

Issue 1 ● February 2011

Dear Secretary,  
Dear Members of the National EAEC Societies,  
Dear Friends and Colleagues,

In the first issue of the 2011 Newsletters, the European automotive events of the first half of this year are mentioned, as far as I am informed. Please send me automotive events, which are not on the list. I will announce them in the next issues.

As in December and January, there were no events. I cannot mention congresses in the column „*Post Congress Information*“.

A presentation of the FISITA HQ is given. On 8 January 2011 there was a meeting of the Internal & External Relations Committee in the HQ of FISITA in London. On this occasion, Murli Iyer and I took some pictures of the office of the FISITA HQ, which are shown in this issue.

Unfortunately I cannot announce any special birthdays, any automotive awards or other occasions in the national societies which might be of general interest. If some special things happen in your society that are worth announcing, please let me know.

The main event of our EAEC family is the

## **EAEC 2011 Congress**

14 – 16 June 2011

Valencia, SPAIN

<http://eaec2011.com/>

On 8 February 2011 there was a meeting of the EAEC 2011 Congress Committee in Valencia. From the meeting I can give you more details about this congress. In addition, I would like to present the members of the organizing committee and the „Exhibition & Sponsorship Opportunities“ as well as the hotel list.

More information about the tourist attractions of Valencia and the surrounding area are given. Please note that the next FISITA World Congress will be held in 2012 in Beijing, China.

At the recent Executive Board Meeting in Mainz, Ms. Gong, SAE-China, informed that the dates originally proposed for the FISITA 2012 World Automotive Congress in Beijing (15 -19 October) are no longer available. New dates have been offered: **27 – 30 November 2012**.

In „*The Historic Corner*“, I am starting with the very first automobiles with combustion engines before the great inventors Benz, Daimler and Maybach. These “fathers” of the industrial development of the automobile will be mentioned in issue 2 in April 2011.



Brigadier ret. Prof. Günter Hohl  
EAEC President



## Future Main Events

This year, one of the most important automotive meetings in Europe will be the:

### **EAEC 2011 Congress**

The Spanish Society of Automotive Engineers (STA) will host the  
13th EAEC European Automotive Congress 2011,  
which will take place from  
June 14th - June 17th 2011  
in Valencia, Spain.

The theme of the Congress is:

### **The Automobile in the Second Decade: Sharing all Energy Solutions**

The biennial EAEC Congresses provide excellent opportunities for automotive experts to present the latest findings and to exchange information in the field of automotive and related industries.

One of the most interesting events of the EAEC European Automotive Congress 2011 is the accompanying exhibition.

The EAEC (founded in 1985) supports the cooperation of European automotive engineers societies (member societies from 24 countries) within the core of FISITA and organizes congresses with the objective of interchanging information and creating space for all-European professionals' meetings..

The venue of the EAEC 2011 Congress is the:

### **UNIVERSIDAD POLITÉCNICA DE VALENCIA**



The University is located to the north of the city of Valencia in a peaceful setting that borders with traditional farmland.

UPV consists of nearly 60 buildings arranged in an orderly manner around the Agora, which is the centre of life on the campus.



There are over 108,000 square meters of green spaces that house an open-air museum of sculpture.

Congress building

The branches of studies are agronomy, civil engineering, architecture, industrial engineering, information and communication technologies, biotechnology, aeronautics, business management and administration as well as fine arts.

UPV currently has 37,000 students, 2,600 teaching staff members and 1,700 administrative personnel.

The relevance of UPV's research outputs underpins the strong international presence of the institution, which has close collaborative links with the best universities in the world.

It is an innovative and entrepreneurial University, with effective mechanisms for the dissemination of scientific and technological results, and which excels in the training of researchers and in the creation of technology-based companies.

The area where the congress will be held offers the best facilities providing a perfect space to showcase your products and services.



Coffee shop

## TOPICS OF THE CONGRESS

	Monday 13 <sup>th</sup>	Tuesday 14 <sup>th</sup>	Wednesday 15 <sup>th</sup>	Thursday 16 <sup>th</sup>	Friday 17 <sup>th</sup>
09:00 11:00		Opening Ceremony	Technical Sessions	Technical Sessions	Executive FISITA
11:00 13:00		Plenary Session	Technical Sessions	Closing Plenary Session	Executive FISITA
13:00 14:30		Lunch	Lunch	Buffet	Lunch
14:30 18:00		Technical Sessions	Technical Sessions	FISITA Committees EAEC Council	FISITA Council
20:00 22:00	Welcome		Congress Dinner	FISITA Dinner	

