

GLASSWORKS NEWS

— INTERNATIONAL —

FROM THE FURNACE FLOOR: MY PERSONAL JOURNEY THROUGH 48 YEARS OF GLASS FURNACE TECHNOLOGY

Author: Stuart Alexander | Technical Manager, Glassworks International | Industry since 1978

I started in the glass industry in 1978. That's not a typo. Some of you reading this weren't born yet. A few of you may not have been a twinkle in your parents' eye. And yet here I am, still talking about furnaces; which, if I'm honest, says rather a lot about both the industry and my social life.



Stuart, Glass Industry Since 1978



The Early Days: Welcome to the Lab

It's been quite a journey. The glass container industry has transformed almost beyond recognition over those 48 years, and nowhere is that transformation more striking than in furnace technology. I've had a front-row seat for most of it; and on at least one memorable occasion, I was inside the furnace itself.

The Early Days: Welcome to the Lab

My glass career began in the analytical laboratory, and that's where it stayed for a good while, because the analytical lab was responsible for far more than testing. It owned the mixing and melting operations too, which meant from day one I was involved across the full upstream process: batch chemistry, raw material analysis, furnace inputs, and melt quality. An excellent place to start, and a broader education than most new starters expected.

The furnace floor itself was where theory met reality. This was a different world entirely. The heat. The noise. The characters.

There was a Teaser - the industry term for a furnace foreman, and a title that carries genuine weight on any glass plant floor; who could tell the temperature of a melt by looking at the colour of the flame. No instruments, no data, just 30 years of hard-won instinct. I thought he was performing some kind of dark art. He probably was.

Where the Camera Needed to Go:

Early in my career, I was handed a camera and told to document the inside of a brand new furnace before it was fired up. Straightforward enough, except that accessing the working end required me to squeeze through the throat of the furnace. For the uninitiated, the throat is the narrow channel connecting the melting end to the working end, and it is not designed with human comfort in mind.

I went in anyway. I took the pictures. I came out covered in refractory dust and with a new appreciation for the phrase 'confined space'. Health and safety professionals reading this may want to look away. This was the late 1970s, and the prevailing philosophy was broadly: if you can fit through it, in you go.

A modern health and safety officer would need a full risk assessment, a confined space entry permit, a rescue team on standby, and probably a stiff drink afterwards just reading my job description from those years.



Stuart, 2026

Manual Monitoring: The Orsat Apparatus and the Red-Hot Wall

Furnace monitoring in those days was a genuinely physical endeavor. Waste gas analysis was performed manually using an Orsat apparatus - a piece of equipment that required careful handling, chemical reagents, and enough patience to work through a multi-step absorption process by hand. Today's continuous emissions monitoring systems do the same job automatically, in real time, and without you standing next to a furnace that is radiating heat at temperatures that make your eyebrows feel like a questionable life choice.

Furnace pressure was checked with a manometer. Combustion was monitored by eye and adjusted by hand. Firing changeover - the switching of burners from one side of the furnace to the other; was a manual operation, performed on a set schedule by the furnace team. Miss a changeover and you'd know about it. The furnace would tell you in its own way, and it wasn't subtle.

There was no insulation on the early furnaces I worked with. The heat loss was enormous - by today's standards, staggeringly inefficient.

—But this was simply how things were done, and nobody had yet made the business case—loudly enough to change it.

The contrast with modern furnace technology is difficult to overstate. Today's glass furnaces are heavily insulated, precisely controlled environments. Combustion management is automated, with oxygen sensors, continuous emissions monitoring, and computer-controlled burner sequencing. Furnace pressure is maintained within tight tolerances automatically. Batch composition is monitored and adjusted with a precision that would have seemed like science fiction to my younger self.

Cullet usage has increased dramatically, reducing energy requirements and emissions. Oxy-fuel firing technology has transformed combustion efficiency. Electric boost systems supplement natural gas firing. Some furnaces are now exploring full electric melting as the industry charts a course towards lower carbon production.

"What took a team of experienced operators and a collection of manual instruments now happens continuously, automatically, and with a level of data capture that would fill several rooms of paper records in the old days".

What the Old Days Actually Taught Me

I don't look back on those early years with nostalgia so much as with respect for the people who ran those furnaces through skill, experience, and sheer instinct. They understood glass in a way that no instrument readout can fully replicate. The relationship between batch chemistry, furnace atmosphere, temperature profile, and glass quality was something they carried in their heads — built up over years on the floor.

What I took from those years was a foundational understanding of what glass is, how it behaves, and what can go wrong when the process isn't controlled properly. That understanding didn't come from a manual. It came from the lab, the mixing shed, a slightly ill-advised trip through a furnace throat, and a lot of time standing next to things that were extremely hot.

A junior colleague once asked me if all those years on furnaces had made me immune to the heat. I told him no; it had just taught me where to stand.



Experience you can't learn from a textbook

At Glassworks International, our technical team brings decades of hands-on glass industry experience to every customer relationship. From furnace chemistry to container performance, that depth of knowledge is what sets Glassworks International apart as a quality-led supply partner; not just a supplier of glass.