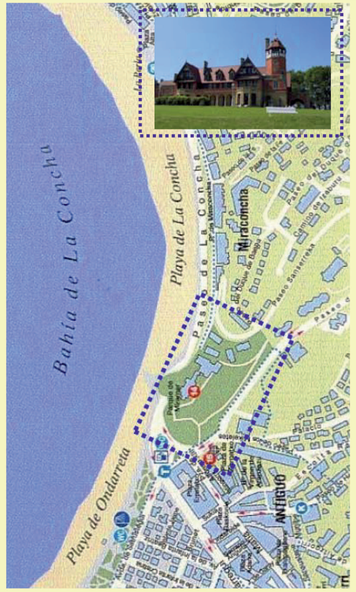
CONFERENCE CENTRE LOCATION
Miramar Palace
Pº Miraconcha, 48
San Sebastian (Spain)
www.sc.ehu.es/palaciomiramar

LANGUAGE
The Conference language is English. No translation will be provided.

PROCEEDINGS
The proceedings will be published on a CD-ROM. Selected papers will be also published in the International Journal of Hydrogen Energy and in the HySafe Biennial Report of Hydrogen Safety.

REGISTRATION
The full Conference Fee is 550 Euro. The Fee includes: Proceedings, Attendance at all Conference Sessions, 3 Lunches, 2 Conference Dinners and Coffee breaks – Students 400 Euro. Conference Dinners Excluded – Accompanyng Person 120 Euro. Only Conference Dinners

Conference registration is available online *www.hysafe.org/conference*



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- Bus San Sebastián - Hondarribia Airport, IPARBUS company,Tel:(+34) 943.49.18.01

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- Bilbao –San Sebastián regular bus, PESA company ,departure point Termibus. Tel: (+ 34) 902 10 12 10

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HySafe

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Local Organizer

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MINISTERIO DE EDUCACIÓN Y CIENCIA
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HySafe ICHS

2nd International Conference on Hydrogen Safety

Miramar Palace, San Sebastián (Spain)
September 11-13, 2007

www.hysafe.org/conference

In Collaboration with:

IPHE International Partnership for the Hydrogen Economy

In Association with:

Auto21 · Codes and Systems for Hydrogen Safety · HEP Hydrogen Executive Leadership Panel · HYDROGEN IMPLEMENTING AGREEMENT · HYPER · ISO · Hyfleet: Cute · NATURALHY · STORHY

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10th SEPTEMBER - From 16.00 until 19.00 Registration — 11th SEPTEMBER

08:00 — **Registration /Welcome**

09:00 — **Opening Session [Room 1]** Manuel Montes Ponce de León - Science & Education Ministry and Joseba Jauregizar - Basque Government

09:30 — **Plenary Session 1 [Room 1] Hydrogen Safety R&D and RCS Process**
Chair: N. Beck - Natural Resources Canada
09:30 Lecturer 1: Antonio Ruiz - DoE
10:00 Lecturer 2: Beatrice Coda - European Commission
10:30 Lecturer 3: Giuseppe Romano - Italian National Fire corps
11:00 Round Table

12:00 — **Coffee break – Poster Session "The Work in Progress Workshop for Young Researchers in H_2 Safety"**