A

POWERTRAIN AND GREEN TECHNOLOGIES



- A1 Hybrid Drives
- A2 Electric Drives
- A3 Powertrain Performance
- A4 Fuels and Lubricants
- A5 Noise, Vibration and Harshness (NVH)
- A6 Environment and Vehicle Recycling

D

MANUFACTURING AND PROCESS INNOVATION

- D1 Production Technology
- D2 Production Processes
- D3 Supply Chain and Logistics
- D4 Flexible Processes
- D5 New Quality Inspection Technologies

B

NEW CONTROL SYSTEMS AND MATERIAL

- B1 Passenger Cars
- B2 Buses and Trucks
- B3 New Materials
- B4 New Vehicle Systems
- B5 TIC Systems

E

SAFETY AND HUMAN FACTORS

- E1 Vehicle Safety
- E2 Human Factors and Safety
- E3 PMR Safety
- E4 Accident Analysis and Reconstruction
- E5 New HMI Technologies
- E6 Haptic Technologies

C

NEW CONTROL SYSTEMS AND MATERIAL

- C1 Suspension
- C2 Steering Systems
- C3 Brakes
- C4 Tyres
- C5 Advanced Dynamic Vehicle Control

## CONGRESS REGISTRATION

The online registration is now available on the homepage

<http://www.eaec2011.com/>

**Reduced registration fees are available to:**

- Delegates who belong to one of FISITA's 39 national member societies – please visit [www.fisita.com/membership/members](http://www.fisita.com/membership/members) to see if you qualify.
- Delegates from non-OECD countries – a list of OECD countries: can be found at <http://www.oecd.org/>
- Students
- Speakers – one speaker per presentation is entitled to the reduced speaker fee.
- Session Chair -

<b>REGISTRATION AND TRAVEL</b>
VALENCIA, SPAIN
ACCOMMODATION
<b>DELEGATE REGISTRATION</b>
MEDIA & PRESS
VENUE

The congress fees in Euros are follows:  
*Please use the reduced fee before 15<sup>th</sup> March“*

	Until 15 <sup>th</sup> March	From 15 <sup>th</sup> March
Delegates (Fisita member societies)	700	760
Delegates non OECD	550	600
Speakers, session chairs & poster authors OECD	600	600
Speakers, session chairs & poster authors non OECD	450	450
Students	200	200
Day ticket	500	500
Accompanying person	200	200

## EXHIBITION & SPONSORING OPPORTUNITIES

The brochure for the Exhibition & Sponsorship Opportunities is now ready and available on the home page of the EAEC 2011 Congress

The biennial EAEC Congresses provide excellent opportunities for automotive experts to present the latest findings and to exchange information in the field of automotive and related industries.

Another interesting part of the EAEC European Automotive Congress 2011 is the accompanying exhibition and the possibilities of advertising via sponsoring.



**WHY EXHIBIT AT EAEC 2011?**

The accompanying exhibition is an excellent opportunity to demonstrate the latest products and services, to present developments, proceedings or the company itself.

The target group of the congress are managers and specialists of car manufacturers, suppliers, logistical and freight companies, science, research and development specialist and representative of international automotive organizations. The exhibition is a perfect opportunity to retain your present and gain new customers.

The Exhibition area will be located near the entrance of the congress building, where the reception desk is located. All conference delegates will have to pass through this area in order to access the coffee breaks and lunches

**EXHIBITION PACKAGE**

Has a price of 1,500 EUR (VAT not included) and includes an outdoor stand in white lacquered aluminum structure in the size of 12 m<sup>2</sup> (3.00 / 2.80 m height).

The additional equipment of the stand includes the following:

- Boards covered with white melamine (8 m / m thickness)
- Cornice PVC modular blue of 0.42 m with decorative white peaks
- Cover: bent sheet metal and finished in grey / green.
- Two fluorescent screens 2 x 40 W
- Electrical installation according to standards of low tension
- Vinyl cutting each stand with a max. 20 characters and two numbers
- 2 Chairs, 1 Table, 1 Wastepaper Basket, 1 Desk, 1 Stool

**INFORMATION ON SPONSORSHIP PACKAGES**

The EAEC 2011 Congress provides multiple opportunities for sponsorship. It enables companies and other automotive organizations to participate and promote during the Congress.

To mention all benefits in this issue would extend the space of the Newsletter.

There are three main packages of sponsoring offered:

**SILVER PACKAGE**

**GOLD PACKAGE**

**PLATINUM PACKAGE**



The benefits are graded to the kind of packages. Some of the advantages are listed below:

Complimentary full congress registrations and admission tickets to the Congress Dinner for several persons.

Display of company logo in the main session hall and acknowledgement in all congress and exhibition publications as well as placement of company logo in the congress bag.

