

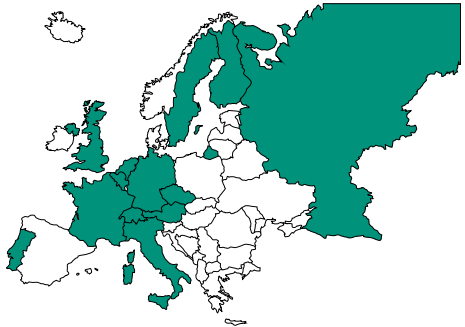
European Working Group
Non-Lethal Weapons

Programme

6th European Symposium on
Non-Lethal Weapons
May 16–18, 2011

Stadthalle Ettlingen, Germany

6th European Symposium on Non-Lethal Weapons



Fraunhofer

ICT

Programme Committee

The European Working Group on Non-Lethal Weapons (EWG-NLW) serves as the Programme Committee:

Helmut Oppenheim
Bundesministerium für Landesverteidigung und Sport
(Ministry of Defence and Sports), Vienna, A

Chris De Cock
Ministry of Defence, Brussels, B

David Humair
armasuisse, Thun, CH

Milan Bezdek
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Ilkka Höysti
Police Technical Centre, Kuusankoski, FI

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DGA, Bagneux, F

Norbert Eisenreich
Fraunhofer ICT, Pfinztal, D

Paolo Giannetti
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University of Coimbra, Coimbra, PT

J.J.M. (Pascal) Paulissen
TNO Defence, Security and Safety, Rijswijk, NL

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Baumann University, Moscow, RUS

Sofia Hedenstierna
Swedish Defence Research Agency, Tumba, SE

Graham Smith
Home Office Centre for Applied Science and Technology (formerly HOSDB),
St Albans, UK

Chairman of the Symposium

Klaus-Dieter Thiel
Fraunhofer ICT, Pfinztal, D

6th European Symposium on Non-Lethal Weapons

NLWs* have been available for use over the last two decades. Media and academic discussions have often focused on the dangers and problems associated with these technologies, but it is also important to consider the benefits. Part of the objective of this conference will be to identify tangible benefits and outcomes from the use of NLWs.

The NLW Symposium, first held ten years ago, is a welcome opportunity to take stock of significant developments in this period in the NLW community, draw conclusions and develop requirements and ideas in order to advance NLW technology and encourage its use by the military and police.

With regard to military scenarios, the last few years have seen a shift in the use of NLWs from police operations like crowd riot control to military missions such as the protection of fixed military installations and mobile military equipment, or of the operations themselves. In practice this means, for example, camp or convoy protection or control of check points.

Current non-lethal weapons have been developed to work at ranges typical for crowd riot control situations; the new operational challenges indicate a need for non-lethal capabilities with much longer ranges. Besides this, accuracy and effectiveness at such distances pose a significant challenge.

The availability of NLWs has increased, resulting in greater choice but also a need to carry more equipment to exploit this capability. The current challenge is to continue offering these options – or even to improve and expand them – and provide scalable effects within one weapon. Emerging trends in development include adaptive NLWs, platforms, handheld weapons and munitions.

There are still situations in which NLWs are inadequate to fill the capability gap, for example in preventing suspected suicide bomber attacks.

The Symposium includes topics on current and advanced technologies, operational and tactical aspects, required capabilities, legal and public acceptance, effects on target as well as the evaluation of effects. The listed topics should only be considered as guiding principles.

NATO and EDA activities since the last Symposium have focused intensively on the use of NLWs in the battlefield. Papers on discussions from these groups are also welcome.

Chairman of the Symposium

Klaus-Dieter Thiel

Fraunhofer ICT, Germany

* There are a number of terms that are used to describe NLWs, for example “less lethal weapons” or “non lethal capabilities”. We will use the term “NLWs” to cover all of these various descriptions.

