Dafosi Coal mine, Xianyang City, Shaanxi Province, China

Burner Off

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Eisenmann Environmental Technology has spent fifty-seven years destroying the things the rest of us would rather not look at. Coal mine methane is only the latest — and the machine that does it was ready years before the world would pay for it.

By Juneia Mallas

When I asked Dr. Peter Boergardts to tell me the story of his company, he did not tell me a story. He shared his screen. The man is Head of Sales at Eisenmann Environmental Technology, and he would rather show a process diagram than describe a single thing in words — the schematic of a furnace, the flow of gas through ten chambers, a destruction curve holding flat at the top of a chart. He is the kind of engineer who relaxes only once the drawing is on the table.

And then, almost in passing, he said the most honest thing I have heard anyone say in this field in a long time. The point of the work, for them, is not to make the world better. *"Our main target,"* he told me, *"is to sell plants."*

In a sector thick with green language, that sentence stops you. It would be easy to read it as cold. It is the opposite. It is the most trustworthy thing a manufacturer can tell you, because it means everything else he says has nothing to prove. He is not selling virtue. He is selling a machine that destroys 99.6 percent of the methane that passes through it, and he can show you the curve. The commercial case and the climate case turn out to be the same case — and Boergardts is one of the few people in the room who will not pretend otherwise.

So this is not really a profile of a man who would rather not be profiled. It is a profile of his machine, told through the one person alive who speaks its language fluently. That is the trade. You don’t get warmth from Peter Boergardts. You get the truth, in numbers.

Dr. Peter Boergardts, Head of Sales
Eisenmann Environmental Technology

Here is what the machine does, in plain terms.

A working coal mine has to breathe. Its ventilation fans run without stop — if they fail, the air underground turns lethal, and so the airflow that keeps miners alive is never switched off. That same air carries methane out of the shaft in a thin trace: a fraction of a percent, a whisper of gas in what looks like clean air. But the volumes are enormous, and methane is roughly eighty-two times more powerful than carbon dioxide as a warming agent over twenty years. So the breath of the mine, by design, is also one of the fastest climate forces we have, leaving invisibly, every second.

Eisenmann’s regenerative thermal oxidiser catches that whisper and burns it. The air is pushed through beds of ceramic held at around 850 degrees, where the methane oxidises into carbon dioxide and water — an eighty-two-times problem reduced to a one-times one.

The detail that stays with you is what happens once the machine is lit. Above roughly two parts in a thousand of methane, the burner switches off. From that point the oxidiser runs on the very gas it is destroying, needing no fuel from outside. *Burner off.* The poison becomes the power. A furnace fed by the problem it solves.

Yuanxiang Coal Mine, Taiyuan, China

The Eisenmann design carries that logic into its mechanics. Where an oxidiser of this kind normally relies on banks of valves switching constantly to steer the gas, Eisenmann took the valves out. Ten chambers sit around a single slow rotating distributor, turned by one small motor. It runs quietly, with very little pressure swing, with few parts to fail — a machine built to run for decades in a place no one will need to visit to fix it. That is the bet their engineers made: fewer moving things, fewer things to break. You can hear the whole company philosophy in it. To understand why Eisenmann builds the way it does, you have to know what it has spent its life destroying. Eisenmann Environmental technology's environmental engineering runs back fifty-seven years. Read its timeline and it becomes a quiet catalogue of the twentieth century's worst exhausts. A thermal oxidiser in 1968. Water treatment in 1970.

The first regenerative thermal oxidiser — the ancestor of the coal mine machine — in 1987 nearly forty years ago now. Then the list turns darker and more particular: a disposal plant for conventional ammunition in 2001; sewage sludge incineration; and, in 2006, a plant for the destruction of chemical weapons at Kambarka. By its own count, fifty-seven years of environmental technology and more than 2,800 plants installed worldwide, of which over 550 are oxidisers.

This is the identity that sets Eisenmann Environmental Technology apart, and it is worth being precise about it. They were never in the business of saving the world. They have always been in the business of un-making — of ending, cleanly, the things humanity would rather not look at. Solvent fumes, toxic water, sludge, munitions, nerve agent. Methane is simply the newest dangerous molecule on a very long list.

