



WTC 2013

5th world TRIBOLOGY congress

World Tribology Congress 2013

WTC V

Turin –ITALY

Sunday 8th to Friday 13th of September 2013

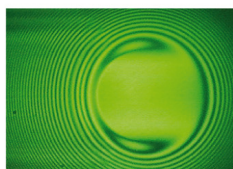
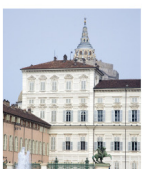
Nowadays, technological development can no longer be mentioned without taking into account environmental impact, economic sustainability and energy efficiency. The need for the development of technologies that are in harmony with nature is now a principle acknowledged worldwide. The objective of the 2013 WTC is the development of all the various tribological technologies in order to improve process efficiency, limit energy consumption and the amount of materials used. Thus mankind will advance in harmony with nature.

World Tribology Congress

The World Tribology Congress, WTC, is set to take place in Turin, in September 2013 (8th-13th of September). It is the most important event for Tribologists all over the world. The Congress takes place every four years and it involves professors and researchers with academic backgrounds as well as experts from research centres and from the most important companies working in various tribological fields.

The main aims of the Congress are:

- To promote Tribology.
- To contribute to technological development involving Tribology.
- To promote International relations and exchanges.
- To highlight how basic and applied tribological studies can be paramount to the environment.
- To promote the exchange of information between universities and companies.
- To highlight new research fields.

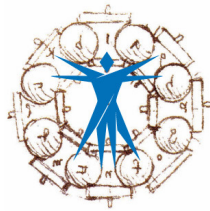


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Previous World Tribology Conferences

The previous conventions took place in London in 1997, in Vienna in 2001, in Washington DC in 2005 and in Kyoto in 2009.



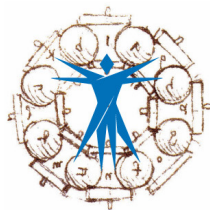
Opening Plenary Session – WTC IV, Kyoto, 2009.



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Exhibition – WTC IV, Kyoto, 2009



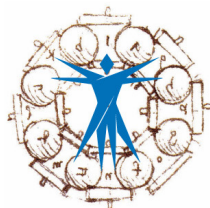
Congress Official Lunch – WTC III, Washington DC, 2005



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Congress Concert – WTC II, Vienna, 2001



Congress Official Dinner – WTC I, London, 1997.



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The WTC involves mainly scientific events, symposiums on specific topics, a large exhibition and various related events. Previous WTCs usually lasted five days. More than 800 scientific works, divided in approximately ten concurrent sessions, were presented. At least fifty exhibitors showcased their products and the number of participants exceeded one thousand. Prominent personalities attended the opening ceremony (in Japan his imperial majesty, Prince Akishino made a speech).

Tribology

Tribology is the science /engineering of interacting surfaces in relative motion. It includes the study and application of the principles of friction, lubrication and wear. Since the phenomena at play are very complex, Tribology is a multidisciplinary science and it involves some elements of physics, chemistry, materials science, energy science and mechanics. In the last few years new fields of study within Tribology have emerged: Nanotechnology, Ecotribology and Biotribology. A good design from a tribological point of view means significant savings in terms of energy and materials thanks to the reduction of frictions and wear and also a radical cut in the release of pollutants in the environment. Both these aspects not only make financial savings a distinct possibility, but they are also at the root of environmentally sustainable progress.

Even though Tribology is not a familiar word for many people, the applications of this discipline include numerous aspects of modern technology ranging from hard-disks to artificial prosthetics, from cars to planes, from seals to gears, from surface coatings to MEMS (Micro Electro-Mechanical Systems).

Congress plan and subjects

The Congress plan includes scientific sessions in concurrence with symposiums on specific Tribology subjects, plenary sessions, a large technical exhibition and other events on the side. There ought to be approximately one thousand attendees from all over the world.

The session will be divided according to the following main subjects:

- Ecotribology



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- Biotribology
- Biomimetics
- Surface Tribology
- Dry Friction and Wear
- Lubricants and Additives
- Lubrication Fundamentals
- Nanotechnology
- Bearings
- Tribology of Machine Elements
- Tribology in Manufacturing
- Tribology of Materials
- Joints Mechanics
- Novel Aspects in Tribology

Special attention will be paid to Ecotribology and Biotribology.

