

## Customer Spotlight

A multinational pharmaceutical and consumer healthcare company.

**Industry:** Pharmaceutical

**Location:** Global

**Use Cases:** Risk Management, Network Planning, Multi-Echelon Inventory Optimization

## Results

- With Gurobi's high-performance and multi-objective optimization capabilities, ICRON can solve their client's large-scale, mixed-integer programming problems in minutes.
- Using ICRON's optimization solutions backed by Gurobi, ICRON's customer can ensure that the right quantities of its life-saving medicines are always in stock.
- Through the integration of Gurobi and ICRON, a multinational pharmaceutical company achieves improved planning efficiency and enhanced decision-making.

## Partner Spotlight

ICRON is a leading provider of optimized decision making and supply chain planning software solutions. ICRON's solutions are used in companies of all sizes around the world across a wide range of industries. ICRON's AI-powered Customer Centric Supply Chain Planning solution is the first of its kind that has Risk Modeling and Global Pegging capabilities embedded into supply chain decision making. ICRON helps businesses to tackle complex supply chain challenges, empowering companies to establish resilient and sustainable supply chains.

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# Using Optimization to Mitigate Risks Across Global Supply Chains

With ICRON's Customer Centric Supply Chain Planning & Optimization solutions and the solving power of Gurobi, a multinational pharmaceutical company can ensure the efficient distribution of their products worldwide.

**A**s one of the largest pharmaceutical companies in the world, ensuring timely access to life-saving drugs and essential medications around the globe is essential.

For this multinational manufacturer, their complex global supply network consists of multiple sites that support their manufacturing process. For example, there are four different sites for manufacturing chemical active ingredients, which are augmented by other active components created with biotechnology. There are also 12 sites for manufacturing and packaging solid delivery forms (such as tablets, coated tablets, or powders), semi-solids (such as ointments or creams), and liquid pharmaceuticals (such as those used in injections or infusions). Finally, there are five different sites that ensure the supply of medical device products and components. These production sites – in addition to many external contract manufacturers – must be orchestrated to optimize production capacity and flexibility.

Nonetheless, the company faces certain supply risks that they must overcome in order to keep up with demand.

With ICRON, the leading provider of decision-making and supply chain

optimization software solutions supported by Gurobi, the manufacturer can continue to meet the diverse needs of healthcare providers and patients around the world.

## Overcoming Global Supply Chain Challenges

One of the most significant questions ICRON's customer faces in its operations is how much inventory should be stocked, and where.

As they work to answer that question from both a strategic and tactical perspective, the company may come across several challenges. These include:

- Long production and procurement lead times, which can potentially impact the availability of their products
- Production disruptions, such as unforeseen events or issues within the manufacturing process that can impact the timely delivery of medications
- Quality issues with single-sourced special materials, which can pose challenges in maintaining consistent product quality and reliability



**“ICRON’s dedication and adaptability—combined with the unparalleled solving power of Gurobi—led to an integration of optimization capabilities into the decision processes of (our) supply chain.”**

Senior Supply Chain Analyst



To ensure that inventory is always in the right place and in the right quantities, the customer must take a unique risk mitigation approach—one that's powered by fast and accurate mathematical optimization.

## Using Optimization to Tackle Complex Risks

Each year, ICRON's customer uses a long-term supply planning process to assess various areas—such as capacity development, investment decisions, or supply network alterations—to enhance their supply chain operations. These evaluations cover the entire pharmaceutical supply chain and help ensure that all components of the global supply chain network are considered in a long-term optimization model. This model incorporates finite capacity considerations and spans a timeframe of over 15 years.

The customer also uses a mid-term optimization model to strike a balance between inventory levels and operational efficiency, which allows for a more accurate assessment of inventory needs and optimization strategies over a designated time frame.

To holistically optimize the size and location of operational buffer stocks, the customer utilizes a Multi-Echelon Inventory Optimization model. The evaluation encompasses various factors—including demand patterns, lead times, supply risks, and customer

service requirements—to ensure a comprehensive optimization approach. By considering the specific needs and characteristics of selected brands or supply chains, the customer can tailor their buffer stock strategies to enhance responsiveness and mitigate supply chain disruptions effectively.

All these processes require advanced mathematical modelling capabilities and different types of models to support the decisions that the customer must make to effectively mitigate risks.

With ICRON's advanced algorithmic capabilities—including heuristics, optimization, simulation and data analytics—the customer gets both the simulation and optimization it needs to accurately analyze and mitigate supply chain risks.

## ICRON and Gurobi: Empowering Resilient Supply Chain Risk Management

ICRON's modeling techniques enable their customer to perform comprehensive optimization while considering various constraints, scenarios, and objectives.

The complexity of the customer's supply chain constraints and the length of the planning horizon result in a large-scale, mixed-integer programming problem. With Gurobi's high-performance and multi-objective optimization capabilities, these models can be solved within minutes.

ICRON also utilizes Gurobi's warm-start capabilities to efficiently optimize ad-hoc what-if scenarios, while Gurobi Instant Cloud provides a natural fit for ICRON's SaaS model, offering the scalability their customer needs without additional hardware investments or IT maintenance overhead.

Overall, ICRON's dedication and adaptability—combined with the unparalleled solving power of Gurobi—have led to a seamless integration that allows their customer to continue its most essential operations across the globe.

## Experience Gurobi for Yourself

Our 30-day evaluation license includes:

- Free benchmarking services
- Free model tuning services
- Free access to our world-class technical guidance and support
- Two free hours of one-on-one consulting services

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