

# TIS Paper

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**No risk,  
no business!**

Profile of an entrepreneur



**Portrait of an entrepreneur**  
**Isolcell Italia**

The air is thin



Oxygen starved environments to keep apples fresh and preserve works of art for the future, with the main additional benefit of eliminating fire risk: the company Isolcell from Leifers literally cuts off the air supply from apples, art works and fires.

The space above the desk of the consulting room is graced by a map of the world from the time before the fall of the Berlin Wall, featuring all imaginable kinds of fruit: it is easy to see that the company has been trading in the former Eastern Bloc for quite a few decades. Isolcell, it needs to be explained, is the expert in the field of fruit storage. Nowadays the firm uses its expertise in controlled and generated environments, i.e. artificially created environments, in order to protect works of art from deteriorating or to prevent fires.

Laboratories, test rooms and any amount of expertise – at the company headquarters the time is ripe for technology. And 'ripening' is what the company is about: their original brief was to stop apples from ripening. Long, long ago, in 1958, the year of its foundation, Isolcell was mainly engaged in controlling the metabolism of apples, a fruit which has quite simply acquired symbolic status in South Tyrol. "We check their 'breathing' and constantly check that the lack of oxygen is not causing the fruit any stress. Achieving this state is the precondition for keeping the fruit fresh for longer", explains the head of the department, Andrea Thurnher. "The more oxygen a piece of fruit is exposed to, the quicker it will ripen."

Isolcell Italia, the company, was not satisfied with simply preventing apples from ripening. Right from the start, they invested the major part of their resources in research and development. The constant desire to innovate has meant that their technology for generating controlled environments has allowed them to diversify in the market: These days, Isolcell have also specialised in extinguishing fires and conserving works of art. They have, for example, constructed a pest control centre to prevent damage to wood and other materials from harmful organisms for the huge new Egyptian Museum due to be opened in Giza in 2015. This is achieved by extracting oxygen from the air as, when there is no oxygen, there are also no pests.

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Another art work preserved from decay by the firm is the so-called Gates of Paradise Baptistery Door in Florence. "They had spent 27 years restoring this popular work. Now they are housed within in a glass display case where a special micro-climate with 15% humidity protects the doors from oxidising. This means that tourists, art lovers and most importantly the inhabitants of Florence will be able to admire them for a long time to come", says Thurnher, clearly proud of having been able to contribute to the preservation of Italian cultural heritage.

How are these environments actually created and controlled? "We alter specific atmospheric parameters, for example the oxygen content, humidity or temperature, depending on what it is that we are seeking to protect and how we should do this", explains Thurnher.

Another area which has become a focal point of activity in recent years is fire prevention. Traditionally, fire extinguishers or sprinkler systems have been used to put out fires, but these can cause further harm, for example water damage. Such devices are used when the fire has already broken out and caused damage. The N<sub>2</sub> Fire

Fighter®-Method developed by Isolcell by contrast will not allow the fire to break out in the first place because it lowers the oxygen level within the protected areas. For, as everyone knows, a fire cannot thrive without oxygen.

One example where this technology has already been put to good use is a warehouse in the province of Parma, measuring 150 m by 50m and 36m high with a total volume of 161,000m<sup>3</sup>. The warehouse contains plastic cutlery, and Isolcell monitors its environment and alters the proportions of oxygen and nitrogen in the air so that knives, forks and other implements cannot spontaneously ignite. An exact analysis of the composition of the air in such a large space necessitated dividing it up into 15 smaller virtual units and measuring the oxygen content in each of these. The oxygen level is subject to constant change within the building as the goods keep being moved around: within one hour, the stock might be repositioned up to 2,500 times, and the fully loaded pallets also contain oxygen. Even a small deviation from the ideal values is registered by the control centre and passed on to one of the nitrogen generators which then reacts by switching on or off depending on what is required.



But is such a complicated system not a great deal more expensive than a simple fire-extinguishing system? "Not necessarily", says Thurnher. "Compared to a large fire protection system, our system generally works out cheaper. That firm contacted us after hearing from a competitor who had to close down following a devastating fire. Which is why they decided that prevention was better than cure."

Plastic forks, apples, works of art, that is all very well, but how can a human being survive in these oxygen-deprived environments? "It varies", explains Thurnher, but adds: "It's not advisable for humans to spend a lot of time in rooms where apples or works of art are stored. The proportion of oxygen there is simply too low and could even be fatal for us. Fire prevention technology is a different kettle of fish, however", he says and immediately puts this theory to the test in his own specially set-up testing room. The air is noticeably thinner and one cannot avoid the sensation of not being able to breathe properly. Andrea Thurnher strikes a match and within seconds, the flame goes out. In the light of this magic, all initial fear felt inside the test room disappears. The fear people experienced in the test rooms would have been quite unjustified in any case, for, to prevent a fire from breaking

out, the oxygen content of the air, which is normally around 21%, merely has to be reduced to 15% and this is easily within the tolerance limit of human beings. An investigation carried out by the Swiss "International Mountaineering and Climbing Federation Union" has even demonstrated that human beings can still breathe without difficulty with an oxygen content of 10.4%, which represents the conditions that prevail at an altitude of around 2,500m. Andrea Thurnher has himself carried out a psychological experiment at a trade fair and found out that the human mind can be easily tricked. He took potential customers into a kind of giant fish tank. Half of them were told that they were in an oxygen-deprived environment; the others were not given any information. Whilst the first group very soon started to complain about headaches, the others made no complaints at all.

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The technology was in place, the only thing left to do was to convince the fire services: they had originally been reluctant to grant Isolcell permission to trade. After the official checks had been carried out and presented to the Ministry of the Interior in Rome, the N<sub>2</sub> FireFighter-Method has been shown to reach national standards and certified for use in Europe. This guarantees the company a place in history – both in order to preserve it, but also to make history themselves

Text by Astrid Brunetti



Here in the test room, the air is very thin, but not dangerous for human beings. This is not the place, however, for a fire to take hold!

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