Advertisement in the announcements and in the Congress proceedings CD-ROM

Placement of company logo on the congress website and brief description of the company profile with logo in the Final Programme booklet

Verbal acknowledgement at the opening of the congress and the exhibition

The Platinum Package includes among other benefits the priority selection of two exhibition booths and the Gold package for one booth.



**DELEGATE NAME BADGES AND LANYARDS**

Organizations are invited to be the exclusive sponsor of the name badges and lanyards/neck cords.

All delegates will be provided with a congress badge printed with the congress logo and the name of your corporation, and a lanyard printed with your corporate logo.

Participants must wear their name badge throughout the Congress and official Congress events.

**CONGRESS INTERNET CENTRE**

Organizations are invited to sponsor the Congress Internet Centre, a multi-station computer centre networked with internet, e-mail and printer access for delegate use.

The three sponsors mentioned are announced in many ways and have complimentary congress regis-



**DELEGATE NOTEPAPER AND PENS**

Notepaper and pens printed with the company logo and will be included in the Congress Bags, given to each registrant at the congress.

More details can be found on the congress homepage:  
<http://www.eaec2011.com/content/exhibition>



## Accommodation

Five hotels in three categories are offered and can be directly booked.

These hotels can be found on the FISITA 2011 website:

<http://www.eaec2011.com/content/accommodation>

*Please find more details about prices and location on the above homepage!*



### HOSPES PALAU DE LA MAR \*\*\*\*\*

Navarro Reverter, 14, 46004

<http://www.hospes.com/en/hotel-valencia->

### NH LAS ARTES \*\*\*\*

Avenida Instituto Obrero, 28, 46003

<http://www.nh-hoteles.es/nh/es/hoteles/espana/valencia>,



### BARCELO \*\*\*\*

Avenida de Francia, 11, 46023

<http://www.barcelo.com/>



### NH CIUDAD DE VALENCIA \*\*\*

Avenida del Puerto, 214, 46023

<http://www.nh-hoteles.es/nh/es/hoteles/espana/valencia>,



### NH EXPRESS LAS ARTES \*\*\*

Avenida Instituto Obrero, 26, 46013

<http://www.hotelnhexpresslasartes>.

**Social Programme**

The Welcome Reception on **Monday, 13th June 2011, 20:00**, will take place at the

**Exhibition Palace**



This venue was built in 1909 to house a regional exhibition in Valencia. It has 5 rooms available for company meetings, business events and incentive trips to Valencia plus a patio for corporate hospitality and entertaining.

The Great Hall is particularly impressive with stained glass windows based on Valencia's glorious Medieval period.



**EXCURSION 1:  
 VALENCIA CITY SIGHTSEEING AND ALBUFERA**

The tour will offer an overview of the old and new city. The special tour bus will also drive us to the city surroundings at the Albufera Nature Reserve where a special lake connects to the sea.

Characteristics of the tour:

**Date: June 14th, 2011**

Estimated length of the visit: 2 hours.

The visit will end at the Valencia City Hall.

**Meeting point: 16:00 h**

(to be confirmed depending on the Welcome Reception) at the Conference Building, Registration Room. Building 6G. UPV



**Albufera Lake** lies approx. 12 km south of the city Valencia.

The shallow lake is separated by a sand barrier from the Mediterranean Sea. The fresh water lake covers a surface of 27 sq.km, its maximum depth measures 1.5 metres. Six small islands lie in the Albufera Lake

Other important ecosystems with a high ecological value that we can find in the surroundings of the lake are the beach, the malladas (temporary small lagoons between the fringes of dunes), the wetland and the Mediterranean forest.







Estación del Norte (North Station)

## EXCURSION 2: HISTORICAL VALENCIA, CENTRAL MARKET TOUR AND TASTING OF TRADITIONAL FOOD

This visit is focused on the historical city centre and the most outstanding monuments of the city such as the Estación del Norte (North Station), Torres de Serrano y Quart (Serrano and Quart Towers), Mercado Central (the Central Market), la Lonja (the old silk exchange), Plaza Redonda (the Round Square), the Cathedral, Plaza de la Virgen (Virgin Square) and the exterior of the Basilica and the Generalitat Palace.



(Serrano Towers),

The visit includes a special tour to the Cathedral and a tasting of traditional Valencian food and drink such as ham, cheese, wine, **paella** etc. at the Central Market of Valencia.

Characteristics of the tour:

**Date: June 15th, 2011**

Length of the visit: 4 hours

**Meeting point: 9:30 h.**



Cathedral; Front view



Cathedral; Inside



Cathedral; Rear side view

**Paella** is a Valencian rice dish that originated in its modern form in the mid-19th century near Lake Albufera, a lagoon in Valencia, on the east coast of Spain.. Many non-Spaniards view paella as Spain's national dish, but most Spaniards consider it to be a regional Valencian dish. Valencians, in turn, regard paella as one of their identifying symbols.

