



Small and medium-sized companies and technological achievements

Research: costs and problems

The technological goals achieved by recent scientific research are surprising. **Scientific research is advancing at a fast pace and seems unstoppable.** As a result, keeping up with technology in general and conducting research is truly challenging, but not an impossible feat.

Keeping up with technological evolution at all times means diluting the effort and expense which research involves. By the same token, if we slow the pace of research, or worse still abandon it altogether, we risk losing ground, along with researchers with clients who want to keep up with progress. Getting back on track to catch up again can prove difficult, if not pointless.

During the start-up phase, small companies which generally do not have a department entirely dedicated to research experience greater difficulty. Later, however, they move at a faster pace in the development phase; we need only take the example of changes in production, when new products take the place of the previous ones. Change is always traumatic, because it slows production down, and a state of uncertainty is experienced for a short time.

The same problems are encountered by mid-to-large companies. In fact where companies with large-scale production are concerned, these difficulties increase proportionally to the point that we can say that **problems are in proportion with the size of the company.**

Research as a resource

Production units which do not keep abreast of change lose market, and are consequently forced to cut their sale prices to stem their losses. By the same token, companies that conduct research always have new selling points. Research actually increases the professional performance of production, the analysis and creativity of researchers, often leading to savings or improvements with very low costs. We can take active self-protection as an example: in a situation which poses a hazard to the device's integrity, **products with a computer software have a programme which triggers a reaction: machines reacting to an anomaly which can damage them automatically adjust how they work to overcome the hurdle. When the emergency has subsided, they resume the programmed function in an equally automatic manner.** It is this cooperation of artificial intelligence which we have termed **active self-protection** which saves the machine without interrupting operation. The event is of course stored in the memory, and the engineer can take the relevant steps at the first check-up. Being able to save the machine without interrupting work is a service which professionals appreciate a great deal. Here we have only recalled one of the many characteristics yielded by modern technologies, but there are in fact many.

Market requirements

Thirty years ago, the criteria used for assessing an object or a machine differed greatly to those we use today. For example there was more of a tendency towards metal equipment than plastic, even

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when, from a practical standpoint, the opposite was true; the price of a machine was calculated more in kilos than in terms of technical performance.

Nowadays, we pay closer attention to practical issues. Let's use an example to get our point across: plastic bumpers are preferable to steel ones for cars, as tests have shown that plastic absorbs collisions better than steel, which is too rigid. Taking cars as our example again, people now look first and foremost for a sat nav system, ABS for controlling stability, automatic gear shifts, parking sensors with rear-view cameras and front and side sensors with automatic braking; people prefer practicality and safety to other values which are not linked to the functions the car offers.

Needs of the dental profession

Let's return to the dental sphere, in particular to suction units and compressors.

The main practical needs are:

- **operative adjustment and stability** of the head pressure and flow,
- **automatic activation of active self-protection,**
- **environmental sustainability** and above all savings in raw materials and energy.
- **These are essential practical and ecological requirements** which can only be achieved with cutting-edge technology.

Modern technologies such as inverters, electronics and computing allow for programming, and during work they automatically adjust how the equipment is working, adapting it as required; as demand diminishes, the rotation speed of the suction unit also falls. **This drop in speed translates into energy savings.** Simply put, we might say that **artificial intelligence adapts the motor's rotation speed to the required suction** whilst ensuring the programmed head pressure remains the same.

At this moment in time, there are no solutions other than those offered by modern technologies, except for using smaller motors which might give a partial energy saving which would, however, affect pressure. By the same token there would not be any automatic adjustments.

Research comes at a cost, which is offset by increased performance and the savings provided by environmental sustainability. An absence of research causes damage which is hard to repair. Manufacturers who do not keep up with the present state of technology might well make up for it by copying whatever they can from the competition at the outset. But it is likely that the result will only be a poor copy of the original. It takes a lifetime to set up a company, but it only takes a few months of distraction to destroy it. Every day, the entrepreneur heads out onto the field to play the game and, like an athlete, he has to push himself to the very limit to make sure he loses as little as possible. Otherwise he will soon find himself on the road to defeat.

Research is not optional

Research is made necessary by advances in progress. Man has a natural tendency to try to improve things.

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Every day there are stories in the news reminding us that we will destroy the world if we continue at this pace. Unlike thirty years ago, modern production, which is the result of analysis and research, yields the same things but with new functions and savings in energy and raw materials of 30 to 50 %.

To be quite honest, I would not be surprised if in the not-too-distant future, **products which are not in step with the times and do not apply environmentally sustainable technologies are prohibited by law.**

To prove this, I'd like to quote financial journalist Federico Pedrocchi. In his book "PAROLE PER IL FUTURO" (Words for the Future), he states that those in the field of mobility, ANIA first and foremost, acknowledge that **around seventy percent of road accidents are caused by distractions and traffic infractions**; ANIA and other players in the field of road mobility therefore hope that **side and front sensors with an automatic braking system will be made obligatory** for all cars and vehicles.

Both measures are crucial; taking steps to render production systems environmentally friendly will save the world, whilst the second will save lives.

We don't need a prophet to predict what the near future holds in store: **it will involve laws that will force us to produce goods in keeping with new environmentally-friendly tenets, and to travel using satellite-guided vehicles.**

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Parma, 15/04/2015

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