Which is why Boergardts bluntness reads, in the end, as a kind of integrity. A man who spends his life destroying what others would rather ignore has little reason to soften how he describes it.

Yuanxiang Coal Mine, Taiyuan, China

The coal mine methane story, for Eisenmann, begins in a valley in Guizhou in 2010.

That year they put a rotary oxidiser onto the ventilation air of a Chinese coal mine — 100,000 cubic metres an hour, by their account the largest single device treating coal mine methane anywhere at the time, built into harsh, mountainous ground. It worked. It destroyed something near 6,800 tonnes of methane a year. The machine proved itself completely.

And then, in the flat words of Eisenmann's own record, it *"was not economically viable, because the carbon credit price was too low."*

Read that sentence twice, because it is the whole of the problem in a single line. The cure existed in 2010. It ran. It abated. And then the world made it wait — not because the technology was unready, but because no one would pay enough for the tonnes it destroyed.

There is an editorial honesty worth flagging here, too. Eisenmann's engineers print the conservative number on their own slides — they value methane at twenty-five times carbon dioxide, the old hundred-year figure. Even at that cautious rate, the 2010 economics were within touching distance. Measured the way methane's near-term heat actually deserves to be measured — at eighty-two times — that Guizhou machine was already cheap, years before the market would understand it. The honest engineers, if anything, undersell their own machine.

Dingji Coal mine, Huainan City, Anhui Province, China

What happened next is the economics slowly arriving. The plants get larger and they begin to keep the heat. At Dafosi in Shaanxi, running from 2016, the oxidiser is paired with a boiler making ten tonnes of steam an hour. At Dingji in Anhui, from 2019, a pair of oxidisers with waste-heat boilers drive turbines rated at 1.5 and 3 megawatts — the destroyed methane now coming back out as electricity. At Yuanxiang in Shanxi, from 2023, the steam reaches 98 bar and a pair of turbines rated 2 and 3.5 megawatts turn the destroyed methane into power. Across fifteen years, the same German machine waited in the mountains while the value of what it did caught up to the cost of doing it.

That is the arc the Methane Brief keeps returning to: the technology was never the bottleneck. Invention was solved in 1987, proven in 2010. Everything since has been the slow business of making it pay.

This is where Boergardts plainest complaint becomes the bridge to a larger question.

He will not theorise about carbon markets. He tells you, like a builder, that in 2010 the price was too low and the plant sat there. That is not an economist’s argument. It is a symptom, reported straight — and it is exactly the wound that a coal-gas company on the other side of the world is now trying to close. In Appalachia, CNX Resources captures methane from US coal mines at commercial scale and has spent years asking what would let institutional capital underwrite that work everywhere else. Their answer is that the technology is there and the economics work; what is missing is the financial architecture.

Stand the two of them side by side and they are saying the same sentence, fifteen years apart. A German manufacturer who built the cure and watched it idle for want of a price. An American operator building the market that finally pays for it. They never have to be compared, because they are not competing — they are standing on opposite banks of the same river. The machine is the supply side, proven. The money is the missing middle.

That gap — what capital could build around abatement this cheap, this verifiable, this immediate — is the subject the Methane Brief takes up in the next instalment. It is a story about money, not machines. Boergardts only names the wound. The finance piece treats it.

Eisenmann delivers these plants now from a registered base in Shanghai, into China, across Asia, and toward Australia, where the regulations are beginning to turn. At a UN conference in Geneva this spring, the Chinese delegation named the company twice, unprompted. Where the volume of this problem actually sits, Eisenmann Environmental Technology is already there.

Dafosi Coalmine, Binchang, China

But the image that stays is the smaller one. A furnace in a Chinese valley, fed by the very gas it was built to destroy, its burner long since switched off, running clean on the problem itself. The climate does not need the engineer who built it to love it. It needs his machine, and his refusal to pretend about why he made it.

Burner off. The methane is gone. The case makes itself — told by a man who would always rather show you the curve than tell you he is actually saving the world.