
SOLDEVCO₂

Developing Solutions for a Sustainable Future

WHY WE DO WHAT WE DO

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“What are we going to do about it?”

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Every company begins somewhere. Some begin with a market opportunity, some with investment capital, some with technology. Soldevco began with a question — asked in 2021 by Alisia Rautenbach of her father, Heindré Rademan — and became a proudly South African, family-led company restoring overloaded water systems, closing resource loops and developing the people needed to lead Africa's water and environmental transition.

The Question That Started Everything

Soldevco was co-founded in 2021 by Alisia Rautenbach, a civil engineer and cleantech entrepreneur, and her father, Heindré Rademan, a civil engineer, infrastructure executive and inventor. Alisia entered the profession with a growing concern about the condition of the world her generation is inheriting — rivers under pressure, water and wastewater systems deteriorating, and agricultural systems facing increasing environmental and economic strain.

That concern was sharpened by South Africa's Blue Drop, Green Drop and No Drop assessments and by the human consequences behind them. Alisia saw what system deterioration can mean for people: communities exposed to polluted rivers, farmers contending with declining water quality, growing risks to public health and food security, and young professionals inheriting environmental damage while facing exceptionally high unemployment.

And one day she asked a question that could not be ignored:

“What are we going to do about it?”

The question that became the foundation of Soldevco.

Rather than using her personal savings solely for her own advancement, Alisia invested them in establishing a green and cleantech company capable of giving back to the planet. For Soldevco, water stopped being only an engineering challenge. It became a human responsibility — to restore overloaded systems, close resource loops and help industries and communities achieve more with less water, less energy and fewer chemicals.

Technology That Works With Nature

Ultra-Oxygen™ — the missing link in aeration.

Conventional aeration moves air. Ultra-Oxygen™ transforms it — delivering the full bubble spectrum designed to support biological, physical and electrochemical treatment processes.

At the centre of Soldevco's innovation ecosystem is the patented Ultra-Oxygen™ (UO₂) Micro & Ultrafine Bubble Generator — an advanced hydrodynamic gas-liquid entrainment system using cavitation and hydrodynamic shear to improve oxygen transfer efficiency, strengthen biological treatment processes, reduce sludge generation and enhance water quality across municipal, industrial, agricultural and aquaculture environments.

Ultra-Oxygen™ is designed to support and accelerate natural biological processes. The platform is designed to generate the full spectrum of microbubbles ($\geq 1 \mu\text{m}$ and $< 100 \mu\text{m}$) and ultrafine bubbles ($< 1 \mu\text{m}$), in line with ISO 20480 terminology. Delivered as a side-stream, retrofit-ready solution, it can modernise existing infrastructure without major civil works, subject to site assessment and application-specific design.

Measured Outcomes and Modelled Potential

Up to 95% Oxygen transfer efficiency	Up to 50% Reduction in aeration energy consumption	30–80% Reduction in sludge generation
Up to 90% Removal of organic pollutants (COD/BOD)	Up to 500% Biological restoration improvement	~2 MtCO₂e/yr* At 100% adoption in the defined scenario · ~968 tCO ₂ e/yr per modelled 2.5 ML/day facility

*Reported ranges depend on site conditions, influent quality, process configuration, operating period and application type. Every external claim must be linked to the relevant project or trial evidence, baseline and assumptions. *Climate figures represent theoretical, modelled adoption scenarios—not achieved global outcomes—and potential impact increases as adoption increases.*

Addressing Pollution Within the Treatment Process

Water pollution has direct human and ecological consequences. Untreated or inadequately treated effluent can contaminate rivers, intensify nutrient loading, reduce dissolved oxygen, damage aquatic ecosystems and constrain water use by communities, agriculture and industry.

Soldevco's integrated approach is designed to strengthen treatment within the process — enhancing oxygen transfer, supporting organic breakdown and reducing chemical dependency and sludge generation where baseline and operating evidence support the outcome. Better-controlled treatment can improve effluent quality for appropriate reuse or discharge, subject to applicable standards and site-specific verification.

The restoration objective is measurable: lower COD and BOD, higher and more stable dissolved oxygen, less sludge, reduced chemical and energy demand where demonstrated, and effluent quality verified against its intended reuse or discharge criteria.

Resource Recovery and the Circular Economy

The linear model — extract, use, contaminate and discard — is poorly suited to water-scarce economies. Soldevco's circular approach seeks to recover and reuse water, nutrients and other resources where technically, environmentally and economically viable.

- Waste reduced at source — lower sludge production reduces the volume requiring handling, transport and disposal; the achievable reduction must be established against a site baseline.
- Water reused, not wasted — improved treatment can expand reuse options once quality is verified against regulatory and end-use requirements.
- Nutrients recovered — in agriculture, aquaculture and aquaponics, circular system design can retain useful nutrients within food-production loops while managing water quality.
- Energy conserved — more efficient oxygen transfer can reduce aeration demand, associated operating costs and emissions where site data confirms the result.

Produce More

- ↑ Crop yield and growing consistency
- ↑ Water clarity and quality
- ↑ Dissolved oxygen and biological stability
- ↑ Water reuse and resource recovery

Use Less

- ↓ Aeration energy consumption
- ↓ Chemical dependency
- ↓ Sludge generation and disposal
- ↓ Freshwater demand and waste

Family Purpose, Skills and Job Creation

Technology alone is not enough. Soldevco is a father-and-daughters family-led cleantech company and remains proudly 100% youth- and women-owned. Alisia remains founder, sole shareholder and strategic adviser, while Heindré serves as CEO and Sole Director.

Heindré works alongside his youngest daughter, Lizelle Rademan, Soldevco's Growth, Digital Platforms & Stakeholder Engagement Manager, who joined full-time in 2026 after supporting the company's digital presence from its earliest days. Both daughters share their father's commitment to improving people's lives and protecting the planet for their children and the generations to come.

Practical advancement includes

- Field exposure in wastewater, agriculture, aquaculture and environmental restoration
- Technical and commercial skills development
- Research, validation and data interpretation
- Presentation, webinar and stakeholder-engagement opportunities
- Leadership, mentorship and career-development pathways — particularly for young women

Soldevco seeks to make each suitable installation a node of local economic activity — creating work for local technicians, practical opportunity for young professionals and skills that remain after project completion. Infrastructure performance is unlikely to be sustained unless operator capability and local technical capacity are developed alongside it.

This is not charity.

This is nation-building.

This is women and youth advancement.

This is long-term environmental stewardship.

This is investment in future resilience.

This Is What We Are Doing About It

We believe much of the deterioration affecting water systems and environmental infrastructure can still be reversed — but only through decisive action, scientific accountability, infrastructure modernisation, practical implementation and long-term

collaboration. Not through temporary fixes. Not through technologies designed to mask deeper systemic failures. But through measurable restoration and sustainable engineering solutions, validated site by site and scaled responsibly.

The scientific foundation exists. The technology exists. The capability to implement, measure and improve it exists.

What remains is the collective decision to act.

At Soldevco, our family and team have committed the next chapter of our lives to that mission — restoring water systems, supporting circular economies, empowering future environmental leaders and helping build a future where societies produce more while using less water, less energy and fewer chemicals. Our operating principle is to restore natural systems, empower people and seek to leave every site more resilient than we found it. It all began with a question from a daughter to her father:

“What are we going to do about it?”

This is what we are doing about it.

Heindré Rademan

CEO and Sole Director · Soldevco (Pty) Ltd

Co-founder and Inventor, Ultra-Oxygen™ Micro & Ultrafine Bubble Generator