There are three widely known types of paella:

**Valencian paella** (paella valenciana) consists of white rice, green vegetables, meat (rabbit, chicken, duck), land snails, beans and seasoning.



**Seafood paella** (paella de marisco) replaces meat and snails with seafood and omits beans and green vegetables



**Mixed paella** (paella mixta) is a free-style combination of meat, seafood, vegetables and sometimes beans.

**But there are many others kinds of Paellas well!**

Most paella chefs use **Calasparra** or **Bomba** rices for this dish. Other key ingredients include saffron and olive oil.

Calasparra benefits from being crossed by four rivers, including the Segura. This has enabled the cultivation of rice, for which the town is noted, and dates back to the 14th century.

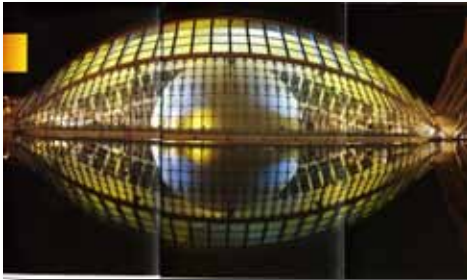
Bomba rice is a special sort and is expensive compared to other rice varieties due to the care required in cultivation and the length of time required for it to mature.

It is most often available in specialty shops and through mail order suppliers.

**EXCURSION 3:  
CITY OF ARTS AND SCIENCES AND  
THE OCEANOGRAPHIC AQUARIUM**

Visit the new landmark of the city, a state-of-the-art architectural and entertainment complex designed by Santiago Calatrava and located on the old Turia riverbed with 5 different areas:

Umbracle: palm-tree garden covered by a big iron structure, the monumental veranda serves as an entrance to the Complex.



**Palacio de las Artes Reina Sofía** (Palace of Arts): the opera house Hemisférico: building conceived as a large human eye where there is a planetarium and where IMAX movies and laser shows are shown.



**Museo de las Ciencias Príncipe Felipe**  
(Science Museum):

enormous interactive museum.

**Oceanographic Aquarium:** the tour will be focused on visiting the area that is considered to be the largest and most important marine parks in Europe. Some of the most important ecosystems on the planet are represented: Mediterranean Sea, wetlands, temperate seas, tropical seas, Patagonia Islands, the Arctic and Antarctic areas, and the oceans.



Characteristics of the tour:

**Date: June 16th, 2011**

Length of the visit: 4 hours

**Meeting point: 9:30 h.** The Conference Building, Registration Room. Building 6G. UPV

Transport and tickets to visit the Oceanographic Aquarium are included.

Further information: transportation from the UPV to the City of Arts and Sciences is included in the price. The visit through the Complex will be on foot.

## Sightseeing in Valencia

In the issue 6 (December 2010) I presented tourist attractions of Valencia in the eastern and northern parts of the city, the **Palau de la Generalitat**, the **Cathedral** and the **Townhall**

In this issue I want to show you some historic buildings and historic quarters in the western parts of Valencia



**Lonja de la Seda (Silk Market)**



**Iglesia de los Santos Juanes**



**Mercado Central (Central Market)**



### **Lonja de la Seda (Silk Market)**

The Silk Market is the main monument of the city and a masterpiece of civil Gothic architecture.

The building has been declared by UNESCO as part of Humanity's Heritage. Construction on the Lonja began in 1483, a project of renowned master builder Pere Compte.

Its resemblance to old Medieval castles is based on the rigid appearance of a fortress accentuated by its stone walls. The building contains four main parts, each one for a different use:

**Lonja de la Seda (Silk Market)** is right opposite La Lonja, this is one of the oldest running food markets in Europe, although the building itself was constructed in the beginning of the XX century, in genuine Valencian style, with lots of colours, ceramics and mosaics. It is really worth seeing - go all the way around it to appreciate different angles. The market is still as lively as ever, as if centuries have not passed by.

A snapshot of real Valencian daily life and, needless to say, a perfect place to buy some local delicacies.

The **Iglesia de los Santos Juanes** church is one of the oldest in Valencia. It is also known as the church of San Juan del Mercado (Saint John of the Market).

It was built in the 14th century and its original architecture is gothic in style. However, there was a terrible fire in 1552 and the interior was completely refurbished.

When you enter, be sure to look up at the huge dome crowning the church and the beautiful frescos decorating it.

