Welcome to the 15th Edition of the International Symposium on Fireworks (ISF). As with other ISF locations, it took several attempts to finalize a plan to host the ISF in France. The location of choice was proposed by the France Host Committee (FHC) as Bordeaux, a city of historical significance and of course in an area of great wines.

There has always been a large presence of French pyrotechnicians, researches and regulators. They played a major role at the first ISF in Montreal in 1992. Besides attending and contributing to the first international Fireworks Harmonization Workshop which was part of the 1st ISF there were presentations such as, “Un outil industriel de sécurité (An industrial Safety Tool) by Jean-Paul Lucotte of Ruggieri” and “L’ensemble de lancement de feux d’artifice , ELFE D’ART (Fireworks Launching Equipment, ELFE D’ART) by Robert Maurel of Maurel Pyrotechnie. (The French delegations also travelled to Ottawa to attend the IGUS meeting which followed the 1st ISF.)

Following the 1st ISF, other presenters from France included, Jean-Marc Mouligné, Dominique Lajeunesse, Raphaël Trousselle (Davey Bickford), Annik Keyser (Ministere de l’Economie, des Finances et de l’Industrie), Alain Jaillard-Rakowski (Arts France), Isabelle Dufresne and Jean-Eric Ougier (Comite Departemental du Tourisme de L’Oise), Ruddy Branka (INERIS), Christian Michot (INERIS), Frederic Manzi and Dominique Vignolo (Vishay Sfernice), Pierre Thebault (Etienne LACROIX Tous Artifices), and others.

The FHC, whose members are exceptional professionals in the field of fireworks have sourced a large number of interesting papers for presentations at this ISF, have arranged several outings, and have organized numerous fireworks displays. The outings are designed to reflect the varied personality of Bordeaux with its many flavours which will be accentuated by fireworks displays by some of the best companies in the world.

This 15th Edition of the International Symposium will be overseen by the Honorary Chairman, Pierre Thebault, a true pyrotechnician and academic with broad knowledge of the evolution of the art and science of pyrotechnics. He has so impressed us that he has agreed to serve as both the Honorary Chair and the Co-Chair of this ISF. This is the first time in the history of the ISF, that the same persona has held both titles. Congratulations and thank you, Pierre!

When the first ISF was being planned for Montréal in 1992, it was imperative to have a logos and nomenclature in both official languages of Canada, French and English. The so called, “Ticket”, shown here, and used for the 1st ISF in Montréal, had the French on top and English on the bottom with the “Star” between them. A very appropriate logo, once again for this 15th ISF.

When it came to have an ISF slogan that would impart the same meaning in English and French, the official federal government translators were at odds. And so, there would be no bilingual slogan! A way for me was the use of letters most often used in mathematical equations and that no one ever questioned. It would mean, using a third language, one that would find acceptance due to its deep roots of many words that seed many languages of the world. And so, I went back to the old Greek letters from which the term that bonds us, “pyro”, is the source, and our quest in the ISF slogan, discovering the fire, ΕΞΕΥΡΙΣΚΕΤΕ ΤΟ ΠΥΡ, continues.

Ettore Contestabile
ISFS Chairman
Introducing the ISF Honorary Chairman: Pierre Thebault

In this 15th year of the 21st century, the 15th International Symposium on Fireworks will take place in Bordeaux (France). This conjunction of “fifteens” would have to be celebrated in a city of prestige and the ISF organizers honored the French pyrotechnic community by choosing Bordeaux as the host city for this special and unique event. Famous worldwide for its vineyards and wines, Bordeaux also has a long tradition of firework shows and the French Association of Manufacturers of Explosives, Pyrotechnics and Fireworks (SFEPA), together with the French Association of Pyrotechny (AF3P), are proud to have this opportunity to invite you to share the French passion for fireworks and the French taste for good wines. With the same objective of stimulating and rejoicing most of the five senses, these two domains have made similar and parallel progress in the last five centuries, while improving their traditional recipes and opening them to innovation as science was developing. Craftsmen have become technicians and scientists, without losing their original skills and aesthetic intentions, but using and understanding them in much better and safer ways, associating them with various new technologies, which made possible the large, dazzling and fascinating shows of our present times.

