

THE WALL STREET JOURNAL EUROPE INNOVATION AWARD

Announcing the 2001 winners

In today's issue, The Wall Street Journal Europe in association with Accenture announce the Business winners of **The European Innovation Awards, 2001**.

The goal of The Awards is to encourage Innovation throughout Europe by recognising individuals and organisations that have introduced new and successful ideas.

The Awards are divided into two categories:

Business Innovation: incorporating a broad range of endeavours such as management, finance and environment.

Technology Innovation: encompassing software, hardware, the Internet, telecommunications and

broadcasting. Winners were announced in a special awards edition of Convergence on November 19.

The Judging

Launched in Spring 2001, nominations were sought across Europe resulting in a large number of high-calibre entries. An independent panel was set up to judge each nomination with the winners being awarded Gold, Silver and Bronze awards. There were also a number of runner up places for each category.

Winners of the awards will be honoured at an awards ceremony, which will take place at The Wall Street Journal Europe's second annual Entrepreneurship Summit in Munich on November 27.

Innovation is key to the advancement of Europe's economy and everyone wants to discover the next life-changing idea that will work out in practice.

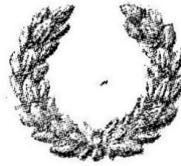
Shedding light on Europe's best and brightest.

B U S I N E S S I N N O V A T I O N W I N N E R S 2 0 0 1



Gold Winners

7E Communications Ltd.
and CNN, U.K.



Silver Winner

Poseidon Technologies
France



Bronze Winner

Dr. Dror Lapidot
Decell Ltd.
Israel

B R O A D C A S T / S A T E L L I T E / B R O A D B A N D

Winners

7E Communications Ltd.
and CNN, U.K.

Runner-Up

Philips Semiconductors
The Netherlands

Runner-Up

RadioScape Ltd.
U.K.

