

Deliverable D4.5:

Progress report on engagement with the private sector

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Progress report on engagement with the private sector

EUROCHAMP-2020 has an extensive range of simulation chamber facilities and calibration centres that can serve as excellent testbeds for a wide range of instruments and technologies. Highly specific atmospheres can be generated in response to the particular needs of industry users and the performance of products can be evaluated through comparison with a range of reference measurements. Performance can also be tested under a variety of different conditions (concentration of gases and particles, temperature, relative humidity, light intensity etc.) and many technical aspects such as stability, reproducibility and interference from specified atmospheric constituents can all be assessed. The EUROCHAMP research infrastructure thus has huge potential as a platform for providing support to industry users in a number of key technological areas including; development and manufacture of scientific instruments, gas and particle sensors, de-polluting materials and the atmospheric impact of new chemical products.

Interactions with industry encompass three areas of activity: direct engagement, Transnational Access and ongoing research collaborations.

Direct Engagement:

Members of the EUROCHAMP-2020 consortium have established links with over 60 companies/SMEs in the private sector. Nine of these companies are now Associated Partners and, as during the last private sector oriented Eurochamp-2020 event there was a significant interest for associated partnership opportunities, this number is expected to increase in the next few months. Five innovation managers from the private sector are part of the Innovation Advisory Board. EUROCHAMP-2020 partners are in regular contact with their industry partners and many also have ongoing research collaborations, as highlighted below.

The Innovation Advisory Board recommended two main courses of action in order to attract new users from the private sector; (i) develop and maintain a high level of activity on social media (Twitter and LinkedIn) to promote EUROCHAMP-2020 services to a large audience, and (ii) to attend targeted conferences and trade fairs to engage with potential users directly. The Twitter activity has been especially successful in raising the profile of the research infrastructure; with 294 tweets posted and over 450 Followers at the halfway stage of the project, Figure 1.

