

Importance of Collaboration – the CPACT Example

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Manufacturing Challenges in the Chemistry-using Industries

- Digitisation – Industry 4.0
- Commercial advantage through optimising efficiency and business-leading innovation
- Shorten the timeline of the innovation supply chain – from discovery/invention to impact
- Accelerate through the TRLs

Role of Collaboration

- Challenges are often complex and require expertise across disciplines
- Challenges are often similar in different companies
- Collaborations can help in different forms:
 - end-user and technology vendor
 - end-user and end-user
 - end-user and academic

In-process Measurements for Optimisation and Control

- Multi-disciplinary (e.g. process chemistry; measurement and data sciences; engineering)
- Crucial for **economic, safety and environmental reasons** – core feature of petrochemical plants for several decades
- Recognition of the need for better collaboration resulted in CPACT
 - between companies; within companies
 - across disciplines; with academia

CPACT

- Formed in 1997
- Industry – Academic club; Industry led
- Companies from across sectors
- End-user and technology vendor
- Common desire to advance knowledge and application of industrial process analysis and control technologies
- Measurement techniques; data analysis; process optimisation and control

Centre for Process Analytics and Control Technology

CPACT is the **leading network** for companies seeking advice and research on all areas of process performance monitoring and control



CPACT Member Companies



CPACT University & Research Institute Members

UNIVERSITETET I BERGEN



Universität Bremen



Imperial College
London



Institute of
Chemical and
Engineering Sciences

CREATING GROWTH, ENHANCING LIVES

IRTA

RESEARCH & TECHNOLOGY
FOOD & AGRICULTURE

MANCHESTER
1824

The University of Manchester



UNIVERSITY
of York



CPACT's Themes

- **Research & Development**
- **Conferences & Networking**
- **Technology Transfer**
- **International Collaborations**
- **Expert Training**



CPACT is a “Club”

- Access to expertise across 26 industrial member companies and 12 Universities and Research Institutes
- Training and KE are key benefits
- Focus remains on analytical measurement, data analysis and performance monitoring



CPACT support for training

- **Networking, Training and Skills Development** – Webinars; Courses & Workshops; Research Days; Conferences
- **CPACT Website** - Access to a dedicated web site with ‘members only’ section containing webinars, presentations, software and other resources



CPACT Training Courses

- Process spectroscopy
- Introduction to design of experiments (DOE)
- Introduction to chemometrics
- Data analysis, data mining, data modelling
- Process performance monitoring (Multivariate Statistical Process Control)
- Multi-block, multi-set, multi-level and data fusion methods
- Introduction to process control
- Process control for chemists and pharmacists
- PAT, multivariate data analysis and Lean Six Sigma
- Software sensors

Recent CPACT Webinars

- Fluorescence suppression by (instantaneous) shifted excitation Raman difference spectroscopy
- Strategies and tools for Variable Selection in spectral profiles that combine interpretation with maximum predictive performance
- Multivariate Hyperspectral Data Visualisation and Classification of Tea Products
- Multispectral Fiber Sensing for Remote Process Control
- Parameters in Mathematical Models and How to Treat Them
- In-line Raman in Real Life Biotech and Industrial Manufacturing
- Statistical Analysis Methods

Additional Benefits of CPACT

- Talent Pool – Well trained recruits from a pool of multidisciplinary researchers
- Feasibility studies – Members get free short-term feasibility studies
- AFACT Conference series – **AFACT 19 in Chester, 29 April – 2 May**



CPACT Feasibility studies

Feasibility studies could be based on a wide range of questions, for example:

- Assessing a new instrument or instrumental method for process applications
- Compare different data analysis methods for particular applications
- Literature evaluation to assess the current status of a developing technology relevant to process analysis or process control

Role of PC&TG

- Stimulate pre-competitive collaborations
- Form **Focus Groups** where there are perceived gaps
- Hold **Workshops** involving technology vendors as well as end-users and academics
- Provide training **courses and webinars** where required
- **Symposia** on Hot Topics
- Facilitate learning **across sectors**
- Create **Communities** of Practise

It's good to Collaborate

Thanks for listening
Questions?