	Session 1 [Room 1] CFD for Regulations, Codes and Standards Chairmans: A. Venetsanos - NCSRD, A. Kotchourko - FZK	Session 2 [Room 2] Materials & Storage Chairmans: I. Azkarate – INASMET-Tecnalia, H. Barthélémy - Air Liquide, D. Anton - SRNL
12:20	**Topical session 1** **CFD for Regulations, Codes and Standards** A. Venetsanos - NCSRD	**Topical session 2** **Materials & Storage** H. Barthélémy - Air Liquide
12:50	1.1.281 **Results of the HySafe CFD Validation Benchmark SBEPV5** *Jordan, T., García, J., Hansen, O., Malkov, V., Travis, J.,Venetsanos, A., Verbecke, F., Xiao, J.*	1.4.43 **Polymer Composites for Tribological Applications in Hydrogen Environment** *Theiler, G., Gradt, Th.*
13:10	3.1.68 **Analysis of Buoyancy-driven Ventilation of Hydrogen from Buildings** *Barley, C.D., Gawlik, K., Ohi, J., Hewett, R.*	1.4.44 **A Temperature Controlled Mechanical Test Facility to Ensure Safe Materials Performance in Hydrogen at 1000 bar** *Hammond, R.I., Pargeter, R.J.*
13:30	3.1.78 **Validation of CFD Calculations against Ignited Impinging Jet Experiments** *Middha, P., Hansen, O. R., Grune, J., Kotchourko, A.*	1.4.91 **Compatibility of Materials with Hydrogen Particular Case: Hydrogen Assisted Stress Cracking of Titanium Alloys** *Azkarate, I., Ezponda, E., Madina, V.*
13:50	1.1.60 **Numerical Study of Spontaneous Ignition of Pressurized Hydrogen Release into Air** *Xu, B. P., El Hima, L., Wen, J. X., Dembele, S., Tam, V.H.Y.*	2.1.109 **Testing Safety of Hydrogen Components** *Wastiaux, S., Willot F., Coffre E., Schaaff J.P.*
14:10	**Lunch**	
15:10	1.1.65 **Analysis of Jet Flames and Unignited Jets from Unintended Releases of Hydrogen** *Houf, W.G., Evans, G.H., Schefer, R.W.*	2.1.41 **Analysis of Composite Hydrogen Storage Cylinders under Transient Thermal Loads** *Hu, J., Sundararaman, S., Chandrashekhara, K., Chernicoff, W.*
15:30	1.1.108 **Processes of the Formation of Large Unconfined Clouds Following a Massive Spillage of Liquid Hydrogen on the Ground** *Proust, Ch., Lacôme, J.M., Jamois, D., Perrette, L.*	2.1.42 **Optimization of a Solar Hydrogen Storage System: Safety Considerations** *López, G.E., Rengel, G.R, Isorna, Ll.F, Rosa, I.F.*
15:50	1.1.112 **CFD Simulations of Hydrogen Release and Dispersion Inside the Storage Room of a Hydrogen Refueling Station Using the ADREA-HF Code** *Papanikolaou, E.A., Venetsanos, A.G.*	2.1.126 **Thermal Loading Cases of Hydrogen High Pressure Storage Cylinders** *Anders, S.*
16:10	1.1.125 **Experimental Study of Jet-formed Hydrogen-air Mixtures and Pressure Loads from their Deflagrations in Low Confined Surroundings** *Friedrich, A., Grune, J., Kotchourko, N., Kotchourko, A. Sempert, K., Stern, G., Kuznetsov, M.*	3.1.46 **Fundamental Safety Testing and Analysis of Solid State Hydrogen Storage Materials and Systems** *Anton, D., Mosher,D., Fichtner, M., Kuriyama, N., Chahine, R., Dedrick, D.*
16:30	1.2.56 **Experimental and Numerical Investigation of Hydrogen Gas Auto-ignition** *Golub, V.V., Baklanov, D.I., Bazhenova, T.V., Golovastov, S.V., Ivanov, M.F., Laskin, I.N., Semin, N.V., Volodin, V.V.*	1.2.45 **Complex Hydrides as Solid Storage Materials: First Safety Tests** *Lohstroh, W., Fichtner, M., Breitung, W.*
16:50	**Coffee break - Poster Session "The Work in Progress Workshop for Young Researchers in H_2 Safety"**	
17:20	1.3.95 **Simulation of Detonation after an Accidental Hydrogen Release in Enclosed Environments** *Bédard-Tremblay, L., Fang, L., Bauwens, L., Finstad, P.H.E., Cheng, Z., Tchouvelev, A. V.*	4.1.294 **Risk Analysis of the Storage Unit in Hydrogen Refuelling Station** *Giardina M., Casamirra, M., Corchia, L., Lombardo, C., Messina, G., Castiglia, F.*
17:40	1.3.80 **CFD Simulation Study to Investigate the Risk from Hydrogen Vehicles in Tunnels** *Hansen, Olav R., Middha, P.*	3.1.157 **Prediction of the Lift-off, Blow-out and Blow-off Stability Limits of Pure Hydrogen and Hydrogen/Hydrocarbon Mixture Jet Flames** *Y. Wu, I. S. Al-Rahbi, Y. Lu, G. T. Kalghatgi*
18:00	3.1.145 **CFD Modeling of Hydrogen Dispersion Experiments for SAE J2578 Test Methods Development** *Tchouvelev, A.V., DeVaal, J., Cheng, Z., Corfu, R., Rozek, R., Lee, C.*	2.1.121 **H_2 High Pressure On-board Storage Considering Safety Issues** *Vieira, A., Faria, H., de Oliveira, R., Correia, N., Marques, A.T.*
18:20	1.1.120 **High Pressure Hydrogen Jets in the Presence of a Surface** *Bénard, P., Tchouvelev, A., Hourri, A., Chen, Z., Angers, B.*	**Closure**
18:40	**Closure**	