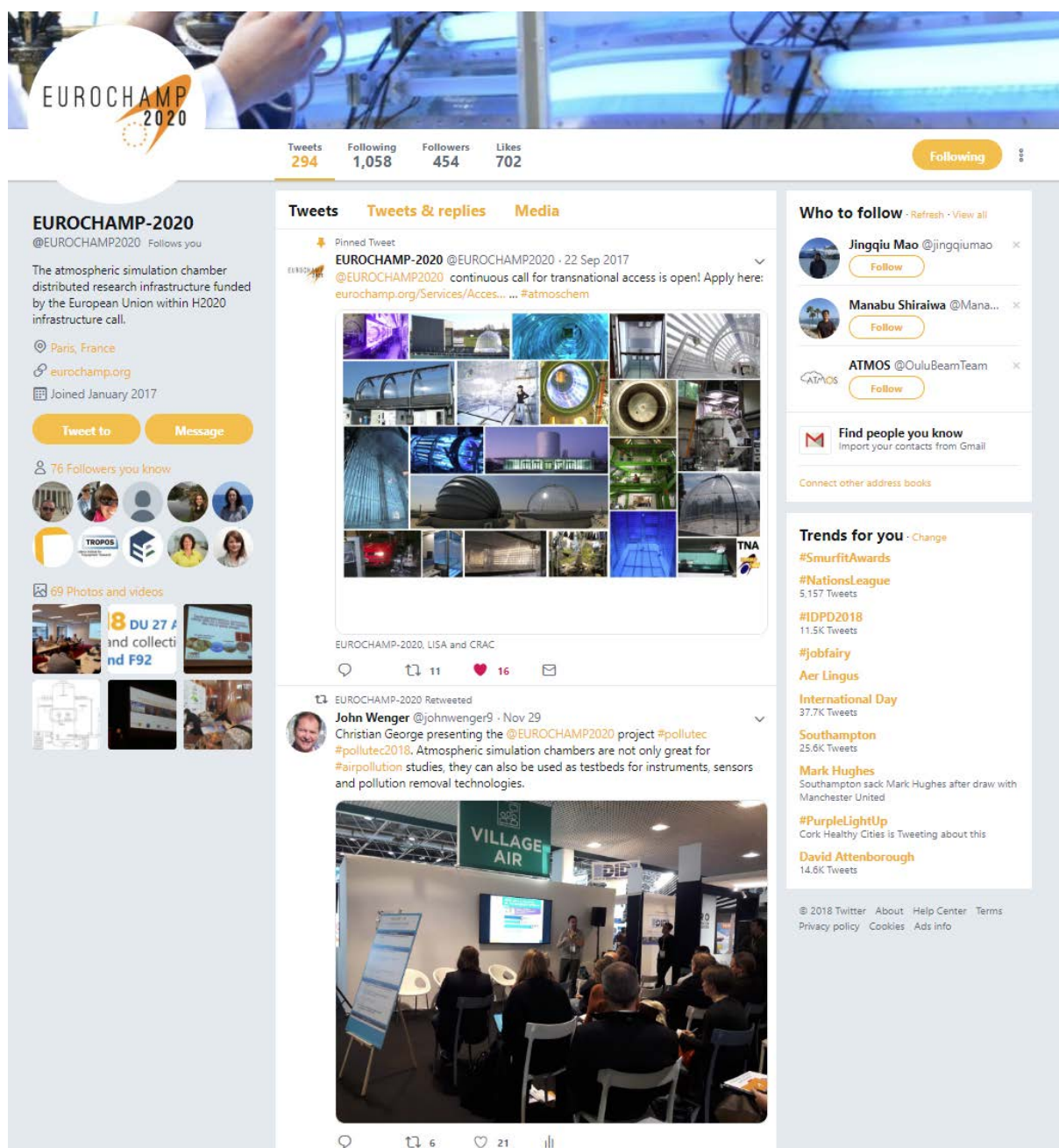


Figure 1. Screenshot of the EUROCHAMP-2020 Twitter page (accessed 30th November 2018).

The following three conferences were targeted in order to reach potential new partners and users in the private sector:

Integration of European Simulation Chambers for Investigating Atmospheric Processes. Towards 2020 and beyond

- 1st EU Environmental Research Infrastructures–Industry Joint Innovation Partnering Forum (Grenoble, France, 18-19 May 2017): <http://www.envriplus.eu/2017/01/26/1st-eu-environmental-ris-industry-forum/>.
- Analytica 2018, the world's largest trade fair in analytical scientific equipment (Munich, Germany, 31 March - 3 April, 2018): (<https://www.analytica.de/index-2.html>).
- Pollutec 2018, international trade show for environmental equipment, technologies and services (Lyon, France, 27-30 November, 2018) (<http://www.pollutec.com/>).



Figure 2. Engaging with potential industry users at Analytica (left) and Pollutec (right).

Transnational Access:

Transnational Access (TNA) to 16 atmospheric simulation chambers and four calibration centers is available for industry users free of charge. The TNA is advertised through the project's home page, social media (e.g. twitter) and the websites of individual partners. TNA for new industry users is also promoted at international trade fairs.

In order to facilitate the application process, the EUROCHAMP-2020 Project Office has prepared a set of instructions, including an application form, which can be found/downloaded at <https://www.eurochamp.org/Services.aspx>. The Project Office keeps close contact with the TNA applicants via e-mail and provides assistance during the application process whenever needed. New industry users are offered advice (by the WP4 leader and the Project Office) on the facilities that are most suitable for their application. Once a facility has been identified, the host partner works with the industry user on design of the experiments/tests required and in preparing the TNA form.

In the first 24 months of the project, industry users submitted five TNA applications to the EUROCHAMP-2020 Project Office. These proposals account for 10% of the TNA proposals received to date. Four of the activities have been completed and are summarized in Table 1. The user and scientific reports received up to date indicate a high level of fulfillment: <https://www.eurochamp.org/Project/Documentation/TNAdocuments.aspx>

Table 1. TNA projects completed by industry users in the first 2 years of EUROCHAMP-2020.

Industry name	Project title	Chamber	Description of the activity
ENOVEO, Lyon, France	Microbial Life in Frost Flowers: determining seeding sources and spatial structure	RvG-ASIC (UEA)	Using unfiltered sea water, sea-ice and frost flowers were grown at -30°C for 1 week. Samples of air, frost flowers, sea-ice, brine and sea water were collected for microbial and chemical analysis using sterilized sampling equipment.
Ionicon Analytik GmbH, Austria	Direct aerosol chemistry investigations with advanced mass spectrometric methods	PACS-C3 (PSI)	Ten chamber experiments of secondary organic aerosol formation from α -pinene, toluene, cresol and a mixture of α -pinene and toluene were performed at the PACS-C3 chamber. The experiments were used to assess the performance of Ionicon's modular "Chemical Analysis of Aerosol Online" (CHARON) particle inlet coupled to a new-generation proton-transfer-reaction time-of-flight mass spectrometer (PTR-TOF 6000 X2). Results were compared to a high resolution time-of-flight aerosol mass spectrometer (HR-TOF-AMS), and PSI's new extractive electro-spray ionization TOF-MS (EESI-TOF).
Blue Industry and Science, France	Factory boundary pollutants monitoring	EUPHORE (CEAM)	The performance of the company's Blue X-FLR9 gas analyser was investigated using different gas mixtures and chamber conditions (humidity, clean and ambient air, dark and sunlight). The results were compared to reference measurements made using GC-MS, in situ FTIR spectroscopy and PTR-MS.
Environmental Physics Bologna, Italy	Characterization and calibration of a new instrument for filter-based measurement of aerosol absorption coefficient at 5 wavelengths	CESAM (CNRS-LISA)	The performance of a new Dual Beam Absorption Photometer (DBAP) was evaluated in a series of tests at the CESAM chamber. The detection limit and possible zero offset was measured using clean air and non-absorbing aerosols (ammonium sulfate particles). The instrument response to both strongly (fullerene and aquadag) and weakly (mineral dust) absorbing aerosol was also investigated.