## Future Automotive Events

### IAMF-International Advanced Mobility Forum

Venue: Geneva, Switzerland  
8 - 9 March 2011  
Organizer: iamf  
Website: <http://iamf.ch/en>

### The 81<sup>st</sup> International Geneva Motor Show

Venue: Geneva, Switzerland  
3 - 13 March 2011  
Organizer: OICA  
Website: <http://www.salon-auto.ch/en>

### 11<sup>th</sup> International Automobile Recycling Congress IARC 2011

Venue: Budapest, Hungary  
23 - 25 March, 2011,  
Organizer: IARC  
Website: <http://www.recycling-technology.de>

### 23<sup>rd</sup> JUMV International Automotive Conference

Venue: Belgrade, Serbia  
19 – 21. April 2011  
Organizer: JUMV  
Website: <http://jumv.rs/en/>

### 32<sup>nd</sup> International Vienna Motor Symposium 2011

Venue: Vienna, Austria  
5 - 6 May 2011  
Organizer: OEVK  
Website: <http://www.oevk.at>

### VTMS 10 Vehicle Thermal Management System

Venue: Gaydon, Warwickshire, United Kingdom  
15 - 19 May 2011  
Organizer: IMechE  
Website: <http://events.imeche.org/>

### 18<sup>th</sup> International Automotive Congress, Future Powertrains & Smart Mobility

Venue: Eindhoven, University of Technology  
16 – 17 May, 2011  
Organizer: Eindhoven, University of Technology  
Website: <http://www.automotivecongress.nl/>

### Commercial Vehicles 2011

Venue: Steyr, Austria  
26 - 27 May 2011  
Organizer: VDI-FVT  
Website: <http://www.vdi.eu/>

### AMAA 2011

#### 15<sup>th</sup> International Forum on Advanced Mi- crosystems for Automotive Applications

Venue: Berlin, Germany  
29 - 30 June 2011  
Organizer: VDI/VDE Innovation + Technik GmbH  
European Technology Platform on Smart Systems  
Integration (EPoSS)  
Website: <http://www.amaa.de/>

### International VDI Congress Transmissions in Vehicles 2011

Venue: Friedrichshafen, Germany  
7 - 8 July 2011  
Organizer: VDI-FVT  
Website: <http://www.getriebekongress.de/>



Venue: Valencia, Spain  
14 - 16 June 2011  
Organizer: STA and EAEC  
Website: <http://eaec2011.com/>


 THE HISTORIC CORNER

Although the German engineer **Carl Friedrich Benz** (sometimes written Karl Benz), the inventor of numerous car-related technologies, is generally regarded as the inventor of the modern automobile, and received a German patent in 1886, there were some pioneer inventors before who could also be regarded as inventors of the automobile. But one fact is beyond controversy, the invention of Carl Benz initiated the worldwide development of the automobile. In order to honour all the other pioneer engineers who had the same idea to propel a vehicle with an internal combustion engine, contrary to the steam and electric cars, we dare say

## „Time invented the automobile”.

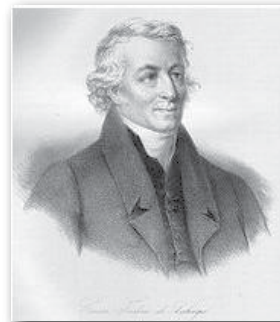
At the beginning of the 19th century, **François Isaac de Rivaz** (1752 –1828) was a Swiss inventor, credited with inventing and constructing a successful internal combustion engine in 1807.

The engine was powered by a mixture of hydrogen and oxygen. A year later, Isaac de Rivaz built one of the first automobiles for his new engine to power. He also experimented with steam-powered vehicles in the late 18th century. Isaac de Rivaz was well educated in Latin, mathematics and especially geometry.

He was very interested in mechanical elements. He served as an officer in the French army. During his training as an officer in about 1775, he learned about the functioning of a pistol by powder gas and used this to test for the ignitability.

In 1806, de Rivaz built an “*explosion engine*” as a two-stroke gas engine and used an explosive mixture of coal gas, hydrogen and air. This mixture was ignited by a spark in the cylinder electrically and the combustion moved the piston upwards. In 1807, Isaac de Rivaz was granted the patent No. 731 in Paris for an “explosive” combustion engine as a drive of various machines.

In 1813, de Rivaz undertook tests with a large hand car that was powered by its engine.



François Isaac de Rivaz  
(1752 –1828)



Hand car with an  
combustion engine  
(1813)

He achieved 25 consecutive ignitions, which had to be activated manually. The vehicle moved 26 meters at a speed of 3 km / h occupied with four people or a load of 700 kg. Although the engine was first built by Isaac de Rivaz, it was never commercially successful. De Rivaz’s early work is credited as the first use of the internal combustion engine in an automobile.

The development for mass production of the invention never truly began until the mid-nineteenth century. Gasoline was not used for internal combustion engines until 1870.