General Information

REGISTRATION

Please return the enclosed registration form. Registration fees (incl. proceedings, coffee breaks, lunch), depending on arrival of the registration form at the ICT:

- Registration up to **April 26**:
EURO 970,- (incl. 19 % VAT)
- Registration up to **May 9**:
EURO 1.070,- (incl. 19 % VAT)

Participation cannot be guaranteed for registrations arriving after May 9, 2011.

The fee must be paid **upon receipt of the invoice** by remittance to the account given on the invoice.

CANCELLATION POLICY

EURO 300,- will be charged for cancellations after **May 10, 2011**. No-shows will be charged with **EURO 800,-**.

ACCOMMODATION

HORE Hotel Reservation
Weingartener Str. 70
76229 Karlsruhe
Germany

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Telefax +49 (0) 721 / 48 26 14
e-mail: HoreHotelReservation@
t-online.de

An application form is enclosed.

CONFERENCE OFFICE

Foyer of the Stadthalle Ettlingen.

Monday, May 16, 12.00 h till
Wednesday, May 18, 18.00 h

Phone +49 (0) 72 43 / 101-158
Fax +49 (0) 72 43 / 101-157

CHECK IN / WELCOME RECEPTION

Please check in at the conference office on **Monday, May 16 between 12.00 and 20.00 h**.

All participants are cordially invited to the Welcome Reception on the same day, 18.30 h – 21.30 h in the foyer of the Stadthalle Ettlingen.

CONFERENCE LANGUAGE

English

PROCEEDINGS

One copy is included in the registration fee. Additional copies cost **EURO 70,-** (Subscription price during the conference EURO 50,-).

12.50 **Opening and Welcome Address**
K.-D. Thiel
Chairman
Fraunhofer ICT, Pfinztal, D

Session 1 ETHICAL AND SOCIAL ACCEPTANCE
Chairman: Marco Filippi
AEPIS and AETEMP, Livorno, I

**13.00 V1 EDUCATING THE COMMUNITY ABOUT
NON LETHAL WEAPONS**
A. Greig
Avalon Beach, AUS

**13.25 V2 THE USE OF “NON-LETHAL” CHEMICAL
AGENTS IN CURRENT AND FUTURE LAW
ENFORCEMENT AND MILITARY OPERATIONS**
M. Dando, M. Crowley
University of Bradford, Bradford, UK

**13.50 V3 JUMPING THE GUN: AN ASSESSMENT OF SOME OF
THE HIDDEN CONSEQUENCES OF IMPROPER
SUB-LETHAL WEAPON DEPLOYMENT**
S. Wright
Leeds Metropolitan University, Leeds, UK

**14.15 V4 LESS LETHAL SYSTEMS AND THE
APPROPRIATE USE OF FORCE**
N. Corney
Omega Research Foundation, Ancoats, UK

15.30 Coffee Break

16.00 -18.30 PRESENTATION OF POSTERS
Chairmen: Matthew Symons
Home Office Centre for Applied Science and
Technology (formerly HOSDB), St. Albans, UK
and Pierre-Antoine Cassar
Centre Technique de la Securite Interieure,
Le Chesnay, F

18.30 Welcome Reception

08.00

Opening & Instructions

K.-D. Thiel
Chairman
Fraunhofer ICT, Pfinztal, D

Welcome Addresses

08.30

Key Note Lecture**NON-LETHAL WEAPONS: A GLOBAL REQUIREMENT**

J. B. Alexander
Las Vegas, USA

Session 2**OPERATIONAL AND TACTICAL ASPECTS**

Chairman: David Humair
armasuisse, Thun, CH

09.00

V5

LESS LETHAL USE IN THE UK:**OPERATIONAL EXAMPLES**

G. Smith
Home Office Centre for Applied Science and
Technology (formerly HOSDB), St Albans, UK

09.25

V6

NONLETHALITY AS A MILITARY OPTION IN THE**AFGHANISTAN SECURITY CONTEXT:****EXPERIENCES AND PROSPECTS**

S. Orbons
Netherlands Defence Academy, Breda, NL

09.50

V7

NON-LETHAL WEAPONS FOR TODAY'S**OPERATIONS AND TOMORROW**

T. Tafolla
Joint Non-Lethal Weapons Directorate, Quantico, USA

10.15

Coffee Break

10.45

V8

EVALUATION OF MANAGEMENT PERFORMANCE**EFFICIENCY IN POLICE OPERATIONS WITH USE****OF LESS-LETHAL WEAPONS**

V. V. Selivanov, D. P. Levin
Bauman Moscow State Technical University,
Moscow, RUS
V. V. Savostianov
Federal Medicobiologic Agency, Moscow, RUS