19:00 – 20:00 Welcome Cocktail & Concert by "Olés Ta Olés" offered by the City Council of San Sebastian [Venue: San Sebastian Town hall]

12th SEPTEMBER

09:00 — **Plenary Session 2 [Room 1] Risk Management Approaches to Hydrogen Safety**
Chair: Th. Jordan - FZK
09:30 Lecturer 4: Shigeki Kikukawa - Hydrogen Technology Group Japan Petroleum Energy Center
10:00 Lecturer 5: Les Shirvill -Shell Global Solutions
10:30 Lecturer 6: Andrei Tchouvelev - Canadian Hydrogen Safety Program
11:00 Round Table

11:20 — **Coffee break - Poster Session "The Work in Progress Workshop for Young Researchers in H_2 Safety"**

	Session 3 [Room 1] Hydrogen Behaviour & Consequences Chairmans: J. Keller - Sandia National Laboratories, - L.C. Shirvill - Shell Global Solutions	Session 4 [Room 2] Quantitative Risk Assessment, Safety Studies and Risk Mitigation Chairmans: J. LaChance - Sandia National Laboratories, A.M Hansen - Norsk Hydro ASA
11:40	**Topical session 3** **Hydrogen Behaviour & Consequences** J. Keller - Sandia National Laboratories	**Topical session 4** **Quantitative Risk Assessment, Safety Studies and Risk Mitigation** J. LaChance - Sandia National Laboratories
12:10	1.1.51 **Hydrogen Related Risks within a Private Garage: Concentration Measurements in a Realistic Full Scale Experimental Facility** *Gupta, S., Brinster, J., Studer, E., Tkatschenko, I.*	4.1.79 **Determination of Hazardous Zones for a Generic Hydrogen Station – A Case Study** *Nilsen, S., Marangon, A., Middha, P., Engeboe, A., Markert, F., Ezponda, E., Chaineaux, J.*
12:30	1.1.54 **Dispersion Tests on Concentration and its Fluctuations for 40MPa Pressurized Hydrogen** *Kouchi, A., Okabayashi, K., Takeno, K., Chitose, K*	1.3.113 **Assessment and Evaluation of 3rd Party Risk for Planned Hydrogen Demonstration Facility** *Haugom, G.P., Holmefjord, K.O., Skogseth, L.O*
12:50	1.1.58 **Experiments with Release and Ignition of Hydrogen Gas in a 3m Long Channel** *Sommersel, O. K., Bjerketvedt, D., Vaagsaether, K., Fannelop, T.K.*	1.4.77 **Materials Considerations in Hydrogen Production** *Øvland, S., Hansen, R.S.*
13:10	1.3.67 **Hydrogen Flames in Tubes: Critical Run-up Distances** *Dorofeev, S.B.*	1.5.122 **Design of Catalytic Recombiners for Safe Removal of Hydrogen from Flammable Gas Mixtures** *Reinecke, E.-A., Kelm, S., Struth, S., Granzow, Ch., Schwarz, U.*
13:30	**Lunch**	
14:30	1.1.62 **Gas Build-up in a Domestic Property Following Releases of Methane/Hydrogen Mixtures** *Lowesmith, B.J., Hankinson, G., Spataru, C.I, Stobbart, M.*	1.5.131 **Novel Wide-area Hydrogen Sensing Technology** *Hoagland, W., Benson, D. K., and Smith, R. D.*
14:50	1.1.63 **Large-scale Hydrogen Release in an Isothermal Confined Area** *Lacome, J.M., Dagba, Y., Perrette, L., Jamois, D., Proust, C.*	1.5.251 **Quantification of the Uncertainty of the Peak Pressure Value in the Vented Deflagrations of Air-Hydrogen Mixtures** *Cerchiara, G., Carcassi, M.N.*
15:10	1.3.40 **Fast Turbulent Deflagration and DDT of Hydrogen-Air Mixtures in Small Obstructed Channel** *Teodorczyk A., Drobniak P., Dabkowski A.*	2.1.73 **Hydrogen Safety Aspects related to High Pressure PEM Water Electrolysis** *Fateev, V.N., Grigoriev, S.A., Millet, P., Korobtsev, S.V., Porembskiy, V.I., Pepic, M., Etievant, C., Puyenchet, C.*
15:30	1.3.106 **Experimental Study of Hydrogen-Air Deflagrations in Flat Layer** *Friedrich, A., Grune, J., Jordan, T., Kotchourko, A., Kotchourko, N., Kuznetsov, M., Sempert, K., Stern, G.*	2.1.75 **Predicting the Probability of Failure of Gas Pipelines Including Inspection and Repair Procedures** *Zhang, L., Adey, R.A.*
15:50	**Coffee break - Poster Session "The Work in Progress Workshop for Young Researchers in H_2 Safety"**	
16:10	1.3.69 **Deflagration Safety Study of Mixtures of Hydrogen and Natural Gas in a Semi-open Space** *Merilo, E.G., Groethe, M.A.*	2.1.81 **Hydrogen Refuelling Stations for Public Transport Quality and Safety in the User-interface** *Haugerød, T., Hansen, A.M.*
16:40	1.3.96 **Vapour Cloud Explosions from the Ignition of Methane/ Hydrogen/Air Mixtures in a Congested Region** *Royle, M., Shirvill, L.C., Roberts, T.A.*	3.1.59 **Hydrogen Safety: New Challenges Based on BMW Hydrogen 7** *Müller, C., Fürst, S., von Klitzing, W., Hagler, T.*
17:00	1. 1.158 **Initial Assessment of the Impact of Jet Flame Hazard from Hydrogen Cars in Road Tunnels and the Implication on Hydrogen Car Design** *Wu, Y.*	3.1.71 **Fire Protection Strategy for Compressed Hydrogen-Powered Vehicles** *Gambone, L.R. Wong, J.Y.*
17:20	1.3.97 **Heat Radiation of Burning Hydrogen/Air Mixtures Impurified by Organic Vapour and Particles** *Weiser, V., Roth, E., Eckl, W., Kessler, A., Langer. G.*	1.1.107 **Safety of Laboratories for New Hydrogen Techniques** *Heitsch, M., Baraldi, D., Moretto, P., Wilkening, H.*
17:50	**Closure**	**Closure**

