

Technology Collaboration Programmes

TCP Universal Meeting - 9 October 2017

*SESSION 2 – Engagement with governments and
private sector*

TCP on Solar Power and Chemical Energy Systems (SolarPACES TCP)

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[SolarPACES TCP]: About Us

■ Mission and scope

- The mission is to facilitate technology development, market deployment and energy partnerships for sustainable, reliable, efficient and cost-competitive concentrating solar technologies.

■ Activities

- Task I deals with system and Task III with component development aspects. Task II focusses on the development of “solar fuels” production (e. g. hydrogen), Task IV deals with process heat (with SHC), Task VI specifically with energy services for water supply. Task V analyzes the primary source, (direct) solar radiation (with PVPS, SHC)
- Annual SolarPACES conference (500 participants, 300-400 abstracts)
- Up-to date web-page, roadmap and guideline documents, seed-funds to foster activities

■ Current high-priority themes

- Foster appreciation for the value of CSP dispatchability
- Increase focus on solar fuels and process heat development
- Increase awareness of potential for developing local supply chains

PARTICIPANTS

	IEA members	Partner countries	Intergovernmental
Contracting Parties	10	8	1

DEWA IV Project – Largest CSP project in the world at 7.3 cent/kWh

Solar Electricity cheaper than Gas!

700 MW @ 5500 h CSP á 7,3 \$cents/kWh
+ 800 MW @ 2300 h PV a 3 \$Cents/kWh
= 5,95 \$cents/kWh
= 5,07 €cents/kWh
for 24/7 electricity

4
Football fields

Source: ACWA POWER

Designed to dispatch base load electricity on a 24 hour basis, with embedded flexibility of operation to address the Dubai load profile depending on seasons.

- 100 MW CSP Molten Salt Tower with 15 hours of storage
- 3 x 200 MW CSP Parabolic Trough with over 10 hours of storage

More than
5000 full load hours

Engagement with the public and private sector

■ State of play

- 1 contracting parties from industry; collaborations with more than 20 companies through conference sponsorship,
- The TCP has made outreach efforts in Namibia, Finland, Saudi Arabia; Cyprus; Japan; India

■ Ideas for further collaborations

- Set-up industry advisory board
- Initiate cooperation with TCP on Storage

■ Further ideas on:

- Next generation technologies depend on joint research on advanced heat transfer fluids, like molten salts, particles, gases or liquid metals
- Further activities on pre-normative research required
- Commitment to fund joint tasks proposals through member states is rather slow: IEA should support harmonized and accelerated approach on ministerial level

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Tokamaks (CTP TCP)
TCP on Spherical Tori (ST TCP)
Nuclear Technology of Fusion
Reactors (NTFR TCP)

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About us (CTP, ST, NTFR TCPs)



Mission and scope

- To advance plasma physics and technologies of fusion devices through international co-operation
 - ◆ Enhance effectiveness and productivity of R&D efforts
 - ◆ Contribute to - and extend - the scientific and technology database of toroidal devices*

Activities

- Basic research and joint experiments to enhance scientific and technological understandings
 - ◆ Scientist and equipment exchanges for experimental campaigns on different devices
 - ◆ Co-operation through international scientific programmes (ITER, EC, DoE, etc.)
- Sharing results at dedicated workshops, international conferences and via scientific journal articles

Current high-priority themes

- **CTP TCP:** High performance ITER plasma operating scenarios compatible with sufficiently benign impact on plasma facing components; Plasma disruption mitigation systems
- **ST TCP:** Performance and stability of STs; effectiveness of auxiliary sources for heating and current drive in STs.
- **NTFR TCP:** Fusion technology, especially components concerned with tritium production, energy extraction and radiation shielding of hardware and personnel

PARTICIPANTS

	IEA members	Partner countries	Intergovernmental
CTP TCP	Japan, Korea, US	China, India	EC, ITER
NTFR TCP	Japan, Korea, US	China, India, Russia	EC
ST TCP	Japan, US		EC

* Doughnut-shaped devices which confine a hot fusion plasma through magnetic fields, including tokamaks, spherical torii and ITER.

