

MINUTES OF MEETING

FLACS USER GROUP (FLUG)

Venue: Fantoftvegen 38
Bergen, Norway
Hosted by GexCon AS

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FLUG meeting 6-7 May 2014

FLUG Chair: Chris Savvides (BP)

FLUG Meeting – 6 May (Day 1)

Welcome
Erik Aadland (GexCon) welcomed the participants to Bergen. Chris Savvides (BP) opened the meeting and pointed out that this was the 25th anniversary of FLUG.

Once upon a time
Vincent Tam (VTAM Ltd.) presented a historical overview of selected milestones related to gas explosion research and the development of FLACS, from the late 1970s to present.

GexCon R&D - Activities & Prospects
Trygve Skjold (GexCon) summarized the ongoing activities at GexCon R&D. Several users inquired regarding a validation report for FLACS, and Trygve answered that GexCon prepared a rather extensive validation report for the previous joint industry project (JIP), but that this document will require further work prior to general distribution. GexCon prioritizes work on a general framework for validation and a new database, and this work runs in parallel with the current JIP (MEASURE).

New release: FLACS v10.3
Lars Pesch (GexCon) presented some highlights for the upcoming FLACS release (due mid-July 2014). He also mentioned various FLUG wishes, including examples of new functionality in FLACS, and encouraged the users to submit new wishes. Djurre Siccama (GexCon) gave a small live demo on new functionality in CASD (v10.3).

FLACS-Fire: Validation
Deiveegan Muthusamy (GexCon) presented validation work for FLACS-Fire. The FLACS user can specify a HEAT file (e.g. cs000000.HEAT), including data relevant for a solid flame model.

FLACS-Fire: Pool fires
Bjørn Lilleberg (GexCon) gave a presentation on the modeling pool fires with FLACS-Fire. GexCon will continue the validation work, and possibly include models for heat loads on structural elements.

FLACS-Fire: Application
Deiveegan Muthusamy (GexCon) presented work on solving an inverse problem in fire modelling using FLACS-Fire.

FLACS-Fire: Commercial aspects
Djurre Siccama (GexCon) summarized the commercial aspects related to licensing of FLACS-Fire.

DDT and detonation predictions with FLACS
Olav Roald Hansen (Lloyd's Register Consulting) showed how FLACS can be used to estimate the likelihood of DDT. Olav pointed out some shortcomings with the filter option in the geo2flacs2 tool. GexCon will look into this and improve the geo2flacs tool. [Update: This issue is resolved in the geo2flacs version included in the v10.3 release].

High Performance Computing
Idar Storvik (GexCon) described a cooperation between GexCon and University of Edinburg where the goal is to allow users to run FLACS on high-performance computing (HPC) clusters. Erik Aadland (GexCon) outlined possible models for commercializing the HPC technology.

Sotra test site expansion
Gisle A. Enstad (GexCon) presented the ongoing work on extending the experimental test site at Sotra.

PipeTech and interfacing with FLACS
Haroun Mahgerefteh, Solomon Brown (both University College London) and Lorenzo Mauri (GexCon) presented the PipeTech software for simulating the outflow from pipelines, and the use of source terms calculated with PipeTech in FLACS.

FLUG Meeting – 7 May (Day 2)

FLACS versions benchmark for explosion simulations
Etienne Guinot (Total) presented a study where explosion scenarios were simulated using different FLACS releases (FLACS v8, v9 and v10.1). A question was raised with respect to the range of validation for a FLACS release. Idar Storvik (GexCon) commented GexCon run about 950 benchmark simulations (including validation) for each FLACS release. GexCon was requested to provide better documentation of the difference between different versions of the core simulator Flacs. Henri Tonda (Total) pointed out the importance of documenting and explaining the differences in the results.

Safety of waterborne LNG application in China: CCS's efforts
Hongiun Fan (CCS) presented plans for transportation and handling of LNG in China, and explained how FLACS can be used for evaluating safety zones and optimizing the layout of gas detectors.

Dispersion modelling versus experimental result
Tim Jones (MMI) presented a study where results from FLACS simulations were compared with experimental results for ventilation and dispersion scenarios. Francesco Chillè (GexCon) pointed out that when the concentration level is near LFL during the dispersion, the gas volume with concentration above LFL is sensitive to the details of the experimental release scenario. Chris Savvides (BP) commented that in realistic dispersion experiments the gas concentration vary significantly in time.

Small scale geometry modelling - challenges using different versions of geo2flacs
Henning Lohne (DNV GL) presented how the geometrical representation and the level of congestion vary for different versions of the geometry import tool geo2flacs (the versions included in FLACS v9.3, v9.4, v10.2). He advocated that it would be useful to define a common way of defining congestion level among the FLACS users and requested improved detection of I-beams in geo2flacs. Olav Sæter (Statoil) inquired regarding the possibility of providing output of the values used by the subgrid turbulence model in FLACS (3D fields). Helene H. Pedersen (GexCon) asked for more information about the test scenarios presented by Henning. It may not be feasible to obtain grid convergence when simulating the test scenarios from the presentation, and it is essential to follow current grid guidelines.

Geometry models: the changes from FEED to detailed design
Kristin Rygg Haugland and Ranveig Niemi (both Safetec) presented examples of significant changes in geometry from FEED to detailed design.

FLACS application in assessment of accidents consequences at the facilities of oil and gas industry in Russia
Anton S. Sofyin (STC) gave a presentation on the application of CFD-modelling in the field of industrial safety in Russia. Erik Aadland (GexCon) asked whether it would be possible to have access to the validation data applied here. Anton S. Sofyin (STC) replied that he expected this to be possible.

FLACS as part of an integrated approach, recent experiences and providing information to the design team
Steve Howell (Abercus) presented an approach where FLACS is part of an integrated approach during design. He proposed that FLUG members (FLACS users) should work together in the area of anticipated congestion, in a joint effort for a better understanding of congestion densities.

AVEVA PDMS/E3D and FLACS
Njål Vikanes (AVEVA) and Trygve Skjold (GexCon) presented plans for using geometry information and metadata from formats such as PDMS™ and E3D™ in FLACS, and visualizing FLACS results in AVEVA AVP™ (Activity Visualization Platform).

FLACS-Risk – Plans and prospects
Djurre Siccama (GexCon) presented plans and prospects for the development of the new FLACS-Risk tool.

FLACS – Extended course program/offering
Francesco Chillè (GexCon) summarized the available training courses and plans for new courses. Vincent Tam (VTAM Ltd.) commented that it is important to consider the reputation of GexCon before defining new topics for courses, since solid knowledge and competence in the relevant areas is essential. Francesco Chillè (GexCon) agreed to this.

FLUG wishes
Lars Pesch (GexCon) encouraged the users to submit FLUG wishes. Etienne Guinot (Total) inquired about the possibility for including capabilities from FLACS-Wind related to representation of complex terrain in the standard FLACS tool. Lars Pesch (GexCon) replied that the current terrain module requires manual editing of files, but that GexCon will consider this issue when prioritizing issues for the next release. Some users inquired about the possibility of having some kind of online database or similar for sharing experiences and solutions to particular issues.

Venue and date for next meeting
Chris Savvides (BP) offered to host the FLUG meeting in the autumn, and the next meeting will be in the BP office in Sunbury on Thames, London (UK), on 6-7 November 2014.

Closing
Chris Savvides (BP) thanked the participants for the contributions and closed the meeting.