

Can ceramics be faster *and* beautiful?



MDT Patric Freudenthal (Sweden) graduated as a dental technician in 1989 at the University of Malmö, Sweden. Before that, he worked as a dental assistant between 1984-1986. After his graduation, he worked as a technician for 10 years before starting his own lab in Ystad focusing on bioinert materials. Since 2004, Patric is lecturing and giving trainings and workshops on different topics, with a focus on function and aesthetics using the latest technologies. Patric is working at Unique Dental (member of Corus Group) in the Department of Aesthetics and is part of the Corus Academy Nordic.

By Patric Freudenthal, Sweden

Since I entered the dental field in 1984, working in a laboratory, porcelain-fused-to metal – also known as metal-ceramic – has remained the *gold standard*. Back then, we worked almost exclusively with gold alloys. Today, most laboratories have shifted to non precious alloys such as Co/Cr, yet the fundamental product has not changed: it is built the same way and requires the same amount of time.

The only real time saving breakthrough came when we moved from casting to milling frameworks – the first and only major efficiency gain in the history of MC.

Over the years, there have been a lot of ideas – from press-based approaches to ceramics, single-body ceramic designs, and just about everything imaginable.

Despite these developments, metal-ceramic remains a widely used solution globally. In some regions – particularly Europe and North America – this dominance has declined as full-ceramic systems have become more prevalent, including both oxide ceramics (such as zirconia and alumina) and glass ceramics (such as lithium disilicate). Yet even in markets focused on full ceramics, cases still arise where metal-ceramic

remains the most predictable option – or where a zirconia framework must be reinforced with metal, resulting in similar costs and production times.

Throughout my career, aesthetic trends have shifted dramatically – from highly natural aesthetics to the “Hollywood smile”. To meet these demands, technicians need ceramic systems that support a wide range of aesthetic outcomes without becoming overly complex. Unfortunately, many modern systems have expanded into overwhelming assortments: more colors, more bottles, more effects, more variations in opacity and translucency. Some systems now include more than 150 different powders, even though no technician uses them all.



Initial REVO MC - A metal ceramic concept that redefines simplicity without compromising beauty.

Moment	Time	Moment	Time
Model	20	Margins	5
Spacers	3	Wax-up	15
Applying casting channels	2	Mix investment material	3
Invest	2	Burn-out	4
Prepare alloy	5	Devest, sandblasting etc.	6
Cut casting channels	3	Try-in	3
Adjustments	5	Porcelain	40
Polishing	4	Total time	120

Table 1: Time study on metal-ceramics in 2001 (classic workflow). This is based solely on my own work. For a truly accurate number, we'd need to measure it over time and with a broader team.

Every technician eventually develops their own way to cut down on powders and while still achieving an approved result.

For many laboratories – especially those with limited experience in metal-ceramics – the challenge is simple: they may no longer own a complete metal-ceramic system, and investing in a full kit for only a few cases per year is hard to justify. Buying individual components isn't easy either. What do you actually need? Which 10–15 bottles matter out of the 150 available? Can you rely on the same cutback design used for zirconia, or does metal-ceramic require different spacing and a different approach?

Another concern is the loss of expertise. As the “old guard” retires, decades of metal-ceramic knowledge disappear with them. How do you train a new generation of technicians who may have never layered a metal-ceramic crown? Can metal-ceramic be taught in a simple, structured way using a streamlined system?

These are questions I hear daily and the reason I've spent years simplifying metal-ceramic workflows. From the countless powders available, I've reduced my working palette to about fifty that cover all essential shades and effects.

One thing experience has taught me is that technicians often overcomplicate their work. In reality, how many cases arrive with ideal planning, photos, communication, preparations, and space for layering? In larger production labs, most orders come with only a shade prescription – sometimes two if you're lucky – no photographs, and little preplanning. On top of that, each technician may handle a high daily volume.

