

# Double degree master programme in Sustainable Energy

## Sustainable Energy

- Sustainable Heat Pumping Processes and Systems

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# Education directly related to research cooperation

- Unique learning opportunities with strong research groups at both universities
- Bringing the new knowledge forward to the master candidates will
  - Contribute to establish new sustainable solutions through creative thinking by the young candidates based on profound knowledge from state-of-the-art research

# Master programme associated with the Joint Research Centre, SJTU and NTNU

- One major of the programme selected to gain experience with this type of double degree programme
- Related to research area
  - **Use of CO<sub>2</sub> and Environment-friendly Working Fluids in Refrigeration and Heat Pumps**
- Possible future majors of the programme of study within the other areas of research of the JRC
- Evaluation of the present major of the programme of study after three years

# Degrees awarded from the programme

- Master Degree in Power Engineering or Mechanical Engineering from SJTU to the students of both institutions enrolled in the programme (depending on actual bachelor degree and selected courses)
- Master Degree in Mechanical Engineering from NTNU to the students of both institutions enrolled in the programme

# Double Degree Programme Structure

- The double degree programme is based on
  - 150 ECTS at SJTU
  - 120 ECTS at NTNU
- First part of study will give 60 ECTS during 2 semesters at either university
- Second part of study including Master thesis
  - 90 ECTS during 3 semesters at SJTU
  - 60 ECTS during 2 semesters at NTNU

# Teaching and supervision

- Master thesis work conducted at the host university
- Master thesis written in English with an extended abstract in Chinese/Norwegian
- Main supervisor at host university; co-supervisor at home university
- Grading with both supervisors
- Master degree awarded by both universities
- All courses are taught in English

# Admittance of students and start of programme

- Home university responsible for admittance of own students (technical prerequisite, English proficiency, interviews)
- 5 to 10 students from each university to be enrolled every year
- SJTU-students start autumn 2012; go to NTNU for the autumn semester 2013.
- NTNU students start in first semester 2013; go to SJTU for autumn semester 2014.

# Developing the last details of the program

- Check compliance with expected learning outcomes
  - Knowledge
  - Skills
  - General competence
- Progress from basic courses to specialization courses



# Importance of this education and of its quality

- Sufficient and clean energy – a global challenge
- Reduce greenhouse gas emission
- A successful program may over time justify admittance of an increased number of good applicants
- Good learning environment is important for success and attraction of good students

# Finally: To obtain success with the programme

- Give the students challenges
- Treat the students well