B U S I N E S S A P P L I C A T I O N S

Winner

Poseidon Technologies
France

Runner-Up

4DigitalBooks – Assy SA
Switzerland

T R A N S P O R T

Winner

Autork Ltd.
Switzerland

Runner-Up

Jean-Jacques Drieux
Michelin SA, France

W I R E L E S S

Winner

Dr. Dror Lapidot
Decell Ltd.
Israel

Runner-Up

Speedwise
Technologies Inc.
Israel

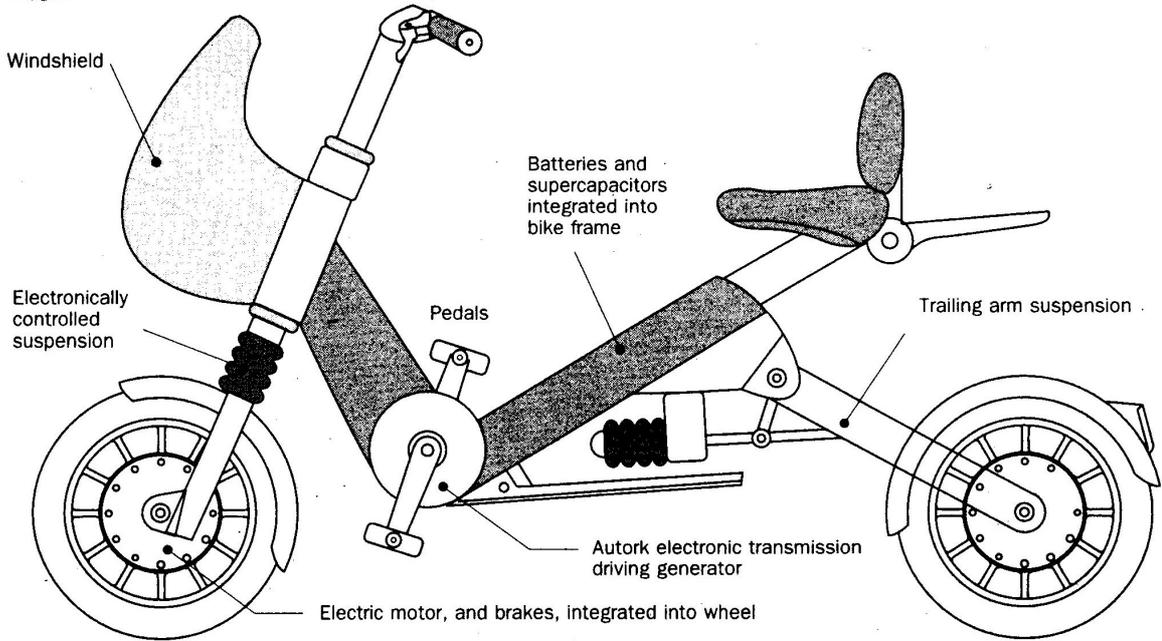
Runner-Up

Remote-i Corp.
Switzerland

TRANSPORT



Winner
Autork Ltd.
Switzerland



Source: Ecomotion Bike GmbH

Swiss Firm Yanks the Chain

Autork Fills the Old-Style Bike With High-Tech Wizardry

Biker Still Has to Work, but the Bike Transforms Human Power Into Electric Power

By Edward Taylor
Staff Reporter

Oily trouser stains from a cycle chain may soon be a thing of the past if engineers succeed in giving the traditional bicycle a high-tech overhaul.

If they get their way, bikes will soon be equipped with anti-lock braking systems, adjustable suspensions and electric motors to accompany the familiar pedals, saddle and handlebars.

"The technology trend is to replace mechanical components with hardware," says Harald Kutzke, chief executive officer of Ecomotion Bike GmbH, a consulting firm specializing in human-powered vehicles. "We saw it in typewriters, cameras, aircraft and cars - now we will do it for bicycles."

He says an electronic bike, equipped with light-weight batteries, cables, chips and electric motors, will soon perform the main tasks previously accomplished using only a tubular metal frame, some cogs, and the chain.

The idea of the electronic bike, winner of the Transport category of The Wall Street Journal Europe Innovation awards, was entered by Dr. Andreas Fuchs. Dr. Fuchs, who works at the University of Applied Science in Berne, is also chief executive officer of Autork Ltd., a company that produces hardware and software for chainless human-powered vehicles.

"The innovation consists of a pedaled generator that transforms human power into electric power," Dr. Fuchs explains.

Like the bike builders at the University of Applied Science in Berne, design consultants Ecomotion Bike and the ExtraEnergy society in Germany, he is working to replace the bike chain with technology that would transfer kinetic energy between the pedals and the wheels using electronics. The pedals would drive a generator that ultimately powers an electric motor.

The purpose of the electronic bike concept is primarily to reduce exhaustion, rather than eliminate effort on behalf of the rider, says Dr. Fuchs. Together with his colleague Juerg Blatter, also from the University of Applied Science, he designed a working electronic bike transmission.

The ability to store energy - with batteries and supercapacitors, which amplify electricity, or just batteries alone - opens up new possibilities for energy conservation. Riders can store energy gained by pedaling down a steep incline, and recoup it when they most need it -- going uphill, says Hannes Neupert, president of the ExtraEnergy non-profit trust.

What is the point in adding electricity to a human-powered vehicle if you can buy an electric bike instead? Batteries run out of juice, say the bike builders, limiting the range of the vehicle.

Another reason to design a bike that uses only human power is how such vehicles are classified under national laws, explains Mr. Neupert, "It's likely to still be classified as a bicycle if power comes from human pedaling." But a vehicle using electric motors as a unique energy source will be classified as a scooter or electric car in most European

countries, he says. And even electric bicycles, which simply add an electric motor to assist the mechanical drive train, require special permits and vehicle insurance and have a minimum age limit for users in several European countries.

The new electronic bike, however, will use human power and be able to "load up" on electricity even while braking. By using electric motors to slow, the motors - working in reverse - act as electricity generators, charging the supercapacitor or battery with energy. Mr. Neupert explains that on an electronic bike, you can change the way a bike feels depending on your mood. The driver may choose a sporty ride - immediate acceleration, firm suspension, harsh braking - or leisurely one - soft, pliant - simply by adjusting the software program.

Removing the direct mechanical link also allows a manufacturer to change the relationship between the saddle, pedals and the wheels. With an electronic transmission, several passengers could feed energy into a battery or supercapacitor, which could then smoothly drive one central electric motor.

"They have to come up with something really special to persuade people to take up the bike as their primary form of transport," says Oliver Green, head of collections at the London Transport Museum.

Not a problem, Mr. Fuchs explains. "We're working on an all-weather quadricycle at the moment."

(END) Dow Jones Newswires 26-11-0

Entry for competition (by Theo Schmidt):

Name and contact details of the person, company or organization you are nominating:

Name: Dr. Andreas Fuchs, CEO autork ltd.