11.10

V9

INTERMITTENT DELIVERY OF TASER DEVICE**ELECTRIC CURRENT AS A METHOD OF****SECONDARY INJURY PREVENTION**

J. D. Ho
Hennepin County Medical Center, Minneapolis, USA
D. M. Dawes
Lompoc Valley Medical Center, Lompoc, USA
A. F. Hinz
TASER International Inc., Scottsdale, USA

Session 3 HUMAN EFFECTS CENTRE OF EXCELLENCE

Chairman: Massimo Annati (ret.)
Italian Navy, Milano, I

11.35 – V10
12.50

STATUS OF THE US AIR FORCE NON-LETHAL WEAPONS HUMAN EFFECTS-BASED DESIGN PROGRAM

A. Ashworth, J. Simonds, J. Fleming, J. van Hove
Air Force Research Laboratory, Brooks AFB, USA
T. Dayton, N. Kohn
General Dynamics Inc., San Antonio, USA

V11

DETERMINING CAUSAL LINKAGES BETWEEN NON-LETHAL WEAPONS HUMAN EFFECTS AND OPERATIONAL OUTCOMES

J. Simonds, A. Ashworth, L. Barnes
Air Force Research Laboratory, Brooks AFB, USA
T. Dayton, N. Kohn
General Dynamics Inc., San Antonio, USA
J. Dykes
University of Texas, San Antonio, USA

V12

EXPERIMENTS IN MODELSPACE: LEVERAGING HUMAN EFFECTIVENESS MODELS AND STATISTICAL DESIGN OF EXPERIMENTS TO ESTIMATE NON-LETHAL WEAPON PERFORMANCE

J. van Hove, A. Deneve
Air Force Research Laboratory, Brooks AFB, USA
T. Dayton
General Dynamics Inc., San Antonio, USA

V13

AN EFFECTS-BASED DESIGN APPROACH USING HUMAN EFFECTIVENESS MODELING AND SIMULATION TO ASSIST IN THE DEFINITION AND VALIDATION OF WARFIGHTER REQUIREMENTS

A. Deneve, J. van Hove
Air Force Research Laboratory, Brooks AFB, USA
T. Dayton
General Dynamics Inc., San Antonio, USA

12.50

Lunch Break

Session 4 EFFECTS ON TARGET AND EVALUATION I

Chairman: Victor Selivanov
Bauman Moscow State Technical University, Moscow, RUS

13.50 V14

TOWARDS A TEST STANDARD FOR CONDUCTED ENERGY WEAPONS

D. Dawson, A. Adler
Carleton University, Ottawa, CAN

14.15 V15 **GUIDEBOOK FOR NON-LETHAL EXPERIMENTATION**
J. J. M. Paulissen
TNO Defence, Security and Safety, Rijswijk, NL
R. Rahimi
Norwegian Defence Research Establishment (FFI),
Kjeller, N

14.40 V16 **HUMAN MOTOR INHIBITION: THEORETICAL CONSIDERATIONS AND SOME PSYCHOPHYSICAL EVIDENCE**
W. Wolf
Universität der Bundeswehr München, Neubiberg, D

15.05 V17 **MODELING THE BEHAVIOURAL IMPACT OF NON-LETHAL WEAPONS**
I. Wetzer
TNO Defence, Security and Safety, Soesterberg, NL

15.30 **Coffee Break**

Session 5 **EFFECTS ON TARGET AND EVALUATION II**
Chairman: J.J.M Paulissen
TNO Defence, Security and Safety, Rijswijk, NL