As usual, these five days of September 2015 will give the opportunity to every participant of exchanging ideas and knowledge, presenting offers of new products and equipment, debating common problems and finding common solutions, establishing cooperation links or bases of fair and respectful competition, with a common will of making fireworks ever more attractive, ever more amazing, ever more innovative.

Welcome to Bordeaux!

Pierre Thebault
Honorary Chairman
15th International Symposium on Fireworks, Bordeaux
THE 15TH INTERNATIONAL SYMPOSIUM ON FIREWORKS COMMITTEE

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Ettore Contestabile

Honorary chairman
Pierre Thebault

Technical Program Co-Chairmen
Roger L. Schneider
Pierre Thebault

Symposium Coordinator and Treasurer
Fred Wade
Fireworks F/X Inc., Canada

Technical Program Coordinators
Christian Lohrer
BAM, Germany
Jorge M. Márquez M.
Lux Pirotecnia, S.A. de C.V., Mexico

Moderated Sessions Coordinator
Jorge M. Márquez M.
Lux Pirotecnia, S.A. de C.V., Mexico
Bert von Rosen
CERL, Canada

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ec Blast Consulting

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BAM, Germany
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Pyroconsultant Sarl, France
Mitsuru Arai
University of Tokyo, Japan
Andrew Tang
Tian Cheng Pyrotechnics Laboratory, China
Bert von Rosen
CERL, Canada
Roger L. Schneider
Rho Sigma Associates Inc., USA
Susan C. Schneider
Marquette University, USA
Jacob J. Schneider
MGS Group, LLC, USA
M. Contestabile, Rewording

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Head of FHC, President of SFEPA
José Refouvelet
Vice-President of AF3P
Frank Garde
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Serge Carcy
Pyro-shows Supervisor

Technical support for pyro-shows:
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Etienne LACROIX Tous Artifices S.A.
Jacques Couturier
JCO (Jacques Couturier Organisation)

Administration
Tessa Wade
Fireworks F/X Inc., Canada

Directors, International Symposium on Fireworks Society (ISFS)
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Roger L. Schneider, Vice Chairman
Fred Wade, Secretary-Treasurer
Christian Lohrer, European Section Director
Mitsuru Arai, Asian Section Director
Joseph Domanico
Julie Heckman
Jorge Mauro Márquez Márquez
Bert von Rosen
SYMPOSIUM WEEK AT A GLANCE
September 20-25, 2015

<table>
<thead>
<tr>
<th>Time</th>
<th>Sunday 20</th>
<th>Monday 21</th>
<th>Tuesday 22</th>
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Registration
Registration to the 15th International Symposium on Fireworks includes entry to receptions, meals and refreshment breaks, all Technical Sessions, Workshops, the Trade Show, site visits, evening fireworks displays, and demonstrations.

Registrants will receive a printed copy of the 15th ISF Proceedings which is a compilation of the scientific and technical papers presented and any other promotional material supplied by sponsors.

Trade Show
Exhibits will open each day at 9:00 Monday to Friday, and will close at the same time as the technical sessions. Attendees are strongly encouraged to visit our exhibitors and discuss their merchandise and services. The exhibitors’ participation is a welcome and a necessary part of the Symposium.

Technical Program
The 15th International Symposium on Fireworks WOULD NOT BE A SYMPOSIUM without the presentations provided by our speakers and moderators during the technical sessions. A great deal of time and effort is required to write papers and prepare the presentations. Your attendance at the technical sessions demonstrates firm support of our presenters and lets them know their efforts are greatly appreciated.
SUNDAY: September 20

13:00 Registration
19:00 Welcome Reception

MONDAY: September 21

8:30 Official Opening
Ettore Contestabile, ISF chairman
Pierre Thebault, Honorary Chairman
Roger L. Schneider, Technical Program Co-Chairperson