Ecotribology, otherwise known as environmentally friendly Tribology has gained increasing importance over the years as a key science for green and sustainable progress. International bodies are setting ever stricter goals to reduce global warming. Growing importance is given to the possibility of recycling products and the impact they might have on nature. Ecotribology is mainly aimed at saving resources and materials, optimizing product usage and design, reducing energy consumption and protecting nature.

Biotribological studies concern friction, wear and lubrication in people and animals. To understand how nature solves tribological problems in the animal world can truly help devise engineering solutions.



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Surface coatings help reduce friction and increase wear resistance or are simply aesthetically pleasing. New types of engines, especially as far as motoring is concerned, require components with increasingly higher wear resistance and that can work well even after one million kilometres. One needs only to think of fuel injectors and o-rings for cylinder liners. Beside reducing wear, these components can also decrease friction. Calculations show that these coatings allow vehicles to consume up to 40% less energy, with a consequent reduction of global CO₂ emissions of 1-2%.

Lubricants also have numerous positive qualities. In burr removal technologies adding a lubricant between tool and work surface saves up to 30% more energy and significantly increases the tool's life. There are expectations concerning the development of long life, low viscosity oils with new additives able to modify friction and reduce wear and oxidation. Numerous studies are being carried out to reduce the environmental impact of the oils and make them biodegradable, there are also studies concerning vegetable oils, minimum lubricant levels required and water lubrication.

Air lubrication is also very interesting as it is oil free and because it offers a significant reduction of friction. Another reason that makes this technology indispensable in certain applications is the possibility of obtaining very high levels of precision handling or very high speeds in linear guides or spin stands.

Low energy consumption has become an increasingly important topic thanks to machine components able to reduce rolling and sliding friction. Both bearings and seals can improve the performance of a machine with suitable surface textures, thus achieving low energy consumption. Energy efficiency of refrigerators and air conditioners has increased in the last few years and Tribology helped improve the performance of compressors, which are a key element in the workings of these appliances.

Congress opportunities

The Congress represents a unique opportunity for companies that want to take part in the technical exhibition as they can gain great visibility and keep updated on the latest technological advancements. One of the objectives of the Congress is the opportunity to discuss the most recent research-advancements and strengthen the fundamental link between industry and universities. Groups of experts in the various disciplines and technologies will be able to exchange information and network.

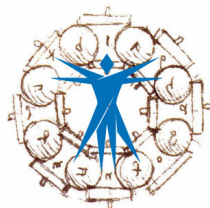


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The 2013 WTC will highlight how basic and applied tribological studies can provide a fundamental support to minimize environmental impact. Biocompatible lubricants, low friction bearings and surface coatings are only a few examples of ways to reduce the environmental impact of mineral oils and how materials and energy can be saved by reducing friction and wear.

If your company works in any of the following fields this conference is for you: Aerospace, Food Processing, Automotive Industry, Biomedicine and Biomaterials, Machine Components (seals and sealing systems, bearings, moving parts, brakes, clutches etc.), Energy, Trains and Railways, Lubricants and Additives, Maritime Industry, Nanotechnology, Production, Production Technologies and Surface Treatments.

Congress Venue

The Congress will take place in the Palaolimpico building in Turin. The building has a large exhibition space with a total area of 4,000sq m. It allows for parallel sessions as well as plenary ones with more than 3000 seats available.

Technical exhibition and sponsorships

The technical exhibition has always been an important part of previous WTCs. Seeing the interdisciplinary nature of Tribology and its many applications and spin offs, many types of exhibitors can attend the Congress. Usually, side by side with companies producing tribological lab equipments, lubricants, chemical products, bearings, gears and other fundamental components for tribological applications and companies specialized in mechanical, chemical and physics related work and treatments, there are also other businesses participating in the exhibition: from machine manufacturers, to large corporations (cars, engines etc), from local businesses to technical publishing houses.



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The exhibitors can rent exhibition spaces of various dimensions and can show their products to experts as well as non-specialists. In the last WTC, in 2009, guided tours were organized including school-trips. The initiative garnered great success. The possibility of opening the exhibition to people outside the field will certainly be studied in depth.



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