Since opening my first laboratory, I've been fascinated by production time, pricing, and quality. My first time study on metal-ceramic dates back to 2001 (**Table 1**), when I compared it to the early alumina oxide crowns entering the market, at a time when casting metal frameworks was still standard.



As the time study shows, the active working time for a metal ceramic crown is around two hours—significantly more than the 75–90 minutes typically needed for a milled, layered zirconia crown.

What does this tell us? The labor time for an MC crown is significantly higher than for zirconia. Yet in many regions—including Scandinavia, where I work, the pricing is the opposite. The uncomfortable reality is that, based on time alone, we lose money every time we produce a metal-ceramic crown.

Most of us have tried to streamline our workflow, finding personal shortcuts that save time without sacrificing aesthetics. But the core challenges remain, which is why I've focused on defining what an efficient, modern MC system should offer:

- A smaller cutback to reduce shrinkage and minimize the number of firings
- An opaque that covers reliably—ideally in a single layer
- A microlayering concept (similar to Initial ONE SQIN), allowing you to “stain your aesthetics”
- Predictable color results from bleach shades to C4
- Fewer bottles and powders
- Compatibility with existing staining systems such as Initial Spectrum Stains and Initial Lustre Pastes ONE / NF Gum.



Fig. 1: Efficient aesthetic workflow using a reduced number of powders and stains with Initial Revo MC.

Is this achievable? It is today. Today, it's entirely possible to achieve beautiful results with fewer firings, fewer powders, and just a handful of stains (**Fig. 1**) – and the advantages go well beyond that.

Table 2 demonstrates that the Initial Revo MC system reduced my working time by more than half an hour.

Moment	Time
Model	10
Design	10
Prepare blank	5
Emptying milling machine	5
Cut connectors	3
Sandblasting	1
Grinding	5
Try-in	3
Porcelain	25*
Polishing	4
Total time	71

Table 2: Time study on metal-ceramics with Initial Revo MC (all-digital workflow - *Body/Enamel Layering & Lustre Paint technique). This is based solely on my own work. For a truly accurate number, we'd need to measure it over time and with a broader team.

The system is compact, with only a small number of bottles, keeping inventory low and costs down.

- It provides a straightforward workflow, similar to the GC ONE SQIN concept. (**Fig. 2**)



Fig. 2: Simple staining of aesthetics with Initial Revo MC.

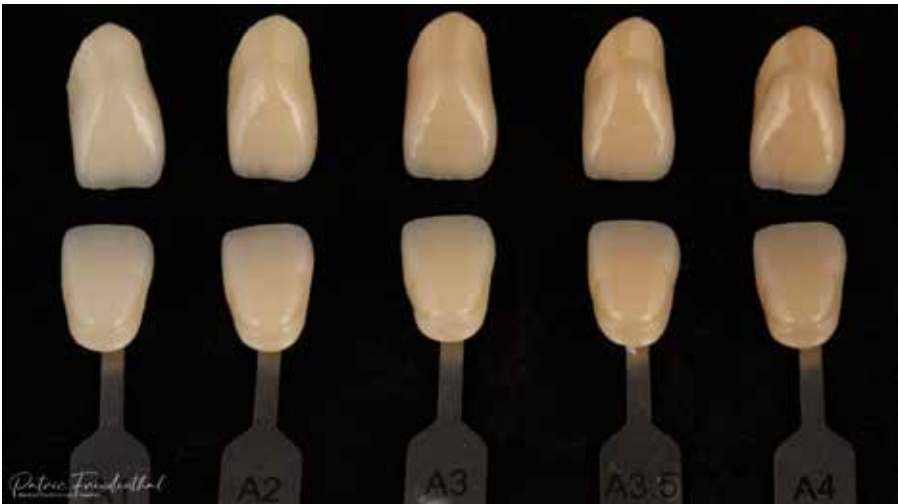


Fig. 3: Spot-on color match! Even with a smaller cutback, the color match is highly accurate.

