ComPSE Consulting

DECISIONS UNDER UNCERTAINTY

Scientific Advisory by Prof. Gürkan Sin

What it is?

ComPSE Consulting drives process innovation with expert PSE—mastering modeling strategies, advanced statistics, and AI technologies.

With a track record in fermentation, sustainable processes, and pioneering life sciences modeling, I optimize R&D, train teams in cutting-edge AI and modeling tech, and bridge industry-academia collaborations

We aim to help make decisions under uncertainty to deliver efficiency and scalability.

Who I am

Prof. Gürkan Sin

- Professor of PSE, DTU (Denmark)

- €15M+ Raised for Process Innovation

- Coordinator: ModLife (Life Sciences Modeling) & PROSAFE (AI Safety)

- Global Network Across Industry & Academia

Expertise

Core Strengths

- PSE Modeling (Mechanistic, ML, Stats)

- Applied Statistics (ANOVA, RSM, Sensitivity)

- Specialization: Fermentation Processes, Biomanufacturing

- Sustainable Processes: Renewable Energy, Wastewater, Power-to-X

- Emerging AI Technologies (LLMs for Safety)

Services

What I Deliver

- Modeling strategies (data needs, training) for reliable processes (e.g., fermentation, DSP (crystallization),…)

- Statistical optimization and data-driven insights for R&D efficiency

- AI training for safe operations (HAZOP, diagnostics)

- R&D review & collaboration for scalable innovation

Approach

How I Work

- 30+ Years in PSE & Sustainable Processes

- Complexity Aware: Models, Stats, AI Solutions

- Results: Efficiency, Safety, Scalability

Contact

Get in touch to learn more

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ComPSE specific offerings

ComPSE Consulting

PSE Modeling & Optimization

- What: Optimize processes and scale up (fermentation, biotech, Power-2-X) with mechanistic, machine learning, or statistical models.
- How: Advise on modeling strategies, identify data needs, train and calibrate models, and validate for scale-up.
- Outcome: Efficient, reliable processes that scale with minimal risk.

Applied Statistics for Process Insights

- What: Leverage ANOVA, response surface methodology, and global sensitivity analysis for data-driven process insights.
- How: Design experiments, model variability, and infer performance to optimize R&D.
- Outcome: Faster, more effective R&D with robust decision-making.

Emerging AI Technologies for Safe Operations

- What: Upskill teams in large language models (LLMs) for safe operations, process design, and documentation workflows.
- How: Advise on LLM selection and integration (e.g., from PROSAFE research), focusing on safety, feasibility, and productivity.
- Outcome: Smarter, safer operations with enhanced team efficiency.

Industry-Academia Collaboration & R&D Support

- What: Facilitate research partnerships, advise on R&D projects, and explore funding for innovation,faciliate dissemination of R&D success stories (in conferences with academic rigor).
- How: Review and optimize R&D plans with PSE expertise, leveraging €15M funding experience to craft proposals.
- Outcome: Stronger collaborations, successful R&D, and access to innovation resources.

Industry-Academia Collaboration & R&D Support

My vision with this Consulting: to help drive R&D efficiency via PSE, stats, and AI

Some thoughts:

- Help with dissemination of your R&D success stories: Craft conference abstracts/manuscripts, review, state of the art, academic rigor

- Optimize PhD/MSc workflows (e.g., fermentation, biomanufacturing): help review progress, give feedback and sparring partner

- Help evaluate funding opportunities/co-writing proposals with your partners (e.g. EU Horizon program, Danish national programs, or others)

- Help review and evaluation of emerging/disruptive technologies of future, help upskilling (if needed),…

How it may help you

- Saves time on abstracts, student oversight, or proposals/collaboration activities

- Align R&D with PSE workflow and methods with emerging/disruptive paradigms

- Extends our collaboration for your R&D goals. Open for new ideas.

Next Step

- Pilot: Draft an abstract, review a workflow, or scope a proposal