16.00 V18 **ASSESSMENT OF RISK INJURY BY NON-LETHAL KINETIC WEAPONS**
I. Borovsky
Israel National Police Headquarters, IL
V. Belkin
Tel Aviv University, Tel Aviv, IL

16.25 V19 **GENE ONTOLOGY ANALYSIS AS A TOOL TO IDENTIFY EFFECTS HPM**
M. Risling, M. Angeria, E. Malm, L. Malmgren
Karolinska Institute, Stockholm, SE

16.50 V20 **TEST AND INJURY ASSESSMENT METHODS FOR LESS-LETHAL KINETIC ENERGY PROJECTILES**
M. van der Horst, M. Philippens, J. J. M. Paulissen
TNO Defence, Security and Safety, Rijswijk, NL

17.15 V21 **A SUBSTITUTE OF GELATIN FOR THE MEASUREMENT OF DYNAMIC BACK FACE DEFORMATION**
O. Mauzac, C. Paquier
CREAL, Ministère de l'Intérieur, Le Chesnay, F
E. Debord, F. Barbillon, P. Mabire, J. F. Jacquet
DGA, Bourges, F

17.40 **End of Day 2**



**HORE
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Weingartener Str. 70
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GERMANY**

Platz für Visitenkarte

Zimmerreservierung / Accommodation

6th European Symposium on Non-Lethal Weapons, 16.-18.05.2011

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Registration form

6th European Symposium on Non-Lethal Weapons
Stadthalle Ettlingen, Germany

May 16 – 18, 2011

Last name

First name

Title / Position

The registration fee will be paid upon receipt of the invoice.

It is agreed that pictures taken during this event may be published.

Signature

Company / Authority / Postal Address

Participation (please tick)

Welcome Reception
May 16, 18.30 – 21.30 h

E-mail

Phone no.

Fax no.

**Fraunhofer-Institut für
Chemische Technologie ICT
Attn. Manuela Wolff
P. O. Box 12 40
76138 Pfinztal
GERMANY**



Session 6**GERMAN MOD STUDIES**

Chairman: Michael Klaus
WTD 52, Oberjettenberg, D

- 08.00 V22 MODELLING OF HUMAN BEHAVIOUR IN THE CONTEXT OF NON-LETHAL EFFECTORS**
J. Kramer, D. Rathmann
CASSIDIAN, Friedrichshafen, D
- 08.25 V23 CONCEPTUAL DESIGN OF ADVANCED NON-LETHAL WEAPONS**
K.-D. Thiel
Fraunhofer ICT, Pfinztal, D
H.-R. Tränkler
Universität der Bundeswehr München, Neubiberg, D
J. Aronshtam
Ludwig-Maximilians-Universität, München, D
- 08.50 V24 REMARKS ABOUT THE EFFECTIVITY OF MULTISENSORIC STIMULATION**
E. David, M. Benedix, A. Fretz
ZEPU GmbH, Witten, D
- 09.15 V25 DIRECTED ACOUSTIC ARRAYS**
E. Walschburger, N. Eisenreich, K.-D. Thiel
Fraunhofer ICT, Pfinztal, D
- 09.40 Coffee Break**

Session 7**CURRENT AND ADVANCED TECHNOLOGIES**

Chairman: Graham Smith
Home Office Centre for Applied Sciences and
Technology (formerly HOSDB), St. Albans, UK

- 10.10 V26 DIRECT ENERGY STOPPER - DESTO**
M. D'Urso, C. Falessi, A. Buonanno, M. G. Labate,
G. Calzolaio, N. Vacca
SELEX Sistemi Integrati, Rome, I
L. Zeni
Second University of Naples – SUN, Naples, I
- 10.35 V27 LONG-DISTANCE CONDUCTED ELECTRICAL WEAPON XREP FUNCTION, EFFECT, EFFECTIVENESS AND BALLISTIC FEATURES**
S. Kunz, M. Graw, O. Peschel
Ludwig-Maximilians-Universität, München, D
N. Grove
Bauhaus Universität, Weimar, D