Coincidentally, in 1807 **Nicéphore Niépce** (born Joseph Niépce; 1765 –1833) was a French inventor, most noted as one of the inventors of photography and a pioneer in this field. He is most noted for producing the world’s first known photograph in 1825.

Nicéphore Niépce’s earliest surviving photograph of a scene from nature taken with a camera obscura “View from the Window at Le Gras (1826)”

One of the two earliest known evidences of seminal photographic activity, was made by Nicéphore Niépce in 1825 by the heliograph process. This illustration is of an etching printed from a metal plate that was etched following alteration of the ground by sunlight; the image is of a 17th Century Flemish engraving showing a man leading a horse.



Nicéphore Niépce  
(1765 - 1833)



View from the Window at  
Le Gras (1826)”

Nicéphore Niépce's earliest surviving photograph of a scene from nature taken with a camera obscura "View from the Window at Le Gras (1826)"

One of the two earliest known evidences of seminal photographic activity, was made by Nicéphore Niépce in 1825 by the heliograph process. This illustration is of an etching printed from a metal plate that was etched following alteration of the ground by sunlight; the image is of a 17th Century Flemish engraving showing a man leading a horse.

**Pyréolophore**, the world's first internal combustion engine, which he conceived, created, and developed with his elder brother Claude, finally receiving a patent on July 20, 1807 from the Emperor Napoleon Bonaparte, after successfully powering a boat upstream on the River Saône in order to be granted the patent by the Emperor Napoleon Bonaparte.

The **Pyréolophore** (from Ancient Greek *pyr*, meaning „fire“, *eolo*, meaning „wind“, and *phore*, meaning „produce“).

The **Pyréolophore** ran on „controlled dust explosions“ of various experimental fuels, including mixtures of Lycopodium powder (dried Lycopodium moss), finely crushed coal dust and resin. The discrete, virtually simultaneous, implementations of these two designs of internal combustion in different modes of transport means that the de Rivaz engine can be correctly described as the worlds first use of an internal combustion engine in an automobile (in 1808), whilst the **Pyréolophore** (in 1807) was the world's first use of an internal combustion engine in a boat. It is interesting that also the first use of an electric motor in a vehicle was in a boat. (See EAEC Newsletter Issue 2/ 2010).



Niépce's photograph  
17th Century Flemish engraving. (above)



Niépce's Monument  
in Chalons-sur-Saône. (right)



The **Pyréolophore**  
Historic drawing  
(right)

Modell (below)



**Samuel Brown** was an English engineer and inventor credited with developing one of the earliest examples of an internal combustion engine during the early 19th century.

Brown was a "cooper" (wooden barrel maker) by training. He also patented improvements to machinery for manufacturing casks and other vessels and has been regarded as the "father" of the gas engine.

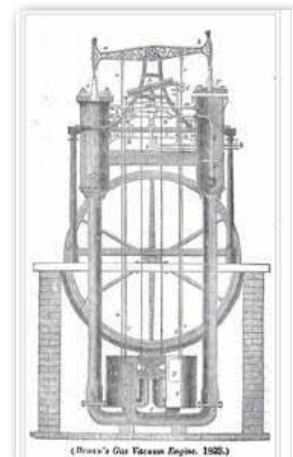
From 1825 to 1835, he developed the first gas engine that unquestionably did actual work and was a mechanical success. He set up two engines for demonstration purposes in

In patents dated 1823 and 1826, Brown proposed to fill a closed chamber with a gas flame, and so expel the air; then he condensed the flame by injecting water, and operated an air engine by exhausting into the partial vacuum so obtained. The idea was evidently suggested by James Watt's condensing steam engine, flame being employed instead of steam to obtain a vacuum.

Brown later designed an engine that used hydrogen as a fuel which was an early example of an internal combustion engine.



Samuel Brown (+ 1852)



Brown's Gas Vacuum  
Engine 1826

It was based on an old Newcomen steam engine, had a separate combustion and working cylinders, and was cooled by water contained within a casing or cylinder lining, circulated around the cylinders. Water was constantly kept moving through the action of a pump and was recooled by contact with outside air. The engine had a capacity of 8,800 cc but was rated at only 4 hp. He tested the engine by using it to propel a vehicle up Shooter's Hill on 27 May 1826.

**J**ean Joseph Étienne Lenoir (1822 - 1900) was a Belgian engineer, who emigrated to France. He developed an internal combustion engine in 1859. Prior designs for such engines were patented as early as 1807, but none were commercially successful. Lenoir's engine was commercialized in sufficient quantities and could be considered as the first commercial internal combustion engine.

