



# Focus: PRODUCTION / MANUFACTURING

## Advanced Process Management™ (APM)

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Ultramax® provides a **full solution** to determining (tuning): “*the combination of setpoint adjustments that makes an existing production process yield the safety, quality, throughput, costs and other impacts that best contribute to company needs and objectives*”. “Setpoints” are the key directions given to the Regulatory Control in the existing Process Control System (PCS) to run the process.

It resolves multiple trade-offs. For instance, it discerns to increase throughput when valuable, and just to reduce unit costs when it is not. It is applicable when to know the outcome of new adjustments one needs to run the process with those adjustments. It complements virtually all Regulatory Control, and incomplete or sub-optimal Supervisory Control logic. When applicable, engineers get **better** results, and **faster**.

**Situation:** Over 95% of production operations are inefficient – that is, they can contribute more to user-defined performance metrics. In other words, often operational execution leaves room for improvements – the “waste” that Ultramax helps avoid.

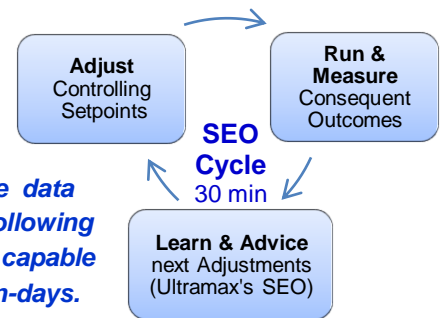
Those operations are not sufficiently optimized because other solutions to solve the problem are limited or require too much, e.g., analytical proficiency, risks (safety, making scrap), and engineers’ time.

**Ultramax® (UMAX®) serves as a self-learning, Optimizing Supervisory Control that improves dramatically the efficiency of operations of existing equipment and controls, even of operations previously deemed satisfactory.** The gains experienced in high-volume production/manufacturing usually range from a few \$100K/year to a few million dollars per year per process, including processes with various levels of advanced process control (APC).

**In more detail:** Production efficiency is **managed** by decisions on the **adjustment values** of the controlling **setpoints**. Production efficiency is **evaluated** by how well it operates within required input/output limits plus improvement goals (e.g., cost reduction), based on user-collected **metric values**.

*As operations proceed, the Ultramax’s intelligent analytics **learns** from the data generated and **determines better setpoint adjustment values** (tuning) for the following runs. Improvements continue until you get to the optimum performance capable by the process, or until you are satisfied with the results. It takes a few person-days.*

**Thus, the user maximizes contribution to enterprise goals** (e.g., productivity, economics) **while maintaining reliability complying with basic requirements** (e.g., for safety, quality, regulations and commitments).



The Ultramax Supervisory Control has been applied successfully to hundreds of batch, continuous, discrete and bulk industrial **processes**, such as: Chemicals, Power Generation (100 boilers), Paper / Nonwovens, Semiconductors, Soaps / Detergents, Plastics / Composite Materials / Molding, Food Processing, Pharmaceuticals, Machining / Metal Removal, Painting / Coating, Pigments / Dyes, etc. Typical **setpoints** adjusted are: temperatures, pressures, flows, speeds, times, amount of ingredient, positions, amps, etc. Typical **metrics** to evaluate and balance operating performance are: safety, quality (within specs, closeness to targets, purity, consistency), productivity / throughput, costs, margins / profits, KPIs, energy and materials consumption, environmental impact, regulations, etc. See examples in [www.ultramax.com/Applications.htm](http://www.ultramax.com/Applications.htm). Ultramax is applied *fully manual, only advisory* and *autonomous closed-loop* optimization. It does not require the user to provide process models, just to measure results.

More generally, **Ultramax is an Optimization Guiding Software for quantitative decisions that are tested sequentially and can be refined by learning from past tests’ data**. Thus Ultramax will also apply to Product and Process Design with sequential tests in labs, prototypes, pilot plants and simulators; and to Tuning Parameters (in rules, algorithms, treatments, reactions, methods and formulas) with the working system itself, or with simulators.

The **Ultramax Method** offers solutions for evaluating several outcomes for net enterprise advantage when otherwise difficult.

**Ultramax** completes the current PCS, and complements Engineering, Lean Manufacturing and Six Sigma process upgrades.

**UMC and its Agencies world-wide look forward to partnering with you in enhancing the effectiveness and value of your processes, products and personnel. We enable you to experience the possible improvements by providing you the right software, training, guidance and support.** We offer a no-cost evaluation of applicability. Except for travel costs, annual 100% ROI is guaranteed if you evaluate benefits in economic terms and we estimate sufficient potential.

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