Contact Information: c/o Waldheimstrasse 32, CH-3012 Berne, Switzerland

Link: <http://www.autork.com>, E-mail: andreas.fuchs@bluewin.ch

Please explain the innovation and how it enhances productivity or Improves quality of life. (Please use as much space as you need.)

AN ELECTRONIC BIKE IS UNLIKE AN ELECTRIC BIKE: IT IS MUCH MORE!

Imagine a new kind of bicycle without the main disadvantages of bicycles such as:

- Losing kinetic energy through braking
- Hard work pedalling when accelerating or climbing hills
- Slow and wobbling starts in the flat with laden bicycle and on hills
- Manual gear changing

The innovation which is described here is a bicycle without the main disadvantages of traditional bicycles: an electronic bicycle! Here, mechanical parts play a smaller role because most have been replaced by electrical and electronic components.

The big step that allows building such electronic bicycles is the transformation of mechanical human power into electric power using a generator driven by pedals. Most of the operating time of electronic bicycles human power is directly used in a motor propelling a wheel. Sometimes human power is stored in super capacitors or batteries. But not only human power may be stored, but also the kinetic energy of the vehicle with rider on it.

Energy in electric form may be easily quantified by measuring it, and is more easily controlled and stored than energy in mechanical form. This explains why electronic bicycles can do more than mechanical bicycles. Compare with the typewriter: The personal computer does much more than a typewriter, even though the core application is still writing!

Kinetic energy may be stored during braking and is recuperated when accelerating again. So for the rider stop and go is no longer as hard as it

was with the mechanical bicycle, where the full kinetic energy was lost at every stop and had to be replenished with some hard pedaling each time.

Since in the electronic bicycle the rider pedals a generator, an electronic transmission of his or her human power to the propelling wheel is easily made and automates the gear changing. Thanks to this fully automated transmission cycling becomes fully intuitive!

The remaining, intuitive tasks for the rider are the basic ones of cycling: Pedaling, steering and braking. If the electronic bike does not behave as wished, the operational parameters can be adjusted.

What, exactly, is novel about it? Please explain how it compares with conventional ideas or processes in its field? Please state if the innovation is patented, copyrighted, published in a technical journal, or otherwise "on the record" with any recognized arbiters of innovation. (Please use as much space as you need.)

The innovation consists of a pedaled generator that transforms human power into electric power. For the first time, this has been technically realized in a working bicycle! A working model in the form of a tricycle is available for riding. A unique property of the system is feedback to the pedals. Without this, pedaling a generator (relatively constant torque) is like pedaling cotton wool. The feedback simulates the feel of the mechanical system, e.g. when accelerating more force must be exerted, but not to the extent that it is tiring. Thus the rider experiences a unique "servo-amplifier" feeling.

Compared to conventional electric bicycles, the electronic bicycle does not utilize a mechanical transmission for the pedaling effort by the rider. Instead, the transmission is electrical and is electronically controlled. A conventional electric bicycle has two drive-trains in parallel: To the traditional chain-drive an electric drive is added. The electronic bicycle has a single drive motor. This simplifies the drive system considerably and allows many new features.

This is also especially useful in larger multi-person bicycles, human-powered vehicles, or even boats. Pedal-generator seats can be placed anywhere and are easily interconnected with wires.

Since human power is transformed into electric power it is easily measured and recorded. This transforms any human powered vehicle with this electronic transmission into an ergometer on wheels.

The innovation has been made public by letting people ride on the working model. The innovation was published in specialized publications, but never in the main world media. The most recent publication:

Fuchs Andreas. Chainless Electrical Human-Power Transmissions and their likely Applications. Proceedings of the 1999 Velomobile Seminar. Future Bike Switzerland 1999
(Downloadable from <http://www.hta-be.bfh.ch/~fuchs/Transmission/>)

A patent application has been made.

Please describe any practical results that the innovation has achieved to date -- sales, profits, users, citations, etc. (Please use as much space as you need.)

At this moment the electronical transmission is being further developed into a product that may be used in numerous kinds of pedal powered machines and vehicles. To serve customers who want to apply this new drive technology, a company has been started up.

The most impressive comment was by Hannes Neupert, secretary of "extra energy" (www.extraenergy.org) and author of the book "Powerbike":

"... for the electric bicycle, the electronic transmission is of the same importance as is the personal computer as the substitute of the mechanical typewriter!"