By 1859, Lenoir's experimentation without electricity led him to develop the first single-cylinder two-stroke engine which burnt a mixture of coal gas and air ignited by a „jumping spark“ ignition system

The engine differed from more modern two-stroke engines in that the charge was not compressed before ignition. In 1863 the Hippomobile with a hydrogen gas-fuelled one-cylinder internal combustion engine made a test drive from Paris to Joinville-le-Pont: top speed about 9 km in 3 hours.

Lenoir founded a company (Société des Moteurs Lenoir) in Paris in 1859.

In order to develop the engine used in a three-wheeled carriage. Although it ran reasonably well, the engine was fuel inefficient, extremely noisy and tended to overheat if sufficient cooling water was not applied

## 1860 the Parisian newspaper „Cosmos“ had pronounced the steam age over“

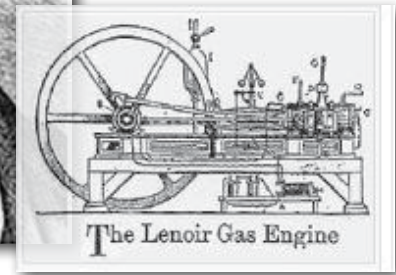
By 1865, 143 units of this engine had been sold.

In 1863, Lenoir demonstrated a second three-wheeled carriage, which was powered by a 2543 cc 1.5 hp „liquid hydrocarbon“ (petroleum) engine with a primitive carburettor which successfully covered the 11 km from Paris to Joinville-le-Pont and back in about ninety minutes each way, an average speed less than that of a walking man (though doubtless there were breakdowns!).

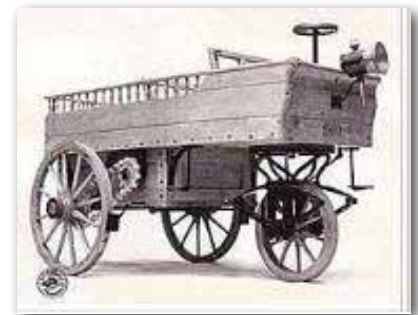
This succeeded in attracting the attention of Tsar Alexander II, and one engine was sent to Russia, where it vanished.

The **Légion d'Honneur** is France's highest decoration. It was created by Napoleon Bonaparte in May 1802 and first bestowed on July 15, 1804. It is awarded for gallantry in military action or twenty years distinguished service in military or civilian life for work that enhances the reputation of France through scholarship, arts, sciences, politics, etc.

The head of Napoleon is on the front. The back is inscribed with the motto HONNEUR. ET. PATRIE (Honor and Fatherland) AUSPICE. NEAPOLEONE. GALLIA. RENOVATA.



Jean Joseph Étienne Lenoir(1822 - 1900)



Lenoir three-wheeled carriage

In 1863 he sold his patents to Compagnie Parisienne du Gaz and turned to motorboats, instead, building a naphtha-fuelled four-cycle engine in 1888.

Granted French citizenship in 1870 for assistance during the Franco-Prussian War, and awarded the **Légion d'honneur** in 1881 not for inventing an automobile, but for developments in telegraphy, Lenoir's later years were impoverished despite his engine's success.



Légion d'Honneur medal

**Siegfried Samuel Marcus** (1831 –1898) he a German-born Austrian inventor and automobile pioneer. He was born in Malchin in Mecklenburg-Schwerin as a member of the Jewish community. His father was a merchant and a member of the local Israeli board.

Little is known about his childhood and adolescence. Becoming a businessman like his father seemed an obvious choice for Marcus. He attended the trade school in Berlin where Marcus converted to Protestantism. In 1848 he joined the telegraph factory of Siemens & Halske. Vienna. Later, his remains were transferred to an “Honorary Tomb” of Vienna’s Central Cemetery

He left Berlin soon afterwards and moved to Vienna, the capital of the Austrian Empire, in 1852. His move might have been promoted by a desire of independence or the threatening prospect of military service in Prussia.

From 1856 to 1898, he worked as a self-employed manufacturer of scientific instruments in this city. He developed an interest in electricity and as a lighting technician, too. His chief improvements include telegraph systems and ignition devices.

Marcus demonstrated the functional efficiency of his ignition device in 1869 by instal-

Ca. 1870, he mounted the first two-stroke petrol engine on a wooden simple handcart with an upright engine propelling directly the rear wheels which worked as flywheels, too.

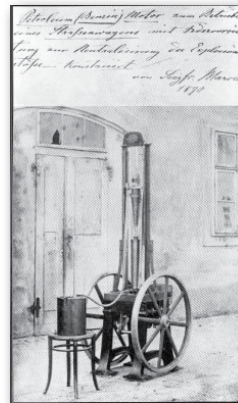
There was no clutch, gearbox, steering or brake. Even a seat for the driver was missing This appliance was designed for liquid combustibles and made him the first man propelling a vehicle by means of gasoline.

