

Unlock  
Hidden Potentials to



Optimize Your Process  
Performance

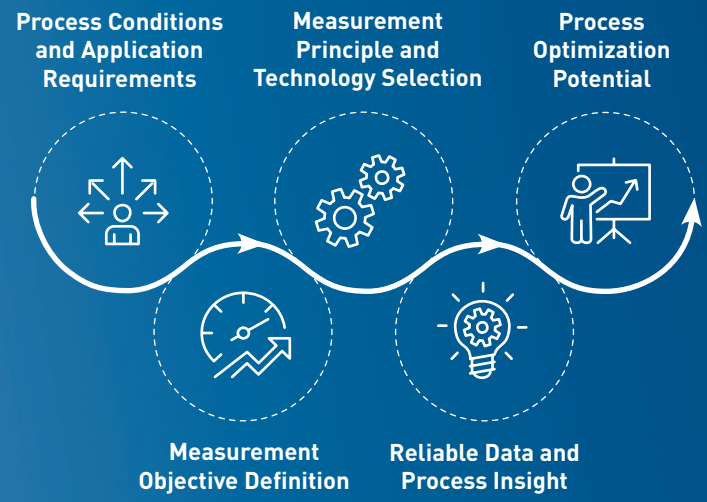
# Analytical Solutions to Turn Measurements into Process Performance.

# Every Manufacturing Process Is Unique. So Is Yours.



- Manufacturing processes vary in materials, recipes, conditions, targets, and regulations.
- Standard analytical measurement technologies cannot cover every application-specific requirement.
- Sustainable optimization demands customized approaches.
- Modular, versatile technology concepts enable precise process-specific solutions.

Our application-driven, structured approach builds the solution for your individual process.



# Industries That Trust Our Services.

# Your Benefit: Measurable Value.

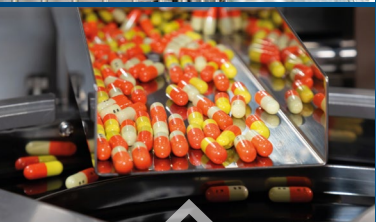
Food  
Beverages



Agriculture



Cosmetics  
Bodycare



Pharmaceutical  
Biotechnology



Chemistry  
Petrochemistry



Plastics  
Polymers

Plant  
Manufacturer



Talk to us about your specific measurement task.  
[www.hellma.com/solutions](http://www.hellma.com/solutions)



- ✓ **Process-Focused Approach:**  
We take the time to gain a holistic understanding of your process, so you receive precisely the right analytics and solutions – fully integrated, perfectly scoped, and designed to deliver measurable value.
- ✓ **The Best Solution - Not the Preferred Technology:**  
Through our strong partner network and broad portfolio of proven process analytical technology, we combine the right methods and technologies to deliver the most suitable solution for your application.
- ✓ **Turning Data into Competitive Advantage:**  
Achieve demand driven results through sophisticated data processing and evaluation.
- ✓ **Holistic Lifecycle Support & Long-Term Partnership:**  
You can rely on comprehensive support from first contact to technical feasibility and implementation to long-term support.

Return on  
Investment.

Optimized Processes,  
Increased Efficiency.



# Start Risk **FREE**

## Quick-Check

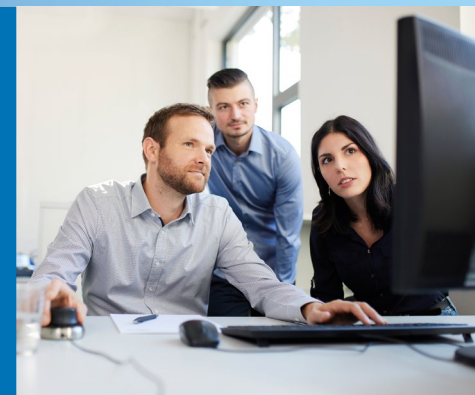
A perfect tool for an **initial test of the feasibility** of your analytical demand. You gain insights into how to approach your measurement task, including potential technologies and methods to use.

## Proven in Real Customer Applications.

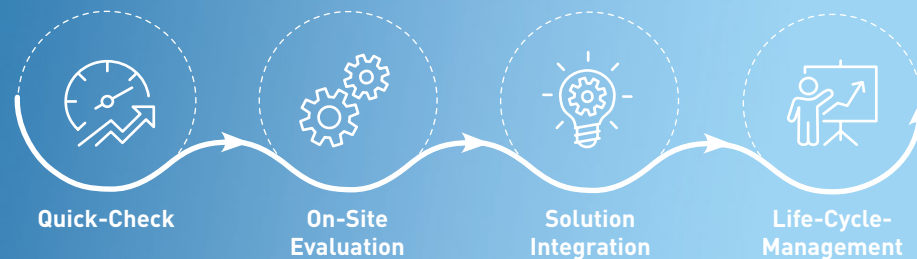
- Process monitoring of polymerization and esterification reactions – Chemistry / Plastics
- Particle measurement in food powders – Food
- Active pharmaceutical ingredient (API) verification – Pharma
- Determination of color shade during pigment production – Paints / Coatings
- Sodium determination in alkali carbonates – Chemistry
- Monitoring water and contaminants in solvents – Chemistry / Pharma
- Hydrocarbon analysis in petrochemicals – Petrochemistry
- Fatty acids in cosmetic products – Cosmetics
- Glucose and ethanol monitoring in fermentation – Biotechnology / Food
- Iodine number in palm oil – Food / Oleochemistry

