Report on the 9th Conference on Compressors and Their Systems, 5th-9th September 2015

Summary

The 9th International Conference, held in the Mermaid Conference Centre in the City of London, attracted a record number of participants. Seventy-eight technical papers were selected and presented to 195 delegates from 29 countries. Organised by City University London in conjunction with Institution of Mechanical Engineers and the Institute of Refrigeration, the tone of the Conference was set by keynote speakers on Compressor Lubrication and on Compressor Trends in the Chinese Petrochemical and Natural Gas Industry.

Howden's new WRViT580 Gas Compressor developed in conjunction with CPDCT

The event was preceded by the 2nd Forum on computational fluid dynamics (CFD) in Rotary Positive Displacement Machines, attended by forty-three participants, from 20 countries.

The welcome reception was dedicated to celebrating the 20th anniversary of the *Centre for Positive Displacement Compressors Technology (CPDCT)* at City. Additionally the Conference Dinner and a River Cruise provided further networking opportunities.

Best Conference Feature:
"Meeting members of the compressor community from industry and academia"

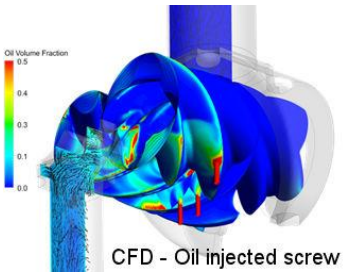
Feedback from delegates was very positive, and with many more developments forecast, the 10th conference planned for 2017, 10th International Conference on Compressors and their Systems, is expected to attract an even larger gathering.

The forum/short course

The 2nd Forum on Computational Fluid Dynamics (CFD) in Rotary Positive Displacement Machines held at City University on the 5th and 6th September, was well received. Forty-three attendees, from 20 countries, were present, including 11 lecturers from five countries with six coming from City.

The course began with an Introduction to CFD analysis in Positive Displacement Machines. This was followed by detailed investigations into leakage flows and multiphase flows in positive displacement rotary machines and modelling of compressor leakage flows. Specific approaches covered were Grid generation for screw machines, using the differential method and their CFD solution, the Twin Mesh grid generator and CFD. The influence of the grid generation approach and CFD solver upon resolving leakage flows in screw machines was investigated with an analysis of twin screw compressors using CFD and the influence of moving mesh degrees of rotation per time step and about the immersed boundary method. Finally, modern approaches in turbulence modelling were considered.

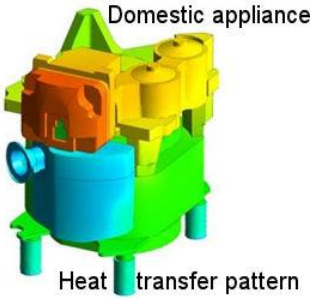
Technical Sessions



CFD - Oil injected screw

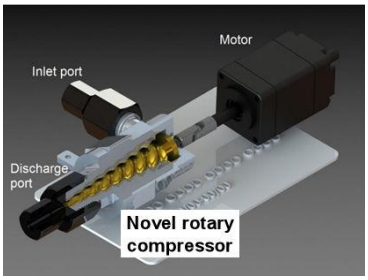
The technical sessions took place in the first two days of the conference itself. The two keynote speakers were Sonny Ganesan Sundaresan from USA on Compressor Lubrication –the key to Performance, and Liansheng Li on Trends in high performance compression for the petrochemical & natural gas industry in China.

In addition to the plenary sessions, of interest to all participants, the technical topics were divided into 18 sessions with up to 3 running in parallel:
Reciprocating Compressors: 4 sessions, 15 papers.
Screw compressors: 3 sessions, 14 papers,
Turbo compressors: 3 sessions, 12 papers,
Expanders: 2 sessions, 8 papers,
Systems: 2 sessions, 10 papers,
Vane Compressors, Modelling, Scroll Compressors, Novel Compressors: 1 session, between 3 and 7 papers each.



In all, 137 abstracts were received. Following the review process, 78 technical papers and the two keynote addresses were selected for presentation and publication. These are published online by the Institute of Physics (IOP) and more than 100 downloads have been recorded for each paper. Additionally, a book of abstracts was printed and supplied to each delegate.

Compared with previous conferences, there was an increase in the number of papers on reciprocating compressors, expanders and turbo compressors, and a decrease in papers on screw compressors. This indicates trends of interest in academia and the industry.



There were a total of six papers in all sections related to CFD. This represents an increase in comparison with previous years and shows growth in the introduction of CFD into all areas. There was a decrease in the number of papers dealing with experimental research.

Authors of selected papers were invited to submit them in extended form for publication in a special issue of the International Journal of Process Mechanical Engineering.

Industry Day

Best Conference Feature:
"Extended conference to include Industry day "

The third day of the Conference was dedicated specifically to industrial concerns regarding technology and business directives, innovations and market drivers which affect Compressor development. This served as a forum for the major players in the Compressor industry. Eight selected companies presented their challenges and achievements. This was attended by 100 delegates.

Social and Exhibition Programme

A welcome reception, held on the evening preceding the Conference was dedicated to celebrating the 20th anniversary of the *Centre for Positive Displacement Compressors Technology* at City, formed in 1995 to assist British manufacturers of screw compressors. This was supported by the Royal Academy of Engineering (RAEng) and Holroyd.

Both the Conference Dinner and a River Cruise on the Thames proved very popular. For the first time, several awards were made. These included a special prize to Guy Hundy for his contribution to the Conference organisation from its earliest days; a prize for the best student paper on Analytical Grid Generation for accurate representation of clearances in CFD for Screw Machines, awarded to City's Sham Rane; and a prize for Marco Diniz of POLO, University Santa Catarina, for the Best Presentation: A Thermal Model for analysis of Hermetic Reciprocating Compressors under the on-off cycling operation condition.

An exhibition was presented in parallel with the Conference sessions with six exhibitors of which three were the main Conference sponsors, Holroyd, Howden and Kapp Niles, whose contributions generously helped in the success of the conference.

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