18:30 Miramar Palace Closure

(*) The Work in Progress Workshop for Young Researchers in Hydrogen Safety is organised by the eAcademy of Hydrogen Safety (www.hysafe.org/eAcademy).

13th SEPTEMBER

9:00 — **Plenary Session 3 [Room 1] Building Public Safety Consensus**
Chair: W. Chernicoff - US DOT / RITA
09:30 Lecturer 7: Vladimir Molkov - University of Ulster
10:00 Lecturer 8: Christy Cooper - DoE
10:30 Lecturer 9: Pierre Gauthier - Air Liquide Canada
11:00 Round Table

11:20 — **Coffee break - Poster Session "The Work in Progress Workshop for Young Researchers in H_2 Safety"**

	Session 5 [Room 1] Hydrogen Facility Permitting Chairmans: M. Molag – TNO. J. Ohi, - National Renewable Energy Laboratory	Session 6 [Room 2] Education and Professional /Technical Training Tools Chairmans: Jim Narva - NASFM, M. A. Delichatsios - University of Ulster
11:40	**Topical session 5** **Hydrogen Facility Permitting** M. Molag - TNO	**Topical session 6** **Education and Professional /Technical Training Tools** Jim Narva - NASFM
12:10	4.1.64 **Hydrogen Safety and Permitting Hydrogen Fueling Stations** *Ohi, J.*	1.5.90 **Guidelines for Fire Corps Standard Operating Procedures in the event of Hydrogen Releases** *Grasso, N., Ciannelli, N., Pilo, F., Carcassi, M.N., Ceccherini, F.*
12:30	4.1.129 **Risk-Informed Process and Tools for Permitting Hydrogen Fueling Stations** *LaChance, J., Tchouvelev, A., Ohi, J.*	1.3.39 **Incident Reporting: Learning from Experience** *Weiner, S.C., Kinzey, B.R., Dean, J., Davis, P.B., Ruiz, A.*
12:50	4.1.143 **Safety-Barrier Diagrams for Documenting Safety of Hydrogen Applications** *Duijm, N.J., Markert, F.*	1.5.100 **Hydrogen Safety, Training and Risk Assessment System** *Hay, R., Tchouvelev, A. V., Benard, P., Wong, J., MacIntyre, I .*
13:10	4.1.93 **Fire Prevention Technical Rule for Gaseous Hydrogen Transport in Pipelines** Grasso, N., Pilo, F., Ciannelli, N., Carcassi, M.N., Mattei, N., Ceccherini, F.	1.5.130 **The Hydrogen Executive Leadership Panel (HELP) Initiative for Emergency Responder Training** Chernicoff, W. P., McCullough, R., Postel, F.
13:30	**Lunch**	
	Session 7 [Room 1] Miscellaneous Chairmans: M. Molag – TNO. J. Ohi, - National Renewable Energy Laboratory	**Session 8 [Room 2] Miscellaneous** Chairmans: Jim Narva - NASFM, M. A. Delichatsios University of Ulster
14:30	4.1.288 **Simulator Development of Virtual Experience and Accident Scenarios of Hydrogen Stations for Safety** *Kim., E.J., Kim, Y. G., Moon, I.I., Kim, J.*	3.1.82 **Model-based Determination of Hydrogen System Emissions of Motor Vehicles Using Climate-Chamber Test Facilities** *Weilenmann, M., Bach, Ch., Novak, Ph., Fischer, A., Hill, M.*