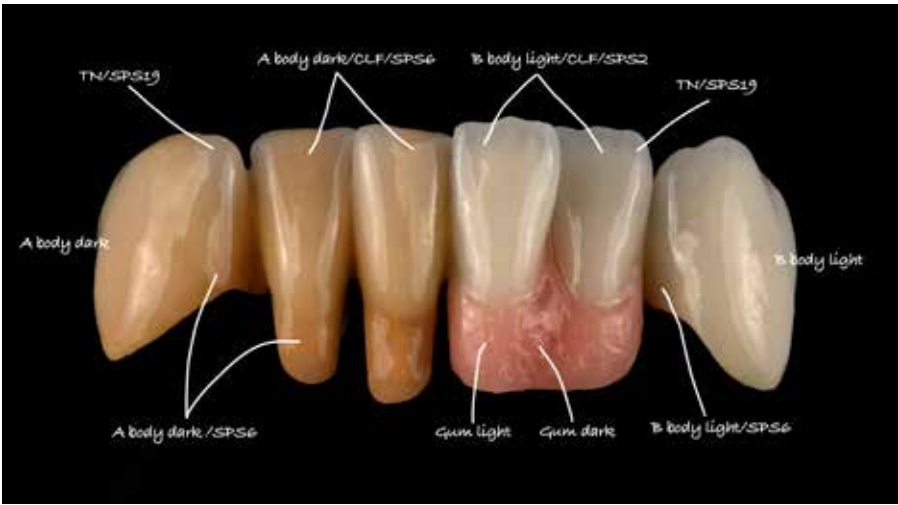


Fig. 4: Predictable shade matching occurs across the full spectrum, enabled by a streamlined Revo MC concept designed for efficient layering and consistent aesthetic outcomes.

- It's easy for newly trained technicians to learn and adopt. (**Figs. 3-4**)
- A minimal cutback is sufficient, as the material covers the framework down to 0.5 mm. This reduces shrinkage, limits the number of firings, and speeds up production. (**Fig 5**)



Fig. 5: Initial Revo MC allows for minimal cutback, given its ability to cover the framework effectively down to 0.5 mm.



Fig. 6a-b: Initial Spectrum Stains provide a straightforward yet highly effective addition for internal staining, external characterization, and fine tuning powders—supporting not only the MC system but also the all ceramic Initial IQ ONE SQIN workflow.

Fig. 7: The system offers full flexibility in mixing and matching, providing extensive artistic freedom without requiring a large assortment.

- At the same time, it still supports a more advanced layered approach when needed – especially in combination with Initial Spectrum Stains (**Fig. 6**), which can also be used for all ceramic work. This allows you to mix and match freely to achieve the desired effect. (**Figs. 7**)

Of course, you can combine all techniques—basic, basic with stains, internal staining, or mix-and-layer. And you can do it all with just 23 bottles plus an Initial Spectrum Stains Kit and/or Initial Lustre Pastes ONE / NF Gum.

Even though I have the full Initial MC system, I now use this setup for all my basic crown-and-bridge work - and

even for some of the more demanding cases. It's simply that easy to handle. For labs focused mainly on full-ceramic production, this compact kit (**Fig. 8**) is the perfect backup for those metal-ceramic cases that come in a few times a year. And as mentioned above, it's a system that newly trained technicians can learn very quickly.

And maybe most important for all lab owners: production time. My working time dropped from 120 minutes to 71 minutes per unit – a reduction of about half an hour. Scaled to 1,000 units per year, that adds up to about 550 hours saved annually—time you can reinvest however you choose.



Fig. 8: The Initial REVO MC Starter Set contains all you need for fast and beautiful characterization of metal-ceramics.

And ultimately, saving time means gaining freedom – whether you invest it in your team, your craft, or simply a better work life balance.



Initial REVO MC is a system with a small inventory that integrates seamlessly with existing universal ceramic painting solutions such as Lustre Paste ONE/GUM and Spectrum stains.