Guest Speaker
Hervé Graindorge, Chairman of AF3P

9:00 From The Kings’ Prestige to Bastille Day Celebrations: History of a National Passion
Pierre Thebault, Pyroconsultant Sarl, France

9:30 Peering at the Display-Window of a Fireworks Shop before World-War-Two
Jean-Louis Dumont, Expert in Pyrotechnics, Retired from CNRS (Centre National de la Recherche Scientifique), France

10:00 BREAK

Session 1
Session Chairperson: Ben Schwegler, The Walt Disney Company, USA

10:30 Characterization and Classification of Spent Tubes from Pyrotechnic Devices and Items Soiled with Pyrotechnic Residue
Stephan A. Coman, RES Specialty Pyrotechnics, Inc., Troy A. Gardner and Kirt N. Sasser, Safety Management Services, Inc., USA

11:00 We’re Only Human: The Application of Human Factors Engineering to the Reduction of Errors in Fireworks Related Operational Systems
Robert Foti, Pyromanager Co Ltd, Hong Kong

11:30 Study on Thermal Decomposition Characteristics of High-Nitrogen Fuel
Xinggao Zhang, Wenlian Peng, Gengran Liu, Pai Wu, Hongxin Shi, State Key Laboratory of NBC Protection for Civilian, Beijing, P. R. China

12:00 LUNCH
Session 2
Session Chairperson: Jean-Michel Dambielle, General Operational Director of Lacroix-Ruggieri, Etienne-Lacroix Tous Artifices S.A., France

13:30 French Main Requirements for Fireworks Implementation in Pyroshows Jean-Frédéric Dartigue Peyrou and Henri Miermont, Syndicat des Fabricants d’Explosifs, de Pyrotechnie et d’Artifices (SFEPA), France

14:00 Fireworks Shooting Technology in China Shixing Ouyang, Ouyang Musical Pyro Ltd., China

14:30 Showing Compliance of Firework Noises with the European Directive on Environmental Noise Daniel Casenave, Matthieu Labeille and Pierre Thebault, Etienne LACROIX Tous Artifices S.A., France

15:00 BREAK

Session 3
Session Chairperson: Izaskun Astondoa, Piroteknia Astondoa S.A., Spain

15:30 A Survey of the Sources of Pyrotechnic Chemicals in China Andrew Tang, Tian Cheng Pyrotechnics Laboratory, China and Roger L. Schneider, Rho Sigma Associates, Inc., USA

16:00 Evaluation of Aging Pyrotechnic Compositions Obeysing the Arrhenius Law by Differential Thermal and Gravimetric Analysis D. Medus, M. Petrantoni, C. Sandre, C. Dupuy, P. Thebault, Etienne LACROIX, France

16:30 The Research of the Extinction Theory of Graphite Gengran Liu, State Key Laboratory of NBC Protection for Civilian, Beijing, P. R. China

CLOSE

TUESDAY: September 22

Session 4
Session Chairperson: Martyne Gagnon, Entertainment Manager and Director of L’International des Feux Loto-Québec presented by TELUS, Canada

8:30 Water and Gravity Efficient Action Relationship in Reaction to Fire Joaquim Melo Rodrigues, Luso Pirotecnia Group, Portugal

9:00 Phenolic Resin/Hexamine Binding of Pyrotechnic Compositions James C. Widmann, Connecticut Pyrotechnic Manufacturing LLC, USA

9:30 Progress with the Development of an Alternative Approach to the Analysis of Data from the CHAF Research on Waterfall Fireworks and the Ramifications for UN Series 6(A) and 6(B) Testing of Fireworks S.G. Myatt Health and Safety Laboratory, and E. Bale, Health and Safety Executive, Great Britain
10:00 BREAK

Session 5
Session Chairperson: Dominique Medus, Scientific Director, Etienne-Lacroix Tous Artifices S.A., France


11:00 Determination of Safety Distances: The French Approach Jean-Pierre Costes and Pierre Thebault, Etienne Lacroix Tous Artifices S.A., France

11:30 Method of Measuring the Effect Range of Aquatic Display Fireworks Y. S. Chua, International Quality Assurance B.V., China

