ROSTA Info

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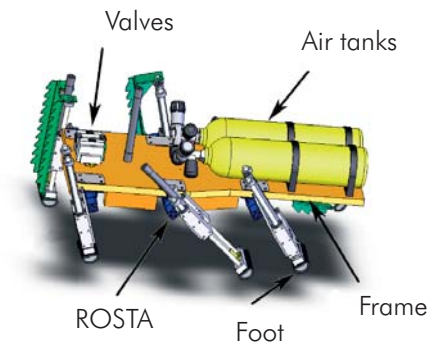
RUBBER SUSPENSION TECHNOLOGY!

No progress without development!

Without the active development help provided by the **Society** of **Automotive Engineers (SAE),** the „Lunar-Rover's" ride on the moon during the Apollo 15 mission in 1971 would not have been possible. This society continually invites technical universities to take part in competitions for the invention of new „vehicles", such as the recent **Walking Machine Challenge.** Where these insect-like „walking" and „hopping" devices will eventually find a practical application is still completely uncertain. Perhaps they will one day drive on the stone dessert of other satellites somewhere in space!

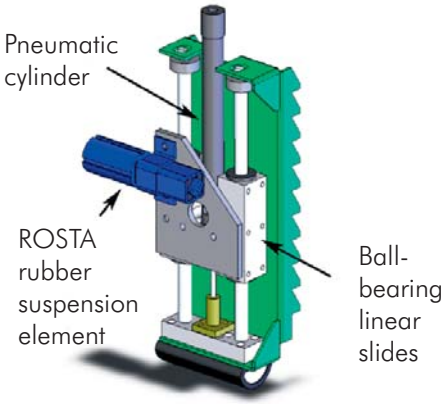
A team of students from the University of **Sherbrooke** in Canada accepted the challenge of SAE, and took part in the competition. A transportation device was developed that could quickly and surely climb over obstacles in six legs like a **cockroach.** In the coming final round of the competition, the Walking Machines will be tested in six disciplines: Short-distance running, slalom, resistance to stumbling, object detection, endurance and charging capacity.



The Canadians have developed a **six-legged** machine that looks for a way over obstacles using pneumatic stilts powered by compressed air. An ingenious electronic sensor system analyses the

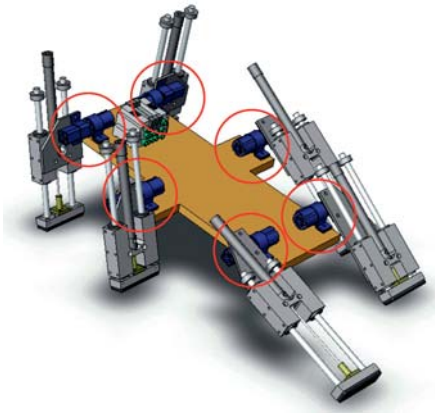
obstacles in front of the device, and gives the pneumatic legs of the „insect" the command to clamber over the obstacle or to even overcome it with a bold jump.

A large number of electronic and mechanical problems had to be solved before the device was able to move itself forwards at a speed of 1.2 m/sec (4.3 km/h). One problem was the design of the „shoulder joint" of the six pneumatic legs for the 32-kg-heavy „insect". The unique spring characteristic of the **ROSTA element** was a great help to the students in the solution of this problem. During the crawling movement, they appreciated the almost linear characteristic up to 20° of element excursion. When jumping or landing again, the strong progressive spring characteristic from an excursion



of 20° was required for the absorption of the high kinetic energy.

The ROSTA rubber suspension unit is made up of a **series connection** of one **DR-A 18 x 80** and one **DK-A 18 x 80** element on a common interior square profile. The round DK housing with the BK clamp also permits the exact setting of the working angle of the six pneumatic legs (cockroaches need their two pairs of hind legs for pushing off, which thereby have to be at a different angle to the front leg pair, which only raise the body weight vertically before the jump.)



We wish the student team from Sherbrooke every success in the coming finals and are convinced that these Walking Machines will one day explore new stars on ROSTA joints.

OSCILLATING CONVEYOR TECHNOLOGY!

Gravimetric separating process for bulk mixed products by dividing into layers according to specific unit weight

These systems are used mainly to clean cereals after the harvesting process in flour mills and also for the recycling of shredded mixed materials in cases where, e.g. cable insulation must be separated from pieces of copper wire. These are screening and separating processes which are supported by additional air extraction to remove specifically lighter particles.

Gravimetric separating procedure using a thrust crank screening machine

The **RMD SA** Company of León was one of the first businesses in Spain to turn its professional attention to product recycling and to the manufacture of the necessary processing machines. Initially, **RMD SA** received a big order for the recycling of old telephone cables from the Spanish telecom company. The copper material which is in great demand was to be separated from the cable insulation. A facility to cut open the insulating layer and shred the cable pieces was quickly installed. But how were the copper strands to be separated from the surrounding insulation?

A screening machine with a long product dwell time on the screen fraction was built (Figure 1). This device is a reaction-free double mass screening machine in which the screen inclination can be adjusted by a hand wheel depending on the desired intensity and dwell time of the product in the screening process. The actual screening box with the extraction device for the specifically lighter material (insulation) was fitted on four **ROSTA double rocker arms type AD-P 45** and linked to the machine frame and the counterweight for direct mass compensation. Drive is obtained via a thrust crank gearbox on the material feed side (Figure 2). The acceleration force of > 2 „K" is transferred to the screen box by means of the **drive head type ST 50.** On the screen with a width of 1,000 mm and a length of 1,500 mm, some 1,800 to 2,500 kg of copper strands per hour can be extracted, depending on the inclination of the screen frame.

Figure 2

Figure 1

The screen facility with separate extraction is mobile and can be installed at any desired recycling location. Thanks to the direct mass compensation via the ROSTA double rocker arms, the device is practically **free from all reaction** and works in **total silence. RMD SA** is building these screening machines in small series which enjoy a good name in Spain and abroad as **„copper diggers";** they are highly profitable and require no maintenance.

Gravimetric separating process using a freely oscillating grader

The new **Combi-cleaning machine type MTCF „Gravomat"** made by **Bühler AG** in Uzwil, Switzerland, is a freely oscillating grading and separating facility to clean and sort cereals before the actual milling operation. The material flows into the screening machine from above. On a total of four screening decks, tilted towards the material discharge, the material is graded according to the specific weight of the grains (separation of the high quality grains from the „unusable" cereals). The air which flows through the screening facility from below permits screening of the product by specific weight. The good grains, i.e. the heavy product, migrate upwards on the screen fabric and are guided into the outlet box. The lighter mixed product „floats" on the air to the next screen layer below and is separated by the same technique. The lower quality „mixed product" is graded on the fourth lowest screen layer. Aspiration (air intake) on the top of the machine effectively extracts sand, chaff and dirt particles from the cereals (Figure 3).

Figure 3

The **grader,** which vibrates on a linear pattern, is driven by two synchronous acting unbalanced motors. The very high screen box weighing around 2,000 kg (including the grading material and the unbalanced motors) is mounted on 4 **ROSTA oscillating elements type AB 50** with a load capacity of 600 kg each.

Figure 4

The low natural frequency of the ROSTA oscillating elements type AB 50 (natural frequency approx. 2.2 Hz) gives a very high insulating efficiency of > 98 % on the machine substructure which has a positive impact on the working climate in the milling plant with the machines habitually installed in series.

The **low residual force transmission** by the „pantograph"-like ROSTA elements was another decisive factor in the choice of supports and even when the grading machines are installed in series, no floor vibrations occur in the buildings (Figure 4).

The main reason why Bühler AG chose ROSTA type AB oscillating elements for this machine type was, however, the **extremely fast steadying** and motion control of the very high screen box when passing through the resonance frequency while the machine is running down.

ROSTA Info

The Blue Ones from ROSTA . . .

. . . or the art of keeping vibrations and oscillations under control!

That was the central message on our exhibition stand at the **Ipack-Ima** trade fair in Milan (14–18/02/2006). Ipack-Ima is a trade fair for packaging and packaging machinery, but for several years it has also included the **„Milling technology"** and **„Pasta production technology"** machine segment.
In this segment, ROSTA AG traditionally has many customers from Italy, Switzerland, Turkey and more recently also from China. ROSTA products include flour sifters (**AK mounts**), rice and grain graders (**AB** and **AB-D oscillating supports**), pasta drying channels (**AU** and **AR rockers** and heat-restistant **special rocker arms**) and hanging flour sifters (**AV mounts**).

That is why we exhibited together with our Italian subsidiary **ROSTA S.r.l.** our latest demonstration machines, on a stand floor space of 60 m^2 at the main trade fair for special machinery of this kind. Once again, our vibrating bridge attracted many interested visitors to the ROSTA stand. To the background of the sound **„Good Vibrations",** we demonstrated to the international audience our versatile range of possibilities for the suspension of screens, sifters and dryers. This trade fair proved a great success for the ROSTA team and we were able to make many new contacts with international machine manufacturers.

Represented by:

Publisher:
ROSTA AG, Hauptstrasse 58
CH-5502 Hunzenschwil
Phone: +41 062 897 24 21
Telefax: +41 062 897 15 10
E-Mail: info@rosta.ch
Internet: http://www.rosta.ch

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