**11.00 V28 LONG-RANGE MULTIPLE-CHARGE
HIGH-POWER ELECTRIC STUN GUN**
M. V. Silnikov, S. L. Kulakov, A. I. Mikhaylin,
O. G. Nemtshkin
Special Materials Corp., St. Petersburg, RUS

11.25 Poster Session

12.45 Lunch

Session 8 CAPABILITIES AND ACCEPTANCE I

Chairman: Ulf Sundberg
Karolinska Institute, Stockholm, SE

**13.45 V29 TOWARDS A HOLISTIC APPROACH TO NON
LETHAL CAPABILITIES IN THE SWISS ARMED FORCES**
D. Humair
armasuisse, Thun, CH

**14.10 V30 ADVANCED MILITARY REQUIREMENTS FOR THE
EMPLOYMENT AND USE OF NON-LETHAL WEAPONS**
M. Habermann
BMVg, Bonn, D

**14.35 V31 PERSPECTIVE AREAS OF LESS-LETHAL
WEAPONS RESEARCHES AND DEVELOPMENT**
V. V. Selivanov, D. P. Levin
Bauman Moscow State Technical University,
Moscow, RUS

**15.00 V32 NON-LETHAL WEAPONS AND
INTERNATIONAL HUMAN RIGHTS LAW**
S. Casey-Maslen
Geneva Academy of International Humanitarian
Law and Human Rights Geneva, CH

15.25 Coffee Break

Session 9 CAPABILITIES AND ACCEPTANCE II

Chairman: Helmut Oppenheim
Bundesministerium für Landesverteidigung und
Sport (Ministry of Defence and Sports), Vienna, A

**15.50 V33 NON LETHAL CAPABILITIES FOR CSDP
OPERATIONS – UPDATE OF ACTIVITIES
WITHIN EUROPEAN DEFENCE AGENCY**
E. Weissenböck
European Defence Agency, Brussels, B

- 16.15 V34** **NATO NON-LETHAL WEAPONS
CAPABILITIES-BASED ASSESSMENT**
J. Gutierrez
Joint Non-Lethal Weapons Directorate, Quantico, USA
J. Nelson
American Systems Corporation, Dumfries, USA
- 16.40 V35** **THE UK APPROACH TO THE MEDICAL
EVALUATION OF NON-LETHAL WEAPONS**
R. D. Sheridan
Dstl Porton Down, Salisbury, UK
- 17.05 V36** **MYTHS, FACTS AND HOAXES ON NLWS –
IMPACT ON THE INFOSPHERE AND ON THE
WIDESPREAD OF WEAPON SYSTEMS AND
TECHNOLOGIES**
M. Filippi
Livorno, I
A. Girella, G. Furno
Italian Revenue Police, I
- 17.30** **Chairman`s Closing Remarks**

Poster Programme

Posters will be presented during the whole Symposium. A special Poster Session will take place on Wednesday, May 18, 11.25 – 12.45 h. During this time authors should be present for discussion at their poster boards in the foyer.

OPERATIONAL AND TACTICAL ASPECTS

- P37 EARLY IDENTIFICATION OF OCCURRING INCIDENTS AT CROWD MOVEMENTS**
N. Eisenreich, K.-D. Thiel
Fraunhofer ICT, Pfinztal, D
- P38 PERIPHERAL SURVEY OF TARGETS FOR SUPPORTING NON-LETHAL LAUNCHER USE**
J. Neutz, H. Krebs, N. Eisenreich, K.-D. Thiel
Fraunhofer ICT, Pfinztal, D
- P39 THE HOSDB TASER X26 ELECTRICAL OUTPUT SPECIFICATION TEST**
M. Symons
Home Office Centre for Applied Science and Technology
(formerly HOSDB), St Albans, UK
- P40 TASER ELECTRONIC CONTROL DEVICES: THE MATURATION OF A BEST APPLICATION PRACTICE FOR THE TECHNOLOGY**
J. D. Ho
Hennepin County Medical Center, Minneapolis, USA
- P41 NLW OPERATIONAL EXPERIENCES IN INTERNMENT CENTRES IN IRAQ**
S. Orbons
Netherlands Defence Academy, Breda, NL

