targedau Penodol

- £5.4 miliwn o refeniw gwariant busnes ar ymchwil a datblygu'r prosiectau BERD
- £6 miliwn o wariant cyfalaf
- Bydd £2.5 miliwn o gyllid RCUK, STFC ac Innovate UK
- Cyfanswm y staff ymchwil ar gyfer targedau AEMRI - 25

Manylion Cyswllt

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