ELROB - ISMCR 2018
21th International Symposium on Measurement and Control in Robotics
26-27 September 2018 – International CBRNE Institute, MONS, Belgium

ROBOTICS FOR THE CHANGING WORLD

REDUCED CATALOGUE

www.imeko.org – TC 17

European Society for Defense
Hainaut Sécurité
Belgian Royal Higher Institute of Defense
Climbing and Walking Robots Association
Ladies and Gentlemen,

Dear friends,

the International CBRNE Institute is very pleased to welcome you to ELROB 2018.

I would like to thank especially the ELROB committee for the trust in our capacities to organize such a great event.

Thank you also to the companies which accepted to sponsor this event, their contribution helped greatly to the organization of this activity.

Finally, thank you to the staff of the ICI and the RPA Hainaut Sécurité for their indispensable support to the success and their kind availability.

The ICI with its 2 groups of experts becomes by its international dimension more and more a key player in all matters concerning CBRNE (Chemical, Biological, Radiological, Nuclear and Explosives) at both national and international level. Indeed, representatives from no less than 34 countries passed through our walls last year; and the trend still seems to be towards increasing this figure this year.

The advent of robotics has greatly improved the response capabilities of both military personnel and first responders in hostile or dangerous environments; it saves lives and is therefore of considerable interest to all. Our Institute therefore has a role to play not only for the benefit of first responders but also by cooperating with regional and national academic institutions in our country and abroad.

Robotic is now integrated in our “Knowledge Centre” managed by Professor Yvan Baudoin and Brigadier General Ioannis Galatas

I hope that this week’s trials will be useful to you or at least open your eyes to this very particular subject but also allow you to discuss on the subject with both the experts present and your colleagues.

Feel free to visit the stands in the marquee, they will present the latest technical developments in the field.

The ELROB event has been doubled this year by the organization of the 21st International Symposium on Robotics (ISMCR’2018) under the auspices of the International Confederation IMEKO, and more particularly its technical committee (TC17) coordinator of research in robotics, chaired by Japan, of which Belgium is an active member in charge of the organization of this symposium.

Thank You

Y.Baudoin

Director ICI

ICI/EKC Manager
Welcome to the military ELROB 2018 in Belgium.
This year’s event is already the tenth edition of the European Land Robot Trials. Over the years, the trials have established themselves as Europe’s leading outdoor robotics event.

After exceedingly successful ELROB events in Hammelburg (Germany), Thun (Switzerland), Warsaw (Poland), and Eggendorf (Austria) this seventh presentation of the military version of ELROB takes place at the RPA Hainaut Sécurité site in Lens and is kindly co-organized by the International CBRNE Institute (ICI), Les Bons Villers. Bringing together potential end-users, members of the robotics research community and industry representatives, ELROB once more demonstrates the successful cooperation between the European countries.

The purpose of the European Land Robot Trial is to provide a comparative evaluation of outdoor robotic systems across applications such as basic mobility, scouting, EOD, convoying, etc. The trials will provide important information to potential users in terms of the status of current technologies. Through a baseline comparison of systems, it is also a prominent opportunity for vendors to understand current limitations and needs of end-users. ELROB furthermore provides an important venue for academics to understand challenges of technology transfer from research to field applications and basic research problems that remain unsolved.

The military ELROB addresses the fact that it is generally difficult for companies to get access to user feedback about their systems from actual end-users in the theatre. The event offers a unique insight into possible use cases. ELROB is thus an important event for all participants including end-users, providers, research institutes, and universities.

To promote new and future-oriented innovations, European Robotics, the scientific co-organiser of the event, will award special Innovation Prizes. The purpose of these prizes is to recognize new ways of solving the challenges at hand as well as approaches with very strong potential.

We are convinced that this ELROB will again provide important insight into the state of the art regarding military use of ground robotics and will be a valuable resource in further dissemination of UGV technology.

We wish all ELROB visitors and participants a pleasant and successful stay in Belgium!

With kind regards

Dr Frank E. Schneider
Deputy Head of the Cognitive Mobile Systems Department (CMS)
Fraunhofer Institute for Communication, Information Processing and Ergonomics FKIE
frank.schneider@fkie.fraunhofer.de
Military ELROB 2018 – Lens, Belgium
The Royal Higher Institute for Defence (RHID) is the reference body or think tank of the Belgian Ministry of Defence in the field of security and Defence.

In order to fully accomplish its mission, the RHID has set the objectives of focusing the attention - by identifying research and discussion topics, and themes of interest - as well as deepening and disseminating knowledge.

It is also responsible for managing the multiannual programme for scientific and technological research, including the security and Defence studies, as well as the scientific research of the Royal Army and Military History Museum.

Scientific & Technological Research is organized in 3 main domains to cover the whole spectrum of ongoing and future scientific research: Data Acquisition and Processing (OAP), Mobility, Systems and Protection (MSP), Human Factors and Medicine (HFM).

Through national and international partnerships, the RHID has developed an extensive network to exchange ideas and experiences.

Triple Helix, also known as Golden Triangle, which actively involves the 3 main actors (industry, the academic world and the administration) is the preferential approach followed by RHID to conduct scientific and technological research. This way, the best balance is to be achieved between outsourcing and in-house expertise.