EFFECTS ON TARGET AND EVALUATION

- P42 NUMERICAL INVESTIGATIONS OF IMPACT OF NON LETHAL KINETIC PROJECTILES ONTO HUMAN THORAX**
N. Nsiampa, C. Robbe, A. Papy
Royal Military Academy, Brussels, B
- P43 A PRAGMATIC APPROACH TO QUANTIFY THE EFFECTS OF KENLW**
A. Papy, C. Robbe, N. Nsiampa
Royal Military Academy, Brussels, B
P. Drapela
armasuisse, Thun, CH
- P44 MEASUREMENT OF THE FORCE OCCURRING AT THE IMPACT OF A NON-LETHAL PROJECTILE WITH THE FLEXIFORCE SENSOR**
C. Robbe, N. Nsiampa, A. Papy
Royal Military Academy, Brussels, B
- P45 SWISS CONTRIBUTION TO BEHIND ARMOUR BLUNT TRAUMA RESEARCH**
B. Ott, P. Drapela, D. Humair
armasuisse, Thun, CH
- P46 MODELLING OF NON-LETHAL EFFECTORS**
J. Kramer, D. Rathmann, M. Hoppe
CASSIDIAN, Friedrichshafen, D

- P47 ASSESSMENT OF RISK TO EYE STRUCTURES INJURY BY A NON-LETHAL KINETIC WEAPON**
I. Borovsky, S. Benyamin, I. Zamir
Israel National Police Headquarters, IL
V. Belkin
Tel Aviv University, Tel Aviv, IL
- P48 CHARACTERISTICS OF WOUND BALLISTICS IN INJURIES INDUCED BY 9-MM AND 15,3-MM RUBBER BULLETS (WITH METAL CORE) FROM NON-LETHAL WEAPONS**
A. B. Belevitin, V. E. Parfenov, I. M. Samokhvalov, D. G. Grebnev
Military Medical Academy named after S.M. Kirov,
St. Petersburg, RUS
- P49 THE METHODS OF ESTIMATION OF HEALTH RISK FOR OPERATORS OF POLICE NON-LETHAL ACOUSTIC DEVICES**
S. Dragan, F. Torubarov, O. Grigoriev, V. Stepanov
Federal Medical Biophysical Centre of Federal Medical-Biological Agency,
Moscow, RUS
- P50 ELECTROHYDRODYNAMICAL PULSE: TEST FOR SAFETY, METHODS AND RESULTS**
O. Grigoriev, V. Stepanov, A. Koklin, A. Sazhin
Federal Medical Biophysical Centre of Federal Medical-Biological Agency,
Moscow, RUS
M. Antceleovich
"Rotek-Elpom Ltd.", Moscow, RUS
- P51 STUDY OF TWO TECHNIQUES TO MEASURE THE DEFORMATION OF A SURROGATE THORAX WALL**
S. Hedenstierna
FOI, Tumba, SE
- P52 BIO-ACOUSTIC EFFECTS IMPLICATIONS FOR NON-LETHAL WEAPONS**
N. C. Nicholas
Institute for Non-Lethal Defence Technologies (INLDT),
Pennsylvania State University, State College, USA

CURRENT AND ADVANCED TECHNOLOGIES

- P53 LARGE EDDY SIMULATION OF WATER-JET OF PULSED ANTI-RIOTS WATER CANNON**
Zhan Renjun, Wang Song
Engineering College of CAPF, Xi'an City, PRC
- P54 NON-STANDARD APPROACH TO FIRE-FIGHTING**
M. Janicek
Tomas Bata University, Zlin, CZ
P. Fiala
Brno University of Technology, Brno, CZ
- P55 EXPLOSIVE TECHNIQUE USE FOR PROTECTION AGAINST SURFACE FIRE BY HELP OF LUMPED BLASTS**
M. Janicek
Tomas Bata University, Zlin, CZ
P. Fiala
Brno University of Technology, Brno, CZ