12:00 LUNCH

Session 6
Session Chairperson: Emmanuel Baudet, General Director, ARDI S.A., France

13:30 Methods for Projecting Pyrotechnic Patterns in the Air: Software, Hardware, and Products Alberto Navarro, Infinity Visions Inc., USA

14:00 The Language of Pyrotechnic Effect Names Part 3: VDL 1.0 Specification Will Harvey and Dustin Leary, Finale Fireworks, USA

14:30 Parallelism and Hybrid Communication: A Perfect Combination to Maintain High Speed and Performance for Data Exchange in Firing Systems Luigi Leone Paolo Monetti, PyroLED® Firing System Monetti Srl, Italy

15:00 BREAK

Session 7
Session Chairperson and Workshop Moderator: Ettore Contestabile, Chairman, ISFS

15:30 Workshop: Fireworks Picking Areas Presentation by representatives from various countries, followed by a Question and Answer Period

CLOSE

WEDNESDAY: September 23

Session 8
Session Chairperson:

9:00 TBA

9:30 Study on Thermal Decomposition Characteristics of Triaminoguanidinium Azotetrazolates Yinglin Mu, Bing Yao, Gengran Liu, Xinggao Zhang, Wenlian Peng, and Hongxin Shi, State Key Laboratory of NBC Protection for Civilian, China

10:00 BREAK

Session 9
Session Chairperson: Jorge M. Márquez M., Lux Pirotecnia, S.A. de C.V., Mexico
Moderated Sessions
10:30 to 12:00

Each of the moderated session topics listed below will be assigned to a designated table. The number of participants at each table will be limited. Symposium attendees wishing to take part in the discussion of a particular topic will be required to register with the respective moderator. This should be done prior to 9:00 on Wednesday.

Each topic will be presented for discussion in two separate, 45 minute sessions, with a break between. This will provide participants the opportunity to attend two different topics, if they wish. Note that translation services will not be available for the moderated sessions; however, some moderators can converse in more than one language.

Topics and Moderators
1. Wrong Theory; the Power of Imperfection in Pyrotechnic Display Design – Alberto Navarro
2. Environmental Impacts, Assessments and Mitigation Strategies – Ben Schwegrler and Joost van Lingen
3. Safety distances for display fireworks with focus on EU regulations – Christian Lohrer, Pierre Thebault, and Jean-Pierre Costes
4. The susceptibility of the e-match to ESD, lightning, magnetic fields and electromagnetic waves – David Weston
5. International Symposium on Fireworks; Open Forum for Opinions and Suggestions – ISF Directors
6. Phenolic Resin/Hexamine Binding of Pyrotechnic Compositions – James C. Widmann
7. The Montreal International Fireworks Competition, thirty-one years of Pyromusical Innovation – Martyne Gagnon and Paul Csukassy
8. America’s National Fireworks Association (NFA) – Nancy Blogin
10. Firing Systems – Vitor Machado
11. Technics in Computer Choreography – Will Harvey

12:00 CLOSE—Free Afternoon

On this occasion of the 15th ISF, MagicFire and Rho Sigma Associates have sponsored a flash drive that every ISF registrant will receive. The flash drives are loaded with the Program and the Proceedings of the 15th ISF and the Proceedings of the previous fourteen symposia.

THURSDAY: September 24

Session 10
Session Chairperson: Martin Hildeberg, Göteborgs FyrverkeriFabrik, Sweden

8:30 Comparative Analysis of Fireworks Transport Dangerous Classification Test Results and Default List
Zhang Guanghui, Xiao Jiayong, Tan Aixi, Jiang Zicheng, Qiu Lina, Tan Jingru, Fireworks & Firecracker Inspection Centre of Hunan Entry-Exit Inspection and Quarantine Bureau, China, and Y. S. Chua, International Quality Assurance B.V., China

9:00 Fireworks Accidents in Japan during 2011-2014
Yuji Wada, Takako Itou, Nobuo Nakajima, Kunio Matsukura, and Masahide Wakakura, Research Institute of Science for Safety and Sustainability (RISS), National Institute of Advanced Industrial Science and Technology (AIST), Japan