We guarantee you:

- Professional initial consultation with our PAT Experts
- Quick assessment of real process samples in our lab
- Final report and results meeting



## Next Steps



Solution Development

Validation



# Best Cases

## Determination of Acetate and Ethanol in Aqueous Samples

**Special Requirement:** Very high accuracy requirements with 0.004 mol % in the aqueous sample to be analyzed.

**Specific Solution:** Consulting on suitable process analytical technology techniques and systems.

Developing a demand-driven custom solution with complete spectroscopic analysis. In addition, nine different measurements could be analyzed using Hellma's FMX Multiplexer.

Bioprocessing



GMP  
READY

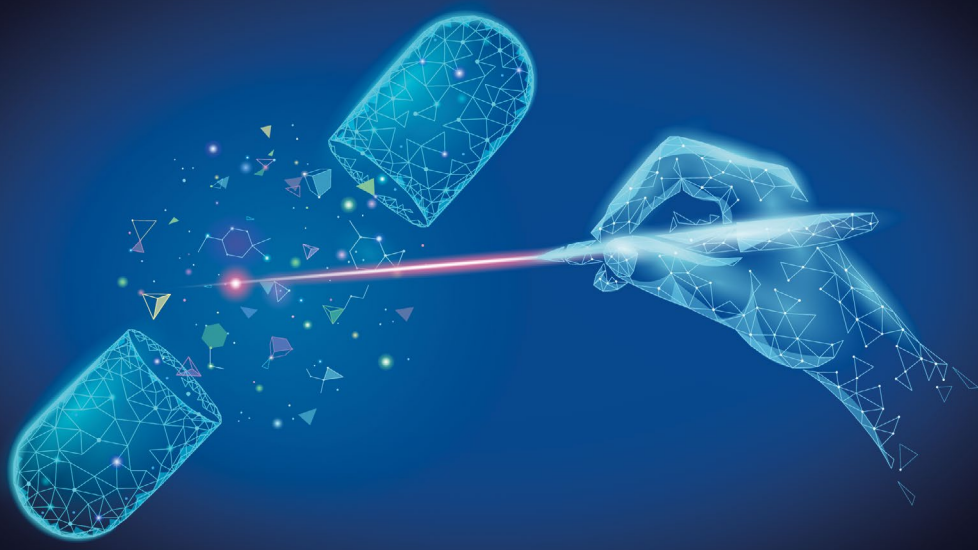
## Determination of Water Concentration in a Solvent for a Real-Time Batch Release

**Special Requirement:** GMP regulated process in ATEX environment.

**Specific Solution:** Consulting on suitable process analytical technology techniques and suitable systems.

Selection, adaptation and implementation of an ATEX approved NIR measurement system which communicates in real time and under GMP regulations with the process control system via OPC UA.

Pharmaceuticals



## Real-Time Monitoring of API Concentration in Pharmaceutical Environment

**Requirements:** Using already installed spectrometers, a selection of suitable measuring points had to be determined. Additionally, a chemometric service was required to model the concentration of active ingredients in tablet production.

**Challenge:** Finding representative measuring points for the active ingredient concentrations in a complex system together with the customer.

**Our solution:** Thanks to our experience in the PAT area and the associated PAT consulting, we were able to ensure the best possible analysis together with the customer and also create meaningful models for the active ingredient concentration with our chemometric service.

Plant Manufacturer

## Reaction Monitoring of Polymerization Processes

**Special Requirement:** Endpoint determination of the polymerization reaction of styrene using particle size and degree of conversion. Very fast and accurate measurements required due to rapid reaction progress.

**Specific Solution:** Consulting on suitable process analytical technology techniques and suitable systems. Setting up a demand-oriented system concept with spectrometers and optical probes for rapid and accurate real-time measurements.

The use of our high-end reflection probes ensure safe measurements without disturbing fluid dynamics.

Plastics/Polymers

# Hellma<sup>®</sup> Solutions

Analytical Insights  
Driving Process Efficiency



## We Live Passion for Process Analytics.

Hellma Solutions develops and integrates application-specific, technologically differentiated solutions for demanding customers worldwide. We combine deep application understanding with system expertise and act as a long-term solution and technology partner for our customers.

- ✔ **100 years of experience** in analytical spectroscopy  
Hellma stands for **continuity and reliability**
- ✔ Independent, owner-based company, which guarantees  
**fast and flexible results**
- ✔ The world's largest program of **spectroscopy probes,  
flow cells and sample interfaces**
- ✔ **A broad portfolio of proven process analytical technology**  
to realize the technological concept quickly

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