Organising conferences, colloquia and seminars as well as publishing papers by researchers at the Belgian Ministry of Defence, and the Institute in particular, fully contribute to knowledge transfer. We are proud to support ISMCR and ELROB’2018.

The High Studies for Security and Defence, in the form of a meeting place with seminars and visits, provides training in these fields for high-level staff, both from the ministry
telmax HYBRID
The best of both worlds:
Compact and strong!

Features
- Strong precision 6-axis manipulator with TCP control and automatic tool change
- Fast execution
- Lifting capacity up to 45 kg (99 lbs)
- Compact dimensions
- 4-truck drive system with a top speed of up to 1.5 kmh (0.3 mph)
- More than 20 pre-programmed automatic motion sequences
  - For manipulator and flippers
- Interchangeability of accessories within the telmax family
  - e.g., batteries, tools, cameras and sensors
- Optional version for CBRN defense

Benefits
- Intuitive control of complex manipulator movements
- Ideal manipulator for working with heavy tools and firing systems
- Precise operating power with heavy objects in confined spaces
- Extreme mobility to overcome stairs, steps, gaps and obstacles
  - up to 46 cm (18 inches)
- Easy access to predefined automatic motion sequences
- Suitable in a wide variety of applications
- Improved resistance against decontamination agents

telmax PRO
The original telmax:
Compact design and high reach!
telemax PLUS
The biggest and strongest telemax: Versatile and strong!

Features:
- Exceptionally strong: precision 6-axis manipulator with TCP control and automatic tool change
- Lifting capacity up to 75 kg (165 lbs)
- Double pickload area on the chassis
- A-track drive system with a top speed of up to 6 km/h (3.7 mph)
- More than 30 pre-programmed automatic motion sequences for manipulators and flippers
- Interchangeability of accessories within the telemax family, e.g., batteries, tools, cameras, and sensors

Benefits:
- Intuitive control of complex manipulator movements
- Particularly suitable for operating with very heavy objects
- More space for additional payloads such as up to 4 batteries and other accessories, e.g., systems or sensor platforms
- Good mobility to overcome stairs, slopes, and obstacles up to 40 cm (16 inches)
- Easy access to predefined automatic motion sequences
- Extensibility in a wide variety of applications

AVRORA – www.kt-avrora.ru
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<th>Pictures of the vehicle:</th>
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**BROKK** [www.brokk.com](http://www.brokk.com)

**DIEHL DEFENCE** [http://www.diehl.com/de/diehl-defence.html](http://www.diehl.com/de/diehl-defence.html)
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*(Munich Cognitive Autonomous Robot Car, 3rd generation)*
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<td>(Munich Cognitive Autonomous Robot Car, 4rd generation)</td>
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SMV – DIEHL DEFENCE Smart Military Vehicle

Pictures of the vehicle:

Name of vehicle: TULF (Technologieträger Unbemanntes Landfahrzeug)
Pictures of the vehicle:

Name of vehicle: StrAsRob
RHEINMETALL DEFENCE - https://www.rheinmetall.ca/fr/rheinmetall_canada/index.php

ECA GROUP https://www.ecagroup.com

Pictures of the vehicle: Please provide detailed pictures from ALL sides of the vehicle

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<tr>
<th>Sat/Sun 22/23</th>
<th>Mon 24</th>
<th>Tue 25</th>
<th>Wed 26</th>
<th>Thu 27</th>
<th>Fri 2/8</th>
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<tr>
<td><strong>Team Arrival</strong> (whole day)</td>
<td>Official Opening Ceremony 10:00 - 11:00 (SH)</td>
<td>Urban Recon 9:00 - 17:30</td>
<td>Mule 9:00 - 17:30</td>
<td>Search &amp; Rescue / MedEvac 9:00 - 17:30</td>
<td>Departure Teams and Exhibitors 10:00 - 12:00</td>
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<tr>
<td><strong>Preparations and Tests</strong> (whole day)</td>
<td>Team Briefing Convoying 11:30 - 12:00</td>
<td>Welcome VIP-Press 10:00-11:00 (SH-1)</td>
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<td>Convoying 12:30 - 17:00</td>
<td>Welcome ISMCR’2018 session 1 10:00-10:30 (SH-2)</td>
<td>ISMCR’2018 session 2 10:30-12:30 (SH-2)</td>
<td>ISMCR’2018 session 2 10:30-12:30 (SH-2)</td>
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<td>Team Briefing EOD / IED 11:30 - 12:00</td>
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<td>ISMCR’2018 session 4 13:30-17:30 (SH-2)</td>
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<td>Team Briefing Search &amp; Rescue / MedEvac 17:30 - 18:00</td>
<td>Award Ceremony &amp; Farewell &amp; BBQ ELROB participants 18:30 - 22:30</td>
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<td>Get-Together ELROB participants 18:30 - 20:00 at Hainaut / drinks only</td>
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<td>Together ISMCR Participants MONS Hotel 19:30-22:30</td>
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<td><strong>Exhibition Setup</strong> (whole day)</td>
<td>Exhibition / Static Display 11:00 - 17:30</td>
<td>Exhibition / Static Display 11:00 - 17:30</td>
<td>Exhibition / Static Display (incl. VIP Tour) 11:00 - 17:30</td>
<td>Exhibition / Static Display 11:00 - 17:30</td>
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Transforming operational experience to operational solutions:
a full spectrum of unique products for hazardous substances management

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