14:50	1.3.132 **Hydrogen Releases Ignited in a Simulated Vehicle Refuelling Environment** *Shirvill, L.C., Royle, M., Roberts, T.A.*	3.2.101 **Identification and Monitoring of a PEM Electrolyser Based on Dynamical Modelling** *Lebbal, M.E. Lecoeuche, S.*
15:10	6.0.00 **Safe Operation of Natural Gas Appliances Fueled with Hydrogen/Natural Gas Mixtures (Progress Obtained in the Naturalhy-Project)** *De Vries, H. , Florisson, O., Tiekstra, G.C.*	6.1.00 **Numerical Studies of Dispersion and Flammable Volume of Hydrogen in Enclosures** *Zhang, J. Hereid, J., Hagen, M., Bakirtzis, D., Delichatsios, M.A., Venetsanos, S.G.*
15:30	6.2.00 **Hydrogen Subsonic Upward Release and Dispersion Experiments in Closed Cylindrical Vessel** *Denisenko V.P., Kirillov I.A., Korobtsev S.V., Nikolaev I.I., Kuznetsov, A.V., Gevorkian A.G., Feldstein V.A.*	6.3.00 **Explosion Hazard of Hydrogen-Air Mixtures in the Large Volumes** *Petukhov, V.A., Naboko, I.M., Fortov, V.E.*
15:50	1.3.52 **Computational Modeling of Pressure Effects from Hydrogen Explosions** *Granovskiy E.A., Lifar V.A., Skob Yu.A., Ugryumov M.L.*	1.5.134 **On the Use of Spray Systems: An Example of R&D Work in Hydrogen Safety for Nuclear Applications** *Joseph-Auguste, C., Cheikhravat, H. , Djebaili-Chaumeix, N., Deri, E.*
16:10	**Coffee break - Poster Session "The Work in Progress Workshop for Young Researchers in H_2 Safety"**	
16:40	1.1.83 **Study of hydrogen diffusion and deflagration in a closed system** *Ishimoto, Y., Merilo,E., Groethe, M., Chiba, S., Iwabuchi, H., Sakata, K.*	2.1.53 **A Rural Hydrogen Transportation Test Bed** *Sheffield, J. W., Koylu, U. O.*
17:00	2.1.98 **Potential for Hydrogen Production from Biomass Residues in the Valencian Community** *Cárdenas, R., Alfonso, D., Peñalvo, E., Perez-Navarro, A., Perpiñá, C., Vargas, C.*	3.2.76 **Molecular Transport Effects of Hydrocarbon Addition on Turbulent Hydrogen Flame Propagation** *Muppala, S., Wen, J.X., Aluri, N.K., Dinkelacker, F.*
17:20	**Final Session [Room 1] Conclusions/debate & Perspectives** Chairmans: M. N. Carcassi – UNIPI and S. Dorofeev - FM Global Research	Panel list H. Barthelemy - Air Liquide B. Coda - European Commission R. Day - CCS - ISO TC/197 W. Hoogland - IEA Task 19 T. Jordan - FZK J. Keller - Sandia National Labs I. Mac intyre - Natural Resources Canada S. Miyashita - ENAA Japan J. Ohi - NREL D. Spagni - University of Manchester A. Tchouvelev - Canadian Hydrogen Safety Program J. Y. Wong - Powertech Labs Chris Sloane - GM

21:00 Conference Dinner
Venue: R.C. de Tenis Ondarreta Restaurant, *Pº Eduardo Chillida 9, 20008 Donostia - San Sebastián*