The fifth application, titled “EESI-Vocus Optimization, Kalibration, and Evaluation (EVOKE)” was submitted by Aerodyne Research Inc. (USA) in November 2018 and is currently under evaluation. The proposed work involves advanced tests in the PACS-C3 chamber at PSI to improve performance of their new PTR-MS instrument. Several EUROCHAMP-2020 partners are currently in discussions with other companies and the number of TNA applications is expected to grow in years 3 and 4.

Research Collaborations outside the TNA programme:

Private sector companies have also been using the infrastructure through a wide range of formal and informal research collaborations with EUROCHAMP-2020 partners. These research activities, summarised in Table 2 below, are supported through individual agreements between the participants and highlight the wide level of interest in using the facilities outside of the TNA programme.

Table 2. Summary of research collaborations (outside of TNA activities) between EUROCHAMP-2020 partners and private sector companies.

Partner	Industry Collaborator	Description of Activity
CNRS-LISA	PlumeLabs, France	Evaluating the performance of new air quality sensors; identification of cross-sensitivities and potential artefacts, to aid the optimisation of algorithms for data generation.
BUW	BASF, Germany	Research project to study the effects of photochemical smog on various products.
KIT	Bilfinger Noell GmbH, Germany	Development of a new and innovative mobile instrument for atmospheric measurements of ice nucleating particles (INP). The instrument will be the first of its kind for fully-automated long term INP measurements at high sensitivity and time resolution.
CEAM	PORCELANOSA, Spain	Testing the performance of a new photocatalytic material under a variety of simulated atmospheric conditions in the EUPHORE chamber.
FORTH	Fasmatech, Greece	Development and testing of a new time-of-flight mass spectrometer for measurements of volatile, intermediate volatility, and semi-volatile organic compounds in the atmosphere.
INFN	PM_TEN & Dado lab, Italy	Development and testing of a new sampler for size-segregated, continuous sampling of airborne particulate matter.
UAIC	CONITECH Ltd,	Design and construction of a new temperature control system for the ESC-Q-UAIC chamber to enable studies from 2°C to 40°C.

	Romania	
NCAS-UEA	AutoNaut Ltd, UK	Investigations into ice-repellent materials and coatings to enable deployment of the AutoNaut unmanned surface vessel in cold environments.

Five of our research collaborations have been posted on the “Success Stories” page on the Innovation section of the EUROCHAMP-2020 website to highlight successful collaborations between EUROCHAMP-2020 partners and the private sector, Figure 3. This helps demonstrate how the chambers and calibration centres can be used for TNA visits and collaborative research.



Having the necessary tools to accurately measure the components of the air we breathe every day is a very strong scientific and innovation challenge. Researchers have been working hard in the past decades on this subject, and companies have developed more and more sophisticated instruments to measure our outdoor and indoor air.

Within the framework of EUROCHAMP-2020, very recently, the French SME *Blue Industry and Science* has teamed up with the Spanish *Mediterranean Center for Environmental Studies (CEAM)*, thanks to the support of the trans-national access (TNA) programme offered by the project. Blue Industry's engineers had therefore the opportunity to make use of the *EUPHORE simulation chamber*, one of the most advanced atmospheric simulation chambers in Europe, to validate a new method for monitoring the concentrations of benzene, toluene, xylenes, hydrogen chloride, and non-methane hydrocarbons (NMHC): all potentially harmful and ubiquitous compounds in the atmosphere.

Through this collaboration, the two groups improved the capabilities of a highly innovative instrument which has recently been developed by Blue Industry: the *Blue X-FLR9 gas analyzer*.

The results from the experiments at the chamber have been extremely useful for the French company, which has managed to validate its instrument, and therefore strengthen its product's value on the market.

This example highlights the usefulness of transnational access to the most advanced atmospheric simulation chambers.

To know more about the TNA programme in EUROCHAMP-2020 [click here](#).

Figure 3. Web page (<https://www.eurochamp.org/Innovation/Successstories.aspx>) highlighting successful collaborations with the private sector: