March 15, 2019

**Moon, Mars …and much more thanks to microtechnology**

*The requirements for devices that are supposed to function in space and on other planets, i.e. under completely different conditions than on Earth, are extremely high. The engineering competence of numerous microtechnology companies is, therefore, subjected to strict tests.*

On July 21st, 1969, in front of 600 million television viewers, man made his first step on the moon: an extraordinary achievement. And although the picture is quite visibly not very good, the show was a true technical achievement for that time.

**Computer Science? The Dawn of Its History**

Today, the computing power available to everyone is phenomenal compared to the capacities available at that time. The Apollo master computer operated at a speed of 40 kHz, about 100,000 times slower than a modern PC. And according to two heads of research at Google, the total computing power of the Apollo programme, which lasted 11 years and comprised 17 space missions, today corresponds to a Google search of a few milliseconds.

**Space – the Quest Continues**

Although man first stepped on the moon a full 50 years ago, further feats in space followed, even though they were less effectively communicated to the media. And yet.... since 2011, thanks to the ISS space station, people have been living permanently in space. On November 26th, 2018, the lander of the InSight mission touched down on Mars and began its work there. On January 3rd of this year, the small spaceship Chang'e-4 landed on the far side of the Moon and is now using a satellite in lunar orbit to communicate with Earth.

What makes these feats possible? It is true, modern computer science does considerably simplify all aspects of the necessary calculations, but also renders our research, technology and microtechnology possible.... Technical domains for which the Swiss Jura is famous far and wide.

**Microtechnology? Thousands of Parts and Know-How**

Some examples? One of the experiments carried out on Mars involves special micromotors to measure the seismic activity of the red planet. These include turned and milled parts manufactured in this region. The special design of the wheels, e.g., was developed using a CAD/CAM system developed in this Jura microtechnology hotspot, and dozens of other parts that make it possible to operate aircraft, rockets, and satellites are designed, manufactured, and assembled thanks to the capabilities of our regional industries – i.e. manufacturers of parts, components, machines, or tools.

**Discoveries for Everyday Life**

There are many products from aerospace research, such as fabrics and materials for the sports industry, scratch-resistant glasses, dental devices made of PCA (polycrystalline aluminium oxide), the GPS system, and many others. Relations between Switzerland and space have been numerous for years. For example, during the Apollo 11 mission, the only non-American experiment on the moon was a solar sail developed by scientists from the University of Bern.

**450 SIAMS Exhibitors, Reaching for the Stars?**While many exhibitors reach for the stars, they still plant their feet firmly on the ground to analyze, develop, design, test, optimize, and produce all the parts that are supposed to leave Earth (and of course those that are meant for Earth itself). Not only are they technically highly competent, they also know how to adapt to the requirements of this industry.

**But why is this region so well positioned in this domain?**

In the past, microtechnology in the region has focused on watchmaking, and quite quickly many other sectors, whether medical, automotive, electronics, or aerospace, have been able to take advantage of the exceptional microtechnological capabilities of the Jura. People like to say that the specialists of the region would be able to master the micrometre with flying colours.... and that's true!

The fact that space is slowly opening up to humans is not least due to the exhibitors at SIAMS and the other microtechnology companies in the Jura.

**Don’t miss it!**

To find out more about the companies in this region and their R&D feats, you should regularly visit the SIAMS microtechnology information portal: [www.siams.ch](http://www.siams.ch). And to get to know them personally, simply schedule a visit to the Forum de l'Arc in Moutier from April 21st till April 24th, 2020.

Your admission ticket (available free of charge online) will be available for online download from February 2020 at [www.siams.ch](http://www.siams.ch).

SIAMS 2020

Forum de l’Arc

Rue Industrielle 98

2740 Moutier

*Highlighted*

*“You don't have to fly to the moon to see the capabilities of microtechnology. A trip to SIAMS in April 2020 already promises extraordinary discoveries.”*

Pierre-Yves Kohler, CEO of SIAMS.

Caption: SIAMS will celebrate the 50th anniversary of man on the moon in its own way (forged image).