Engagement with Partner countries and multilateral initiatives

■ Balanced representation

- IEA member countries and Partner countries or multilateral initiatives

■ Partner countries

- **CTP TCP:** Ongoing, fruitful membership of Partner countries (China, India). The TCP has invited Russia to join, the only ITER party not yet participating in the TCP.
- **NTFR:** Ongoing, fruitful membership of Partner countries (China, India, Russia)
- **ST:** The ExCo has discussed inviting Korea, China, and Russia to join

■ Multilateral initiatives

- CTP TCP is strongly linked with International Tokamak Physics Activity (ITPA), which also works closely with the ST TCP.
- The European Commission is the contracting party via the European Atomic Energy Treaty (EURATOM) to all three TCPs.

Views

■ Ideas for further collaborations

- Enhanced cooperation among fusion TCPs, and perhaps also beyond; possibly common meetings between selected TCPs from time to time.
- Create a mini portal for all fusion TCPs, aiming at presenting holistic view of the fusion research covered by the TCPs

■ Further ideas

- *How can the IEA Secretariat and the IEA Committees support your efforts ?*
 - ◆ Develop a mechanism for finding common interests between TCPs; clarify how IEA sees its role in this respect.
 - ◆ Advice on how the TCPs can improve their outreach and engagement with stakeholders
- *What resources need to be mobilised by Parties and other stakeholders to implement the new proposals?*
 - ◆ Possibly resources to develop and maintain a mini portal website for fusion TCPs

For more information

CTP TCP: <http://ctp.jet.efda.org/>

NTFR TCP: <http://www.iea-ntfr.net/portal.php>

ST TCP: <http://iea-st.pppl.gov/>

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TCP on Ocean Energy Systems (OES TCP)

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[OES TCP]: About Us

■ Mission and scope

- CONNECT organisations and individuals working in the ocean energy sector
- EDUCATE people globally on the nature of ocean energy systems
- MOTIVATE governments, corporations, agencies and individuals
- FACILITATE education, research, development and deployment of OE

■ Activities

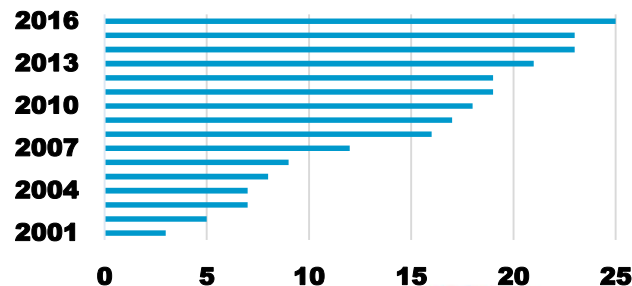
- Interactive Worldwide Web GIS Database for Ocean Energy
- Multimedia database "Tethys" - environmental research and monitoring data
- Consenting Processes for Ocean Energy on all OES member countries
- Wave Energy Modelling Verification and Validation
- Investigation and Evaluation of OTEC Resource
- International Conference on Ocean Energy

■ Current high-priority themes

- Cost of Energy Assessment
- Stage Gate Metrics
- Ocean Energy in remote areas

PARTICIPANTS

	IEA members	Partner countries	Intergovernmental
Contracting Parties	25	6	1



Engagement with the public and private sector

■ State of play

- No sponsors (as decided by the ExCo); but organisation of workshops with industry
- Outreach efforts in: Colombia, Chile, Argentina, Indonesia

■ Ideas for further collaborations

- Organise join workshops between 2 TCPs (e.g OES TCP and Wind TCP)
- Organise a join workshop with IEA and OECD

■ Further ideas on:

- IEA Secretariat and the IEA Committees support TCPs efforts in all parts of the world:
 - ◆ IEA assistance to identify appropriate contacts in target countries
 - ◆ Encourage the promotion of TCPs activities in the delegates home countries connected with IEA events
- Key opportunities and challenges TCPs face in engaging with private sector:
 - ◆ Emerging sector – difficulty to attract companies; need to progress the sector from relying on public support to attracting private investment
- Resources need to be mobilised by Parties and other stakeholders:
 - ◆ Difficulty to have the financial commitment of participating countries in tasks in addition to the annual membership fee