Today, this car is well known as “*The first Marcus Car*”, which can be proved by an authentic photograph from 1870 (with autograph description of Marcus).

In 1883, a patent for a low voltage ignition of the magneto type was given to Marcus in Germany. This design was used for all further engines and, of course, the famous of 1888/89. It was this ignition in conjunction with the “rotating brush carburettor” that made the design of the “*Second Marcus Car*” very innovative.



Siegfried Samuel Marcus (1831 –1898)



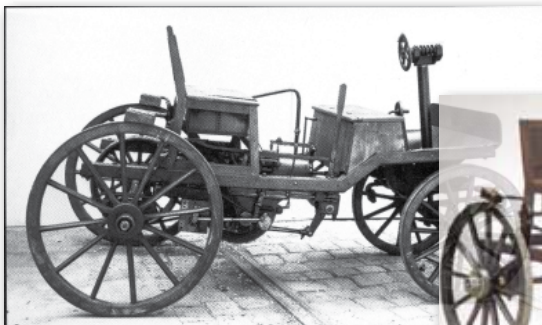
First Marcus combustion engine (1870)



First Marcus car (1870)

The “*Second Marcus Car*” (now owned by the Austrian Automobile Club, ÖAMTC) was first operational in 1888.

The wooden automobile had a horizontally mounted four-stroke single-cylinder engine with a spray-brush carburettor and magneto ignition and an output of up to 0.55 kW (0.75 HP).



Second Marcus car original (1888/89)



Second Marcus car replica (2006)

The “*Second Marcus Car*” can still be admired in Vienna's Technical Museum. This car made Marcus well-known all over the world. For a long time it was a common understanding that the “*Second Marcus Car*” already existed in 1875 — even today a widespread falsity.

It was uncertain for a long time whether his car was ready to drive already in 1875 or only in 1888/89.



A replica of the Second Marcus Car (1888/89) has been built by the Vienna Technical Museum in their own workshops. The Austrian Society of Automotive Engineers was one of the sponsors of this project. In the future, trial runs will be done with the replica car to protect the valuable original vehicle which belongs to the oldest surviving automobiles together with the Benz Three Wheeler (1886; Munich) and the Hammel Car (1887 ?; Copenhagen).

The engine is from the Czech Company ADAST, the successor of the makers of the original car.

Marcus was the holder of 131 patents in 16 countries. He never applied for a patent for the motorcar and, of course, he never held one.

In addition, he never claimed having invented the motorcar.

**Marcus had developed the world's first motor vehicle with a magneto-electric ignition and he was the first to make use of the principle of petrol combustion to drive motor vehicles.**

Due to the 50 years anniversary of the accession to the throne of the Austrian Emperor Franz Josef I, there was in 1898 a great „Jubilee Exhibition.

In this exhibition the „Second Marcus Car“ could be seen. It was the last time that Marcus saw his car. He passed away soon afterwards. He was buried at the Protestant Cemetery at Hütteldorf, Vienna. Later, his remains were transferred to an “Honorary Grave” of Vienna's Central Cemetery



Poster of the „Jubilee Exhibition. 1898

For a long time it was a common understanding that the “Second Marcus Car” already existed in 1875 — even today a widespread falsity.

It was uncertain for a long time whether his car was ready to drive already in 1875 or only in 1888/89.



The „Second Marcus Car“ at the „Jubilee Exhibition. 1898

**GASOLIN AUTOMOBIL** Siegfried Markus designed 1877 in VIENNA (10 Years before the first French German Gasoline Automobiles“

Litteral translation of the metal sheet in front of the car.

The inscription at the memorial “The inventor of the automobile” and at the exhibition were common opinion at that time, but is in the mean time disproved.



At the **Siegfried Marcus Berufsschule** (trading school) where automotive mechanics are educated.

The pupils of this school built a replica of the first Marcus



Siegfried Marcus is still aware in the public cognition:

A memorial was erected in the “**Resselpark**” park in front of the Vienna Technical University. This park is dedicated to some Austrian inventors:

**Josef Madersperger** (1768 - 1850 ) is regarded as the inventor of the first sewing machine in 1814).

**Peter Mitterhofer** (.1822 - 1893) developed the first typewriting machine in 1864.

**Joseph Ressel** (1793-1857) was one of the many who designed a ship's propeller; no one person „invented“ the propeller

All four inventors were not commercially successful with their inventions.

This fact is called the “**Austrian inventor destiny**”.

The Marcus memorial (left) was removed after 1938 and rebuilt after the war. In 1950, the Second Marcus Car has undergone a major restoration

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