P56 USE OF EXPLOSIVE TECHNIQUE FOR ESTABLISHMENT OF FIRE PROTECTION ZONES BY GROUND EXPLOSIVE FRACTURING

M. Janicek

Tomas Bata University, Zlin, CZ

P. Fiala

Brno University of Technology, Brno, CZ

P57 IMPORTANT OBJECTS PROTECTION

M. Janicek

Tomas Bata University, Zlin, CZ

P. Fiala

Brno University of Technology, Brno, CZ

P58 THE RELEVANCE OF MICROWAVE HEARING AS A NLW

E. David, M. Benedix, A. Fretz

ZEPU GmbH, Witten, D

P59 NON-LETHAL LAUNCHER

H. Krebs, J. Neutz, P. Scholz

Fraunhofer ICT, Pfinztal, D

P60 INHIBITORS FOR NON-LETHAL ANTI MATERIAL APPLICATIONS

J. Schubert, A. König, J. Neutz

Fraunhofer ICT, Pfinztal, D

P61 RHEINMETALL WAFFE MUNITION'S MULTIFARIOUS NLW CAPABILITIES FOR LOW INTENSITY CONFLICTS

M. Zuther

Rheinmetall Waffe Munition GmbH, Trittenau, D

P62 PORTABLE SUPER-SONIC ABRASIVE WATER-JET DESTRUCTOR OF THE IMPROVISED EXPLOSIVE DEVICES

I. Plaksin, L. Rodrigues, J. Gois

ADAI / LEDAP, University of Coimbra, Coimbra, P

P63 NON-LETHAL EXPOSURE OF THE PERSON BY THE INFORMATION LABELS OF SPECIAL CHEMICAL AGENTS

A. V. Tovmash

Karpov Institute of Physical Chemistry, Moscow, RUS

L. S. Vilenchik

MKB Electron, Moscow, RUS

CAPABILITIES AND ACCEPTANCE

P64 LEGAL ASPECTS OF USING NON-LETHAL WEAPONS BY RUSSIAN POLICE

A. M. Silnikov

The Interior Ministry University, St. Petersburg, RUS

P65 NON-LETHAL WEAPONS AND TRANSFORMATION

J. Gutierrez

Joint Non-Lethal Weapons Directorate, Quantico, USA

J. Nelson

American Systems Corporation, Dumfries, USA

Ettlingen City Plan

How to find the venue

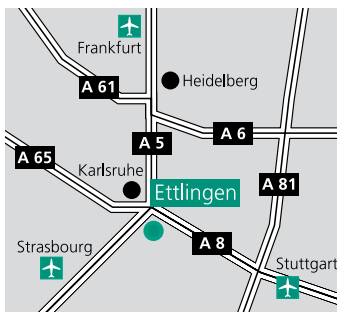
Karlsruhe, A5, Frankfurt Durlach. B 3



Ettlingen is located in the vicinity of Karlsruhe, approx. 120 km south of Frankfurt / Frankfurt International Airport just beside the Autobahn A5.

Other airports are Strasbourg, France (approx. 100 km) and Stuttgart (approx. 90 km).

From the airport it is possible to travel by train (approx. 1 hour) to Karlsruhe Hauptbahnhof (Main Station), then take the "Stadtbahn" (tram) S1 or S11, direction Ettlingen or Ittersbach. Exit the tram at the stop "Ettlingen Stadt" (Stadtbahnhof Ettlingen) (journey time approx. 15 min). After a short walk (approx. 10 min) you reach the "Stadthalle Ettlingen" (see map).



Points of Contact

Chairman

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Fax +49 (0)721 / 4640-111
E-Mail klaus-dieter.thiel@ict.fraunhofer.de

Conference Management

Manuela Wolff
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Exhibition

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