

ITT No. 187

Invitation to Tender

Restricted Commercially Confidential



“Expert support in modelling novel domestic vertical axis wind turbine”

1 SUMMARY

Renewables East (“RE”) is engaged in programmes with both the East of England and East Midlands Development Agencies (EEDA & EMDA) to accelerate the route to market of very early stage renewable energy technologies, increasing both the quantity and quality of investable concepts capable of growing across the two regions.

2 Background

The East of England is the leading English region for renewable electricity, currently producing 8% of the electricity it uses from renewable sources. It benefits from wide scale deployment of bio energy (for example the world’s first chicken litter electricity plant at Thetford, the UK’s first bio ethanol plant at British Sugar Wissington, and the world’s fastest biofuelled car at Lotus in Norfolk) and 2007 saw a record year for deploying on shore renewable energy. The region’s coast is also surrounded by the majority of the UK’s offshore wind installations, with around £50 billion capital investment anticipated by 2020 as well as further R&D innovation capacity in wave and tidal technologies. As a result, the region is well on target to meet its 2010 target of 14% electricity from renewable sources and has also been engaged by the East Midlands Development Agency to increase exploitation of the sector growth.

RE has been approached by an East Anglian based Anglian based entrepreneur to develop a patent pending, cutting edge novel compact domestic grid tied wind turbine system that can deliver electricity far in excess of the average yearly domestic usage of a rural or suburban household.

This invitation to tender seeks support from experts in the field of: Mechanical Engineering; Electrical and Electronic Engineering; Applied aerodynamics particularly in wind turbines; Turbine Generators (design and development of electric motors and generators); Power Electronics (power conversion).

3 About Renewables East

Renewables East is a private company delivering the services associated with being the renewable energy agency for the East of England. The Company is funded by the East of England Development Agency (EEDA) and officially designated as an EEDA sister organisation. For the year 2008/09, **RE** has been allocated £2-4M from various sources including EEDA, EMDA, EU, Local Authorities and central government to continue its mission.

The objectives of the Company are:

- a. To enable the East of England to meet its adopted target for the production of energy from renewable resources, within the context of national energy policy and the need to move towards a lower carbon economy; and
- b. To maximise the rate of growth of the renewable energy sector and the economic benefits to the East of England and East Midlands' regions, especially through stimulating investment and job opportunities, supply chain development and innovation.
- c. **RE's** primary work areas are Bioenergy (Biomass and Biofuels,) Offshore/Onshore Wind, Planning, Supply Chain Development and the On-site Renewables agenda. If you have not already done so, you may find a visit to our web-site useful www.renewableseast.org.uk.

4 Scope of work

The successful bidder will have the capability to provide and deliver the following aspects of the technology development:

Turbine blades and mechanical parts:	3D CAD modelling and rendering; Finite element analysis (FEA); Load calculations and considerations; Shape optimisation; Product styling; Low noise optimisation; Tools, jigs and fixtures design; prototyping; Cost engineering.
PMG (Generator):	3D CAD (Computer Aided Design) modelling, simulation and rendering; Internal electromagnetic field design and simulation; External mechanical design and load simulation; Efficiency optimisation; Heat dissipation optimisation; Low noise optimisation; Low starting torque optimisation; Prototyping; Cost engineering.
Inverters and controller:	Grid connected inverters; Hardware and software design; various safety, grid standard advice and optimisation; Power quality improvement; Safety systems; Remote Monitoring Systems (GPRS/Internet based);

The successful bidder will be expected to provide and deliver a feasibility in principle report for the patent pending concept designs (Turbine blades, mechanical parts and PMG) based on CAD drawings, analytical and numerical modelling within the time scale of two weeks. Once the report is accepted and passed through the feasibility test then the successful bidder will be expected to fabricate and then test a prototype in a controlled environment such as a wind tunnel.

5 Tender Details

Responses to this tender must be received by **Renewables East** no later than **1600 hours on Monday 13 October 2008** and should be sent via email to:

John Heath
Delivery Manager
Renewables East
ZICER Building
School of Environmental Sciences
University of East Anglia
Norwich
NR4 7TJ

Responses should be submitted electronically, and should include your total fees (including the number of people involved, their daily rates, plus any expenses and VAT), outline proposals on the form and type of training session and supporting materials you would develop, evidence of previous experience, and any additional value you can add.

The successful applicant will be notified by Thursday 16 October 2008 at the latest and must be in a position to start work immediately upon notification.

The materials produced will be the property of **Renewables East** and will need to be supplied in formats (hard copy and/or electronic) that can be reproduced by us without further project cost.

6 Tender Process & Assessment

Tenders should be no longer than ten pages, including a two page executive summary. Further information can be included in the form of an appendix. The tenders will be assessed against the following criteria:

- Evidencing of expertise and a track record in similar work
- Understanding economic drivers in SME businesses
- Knowledge of wind turbine supply chain (vis-a-vis Blades & Composites)
- Evidence of ability to pass on expertise to others in a structured fashion, weigh support material where necessary

Any information provided will be treated with total confidentiality.

7 Fees

The budget available for this work cannot exceed **GBP£10,000.00 (“Ten Thousand”)** including VAT and **any materials/expenses** incurred in the course of this work and will be released in line with tangible evidence of progress against milestones, such as:

Completion of a valid De Minimis Form (Beneficiary Sheet - attached)

Evidence of Successful Development of similar design/engineering projects

Successful review meeting with the regional SME and **RE**

Successful completion of a relevant & credible training programme for the employees of the regional SME.

8 Further Information

Should you require any further information on this brief to complete your tender submission, please contact John Heath by e-mail or post: JohnHeath@RenewablesEast.org.uk

John Heath, Delivery Manager
Renewables East
ZICER Building, School of Environmental Sciences
University of East Anglia (UEA)
Norwich
NR4 7TJ