9:30 Lessons that can be Learnt from Accidents Involving Fireworks
Pauline Arama, Bureau d’Analyse des Risques et Pollutions Industriels (BARPI), French Ministry of Ecology, Sustainable Development and Energy, France

10:00 BREAK
Session 11
Session Chairperson: Lionel Aufauvre, INERIS, France

10:30 15 Years after Enschede: An Overview of Actions and Status Piet Timmers and Soedesh Mahesh, RIVM, National Institute for Public Health and the Environment, Centre for Environmental Safety and Security, The Netherlands

11:00 Safety Related Behavior of Cylindrical Shells Marianne Douet, Christian Lohrer, Lutz Kurth, Olaf Mücke, Federal Institute for Materials Research and Testing (BAM), Germany

11:30 Injury Potential from Rockets with Net Explosive Content Less Than 75 g Shulin Nie and Mikael Ekeberg, MSB, Swedish Civil Contingencies Agency, Sweden

12:00 LUNCH

Session 12
Session Chairperson: Maria Grazia Gerbaudo, Panzera s.a.s Industria Pirotecnica, Italy


14:00 Ideas of Improving Colored Flame Compositions Dominykas Juknelevicius, Arunas Ramanavicius Department of Physical Chemistry, Vilnius University, Lithuania, Magdalena Rusan, Thomas M. Klapötke, Department of Chemistry, Ludwig Maximilian University, Germany, Rytis Kubilius, Pyrotechnics R&D Department, Blikas Ltd., Lithuania

14:30 Hazard Evaluation of the Strobe Compositions with Water Mieko Kumasaki, Yokohama National University, Japan

15:00 BREAK

Session 13
Session Chairperson: Dominique Brezac, Brezac Artifices, France

16:00  What did Pyrotechny Mean Five Centuries Ago? Vannoccio Biringuccio and the Arts of Fire  Pierre Thebault, Pyroconsultant Sarl, France

16:30  The Danger of Human Body Electrostatic Discharge to Fireworks Shells with a Composition Containing Metal Particles  David Weston, EMC Consulting Inc., Canada

16:45  Exposure of Fireworks Shells with Conductive Metal Particles to the High E and H Fields under High Voltage Transmission Lines  David Weston, EMC Consulting Inc., Canada

CLOSE

FRIDAY: September 25

Session 14
Session Chairperson: Yuji Wada, Research Institute of Science for Safety and Sustainability (RISS), National Institute of Advanced Industrial Science and Technology (AIST), Japan

9:00  Scale Effect on DDT Properties of Fireworks Compositions  Mitsuru Arai and Kotaro Ouchida, The University of Tokyo, Japan

9:30  The Omagari Fireworks Competition  Shigeji Sasaki, Chairman of the Omagari Chamber of Commerce and Industry, Japan

10:00  BREAK

Session 15
Session Chairperson: Mitsuru Arai, The University of Tokyo, Japan

10:30  Comparison of Modified DDT Test and HSL Flash Composition Tests for Various Fireworks Compositions  Shu Usuba, Ken Okada, Miyako Akiyoshi, Takehiro Matsunaga, National Institute of Advanced Industrial Science and Technology (AIST), Japan, and Shuji Hatanaka, Japan Pyrotechnics Association, Japan

11:00  Firework Mortar Suppressor: Acoustic Dampening of the Launch Phase of Shells for the Professional Fireworks Industry  David Willsher, Fantastic Fireworks, England


12:00  CLOSE
Closing Remarks
—Pierre Thebault and Ettore Contestabile
## FRANCE ISF HOST COMMITTEE EVENTS

September 21 – 25, 2015

Note that with the exception of the Welcome Reception (Sunday evening) and the Gala Dinner (Friday evening) all other events during the week of September 21 to September 25 are organized by the France Host Committee.

