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Europe-China High Value Engineering Network (EC-HVEN): Shaping Sustainable Engineering Sectors in Europe and China

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What’s Engineering?

Engineering is “the synthesizing art and technology by embodying the qualities of inquiry, imagination, scientific and technological rigor, vision and creativity.”


Leonardo da Vinci (1452-1519)
The Engineering Value Chain

The Engineering Value Chain

Idea Generation and Selection  Design and Development  Production and Delivery  Service and Support  Recycling and Disposal

Engineering Designers  Engineering Manufacturers  Engineering Service Providers

A renewed interest in engineering around the world

Engineering: turning ideas into reality
Innovation, Universities, Science and Skills Committee - Fourth Report, 2009
“… We have found engineering to be one of the UK’s great strengths and were pleased to discover that UK engineering and engineers are highly regarded internationally, more than they are at home. We are convinced that the strength of the UK’s engineering base means that the UK can play a major part in solving global problems such as climate change, food and water supply, energy security and economic instability…”

Strategy for promoting interest in science and engineering:
Recommendations for the present, research needs for the future
German Academy of Science and Engineering, 2010
“Germany is threatened by a dearth of professionals skilled in MINT (mathematics, computer science, the natural sciences and technology) occupations. This can have far-reaching consequences for the innovative capacity of science and Industry…”

Upgrading and optimising industrial value chains across a range of key engineering sectors have been the top-priority items in the 11th & 12th five-year plan of China.

Off-shoring Engineering:
Facts, Myths, Unknowns, and Potential Implications
U.S. National Academy of Engineering, 2010
“The engineering enterprise is a pillar of U.S. national and homeland security, economic vitality, and innovation. But many engineering tasks can now be performed anywhere in the world…”
The EC-HVEN approach

Europe-China High Value Engineering Network (EC-HVEN)

International network collaborations along the Engineering Value Chain

Europe
Leading academics, senior industrialists, policy makers, educators, etc.

WP1-2

WP7
Recycling & Disposal

WP6
Service & Support

WP5
Production & Delivery

WP4
Design & Development

WP3
Research & Idea Generation

China
Leading academics, senior industrialists, policy makers, educators, etc.

WP8

P1: UOB

P2: UCAM

P3: DTU

P4: HIT

P5: TSU

P6: ZJU

P7: SJTU
Three main objectives

EC-HVEN aims to establish a framework for global network collaborations in high value engineering, manufacturing and innovation. The main strategic objectives (SO) include:

• **SO1**: Increasing awareness of the importance and potential value of engineering and networking within the community of high value engineering research.

• **SO2**: Providing a supportive environment for building collaborative research projects focusing on high value engineering capabilities and novel concepts of operations.

• **SO3**: Establishing a framework for global network collaborations in high value engineering areas.
The consortium structure

A wider scope of collaborative partners
Academics, Industrialists, Educators, Policymakers, etc.

Exchange Researchers
EC-HVEN will provide 399 researcher x months Marie Curie Fellowships between the three European partners and the four Chinese partners from 2012 to 2016.

WP 1&2
Management & Knowledge Transfer

WP 3
Engineering & Technology Management

WP 4
Engineering Design & Innovation

WP 5
International mfg. & Engineering

WP 6
Service Engineering

WP 7
Sustainability & Engineering

WP 8
ICT for HVEN

Work Package (WP) Leaders
Cambridge University (P2),
Technical University of Denmark (P3)

Harbin Institute of Technology (P4),
Tsinghua University (P5),
Zhejiang University (P6),
Shanghai Jiao Tong University (P7)

The Beneficiaries and Partners

The Coordinator
University of Birmingham (P1)

The Supervisory Board
How to get involved?

QUESTION TWO:
From your perspective, how to effectively create value through Europe-China engineering collaborations?

QUESTION ONE:
What’s the linkage of your research to the engineering value chain?

FOCUSING ON THE RESEARCH YOU ARE LIKELY TO DO IN THE COMING FOUR YEARS, AND ADDRESSING THE TWO QUESTIONS ABOVE:

EC-HVEN
What’s going to happen?

March 2012

- **Preparation**
  - Sept 2012 Getting Start Meeting
  - 2013 WS I: Towards an overall framework for HVEN research
  - 2014 WS II: HVEN implementation and application
  - 2015 WS III: Integration & synergises between HVEN research areas
  - 2016 WS IV: The way forward and exploitation

May 2012

- **Project Starts**
  - WP leaders submit stage 1 research plans (Year 1 & 2) by 1st July 2012, using the project brief template.
  - WP leaders present their research plans in the Getting Start Meeting in Sept 2012, using the project presentation template.
  - Stage 1 projects agreed by the Supervisory Board in Sept 2012.
  - First joint publication by 1st March 2014

May 2016

- **Project Ends**
  - WP leaders submit stage 2 research plans (Year 3 & 4) by 1st April 2014.
  - Stage 2 projects agreed by the Supervisory Board in April 2014.
  - 2nd joint publication by 1st March 2015
  - The rest of joint publications by March 2016

ACTIONS

- WP Leaders say hello to each other and explore/refine appropriate research projects by 1st June 2012.
- WP leaders present their research plans in the Getting Start Meeting in Sept 2012, using the project presentation template.
- Stage 1 projects agreed by the Supervisory Board in Sept 2012.
- First joint publication by 1st March 2014
- WP leaders submit stage 2 research plans (Year 3 & 4) by 1st April 2014.
- Stage 2 projects agreed by the Supervisory Board in April 2014.
- 2nd joint publication by 1st March 2015
- The rest of joint publications by March 2016

EC-HVEN Website
www.birmingham.ac.uk/ec-hven

EC-HVEN Consortium

Exchange Projects between the Partners
Concluding remarks

• Engineering makes a major contribution to the economy and society through transforming innovative ideas and technologies into products and services.

• Companies around the world have to answer to the changing global landscape of engineering and master the skills of capturing (and creating) value in complex and dynamic global engineering networks.

• EC-HVEN will establish an open and interactive platform to explore and develop novel approaches to enhancing industrial performance through international engineering collaborations.

• We are keen to hear from you, and explore research areas of common interest along international engineering value chains.
Thank You!

Together, we will place international engineering collaborations on a solid base of scientific theories and enabling technologies.