<table>
<thead>
<tr>
<th>DATE AND DEPARTURE TIME</th>
<th>SOCIAL EVENTS</th>
<th>PYROSHOWS</th>
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<tr>
<td><strong>Event 1:</strong> Monday, 21st&lt;br&gt;Direct Public Transport from&lt;br&gt;Cité Mondiale (15 minutes)</td>
<td>WELCOME RECEPTION AT TOWNHALL at 6.30 pm</td>
<td>Palais Rohan/Place Pey Berland&lt;br&gt;Place des Quinconces at 9.30 pm:&lt;br&gt;JCO&lt;br&gt;PANZERA-APE PARENTE&lt;br&gt; GALAXIS-FFP&lt;br&gt;VULCAN-ARDI</td>
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<td><strong>Event 2:</strong> Tuesday, 22nd&lt;br&gt;Buses departure from Cité Mondiale at 6.00 pm</td>
<td>CASUAL PARTY AT CHATEAU GISCOURS MEDOC&lt;br&gt;Winery visit Medoc Wines testing&lt;br&gt;Dinner and food testing</td>
<td>On site at 10.00 pm:&lt;br&gt;JINSHEN- BREZAC&lt;br&gt;PARENTE&lt;br&gt; PYRAGRRC- RICASA</td>
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<td><strong>Event 3:</strong> Wednesday, 23rd&lt;br&gt;Busses departure at 4.00 pm</td>
<td>SAINT EMILION VISIT&lt;br&gt;Winery visit&lt;br&gt;Old city guided visit&lt;br&gt;Dinner at Cloître des Cordeliers</td>
<td>On site at 10.00 pm:&lt;br&gt;NEWYEARFIREWORKS - BREZAC</td>
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<td><strong>ISF Gala Dinner</strong>&lt;br&gt;Friday, 25th&lt;br&gt;10-minute walk from Cité Mondiale</td>
<td>GALA DINNER* on BORDEAUX&lt;br&gt;Garonne bank&lt;br&gt;Welcome appetizer on terrace&lt;br&gt;Seated high quality dinner&lt;br&gt;Wines from several Bordeaux vineyards&lt;br&gt;Champagne</td>
<td>On Garonne river and Chaban-Delmas bridge visible from the terrace:&lt;br&gt;RUGGIERI- ZARAGOSANA</td>
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*Gala Dinner is an ISF event

**REGISTRATION CONDITIONS AND FEES ON ISF WEBSITE/DEADLINE FOR REGISTRATION:**<br>SEPTEMBER 10th/ PAYMENT IN EUROS ON SITE ONLY by CASH or CREDIT CARD
FIREWORKS DISPLAYS Donated/Performed by:

Jacques COUTURIER Organisation (JCO)

PANZERA – APE PARENTÉ

GALAXIS – FFP

VULCAN / ARDI

JINSHEN / BREZAC

PARENTE

PYRAGRÍC- RICASA

NEW YEAR FIREWORKS / BREZAC

LACROIX-RUGGIERI-PIROTECNIA ZARAGOZANA
GODEN PEAK
FIREWORKS

The "Jiangxi Wanzai Golden Peak Fireworks Corporation" was established.

1989

Completed successful takeover bid of the original township enterprise of the "Huang Mao Export Shell Factory".

1994

Registered Golden Peak’s first registered logo, the "Jin" brand.

2000

Registration of Golden Peak’s first registered logo, the "Jin" brand.

2002

Established the Tongyi Firecracker Factory in Wanzai.

2004

The subsidiary corporation Peak Performance Fireworks of Frankfort, Indiana was founded and began business operations in the United States in order to develop and serve the wholesale and retail consumer fireworks market in the United States.

2006

Successful takeover bid to acquire the Liuyang Ruida Fireworks Factory to develop the Chinese domestic market.

2007

2009


2012

2013

Awarded Top 100 advanced enterprises among over 600 member enterprises of the Chinese Fireworks and Firecracker Standardization Organization.

2015

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E-mail: sesamechen@chnfireworks.com
market@chnfireworks.com
Http: www.chnfireworks.com

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CPT 诚点

ICTRI
15th International Symposium on Fireworks

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Major actor on the European market, Ardi® offers his know-how and experience both in the display fireworks and in the consumer market.

Au 15ème Symposium international des feux d’artifices, retrouvez-nous lundi 21 Septembre, Place des Quinquonces, à Bordeaux, pour un spectacle à couper le souffle avec notre partenaire Vulcan®. Et du mardi 22 au mercredi 23 Septembre, venez nous rencontrer sur le Trade Show du Symposium. (Stand SFEPA)

Les feux Portables® : des spectacles pyrotechniques d’une très grande intensité, entièrement préréglés avec un seul allumage. Une gamme complète de 1 minute à 8 minutes à découvrir, des feux Portables® homologués CE.

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Avec Ardi®, vivez l’émotion pyrotechnique à 360°! With Ardi®, experience a 360° pyrotechnic emotion.

Present on the 15th International Symposium of Fireworks, meet up with us on Monday, September 21st. Place des Quinquences in Bordeaux, for an absolutely breathtaking pyro-melodic show with our partner Vulcan®. You can also meet up with us at the Symposium Trade Show (Stand SFEPA), from Tuesday, September 22nd to Wednesday, September 23rd.

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Vorteile des Flammenprojektors G-Flame

- Sehr flexibel durch verschiedene Steuereingänge
- Keine Netzspannung erforderlich
- Kann auch bei starkem Regen im Freien betrieben werden
- Brennstoffdosen sind vollständig im Gehäuse untergebracht und dadurch gut geschützt
- Dosenadapter mit Rückschlagventil
- Alle Komponenten sind mit Schnellkupplungen ausgestattet für einen extrem schnellen Aufbau
- Vollkommen autarker Betrieb beim Einsatz des optionalen Advanced-Funkmoduls oder von drahtlosen DMX-Empfängern
- Feinfilter integriert, um unerwünschte Magnetventile vorzubeugen
- Ausgestattet mit zwei hintereinander geschalteten Magnetventilen für doppelte Sicherheit
- Elektronische Flammenüberwachung mittels Ionisationsmessung
- Mit Neigungssensor ausgestattet
- Bi-directionale Kommunikation mit dem Controller PFC Advanced und USB-Funkmodem PFM Advanced für Fernprogrammierung und Fernabfrage
- Vorbereitet für die schnelle Montage auf Spaltstrahlen- und Truss-Elementen
- Beleuchtetes Textdisplay mit bequemer Menüführung
- Optische Warnanzeige wenn scharf
- Atompilzeffekt programmierbar
- Schnelle Stepsequenzen möglich, weil die Flamme auch bei Dosenbetrieb innerhalb kurzer Zeit nach dem Schließen der Magnetventile erlischt

Bitte besuchen Sie unsere Homepage, um weitere Informationen zu diesem innovativen Produkt zu erhalten oder fordern Sie das vollständige Prospekt mit allen Eigenschaften und Spezifikationen der G-Flame an.

Advantages of the Flame Projector G-Flame

- Versatile usage due to various control inputs
- No mains supply required
- Can be used outdoors also in heavy rainfall
- Either aerosol or gas cartridges or gas bottles can be used as fuel supply
- The gas cartridges are fully integrated in the housing and are well protected
- Cartridge holder comes with non-return valves
- All components are equipped with quick couplers for an extremely fast setup
- Completely autarkic operation if the optional Advanced Wireless Module or wireless DMX receivers are used
- Equipped with a microfilter to prevent leakages in the electromagnetic valves
- Contains two electromagnetic valves connected in series for additional safety
- Electronic flame monitoring system utilizing ionization measurement
- Tilt sensor installed
- Bi-directional communication with the controller PFC Advanced or the wireless USB modem PFM Advanced for remote programming and remote checks
- Prepared for the fast installation on light or speaker stands and truss elements
- Backlit character display and convenient menu-driven operation
- Optical warning signal if the device is armed
- Atomic effect programmable
- Flame extinguishes rapidly after closing the electromagnetic valves, also if cartridges are being used, enabling fast step sequences

Please visit our website to obtain further information about this innovative product or contact us in order to receive the complete G-Flame brochure with all its features and specifications.
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