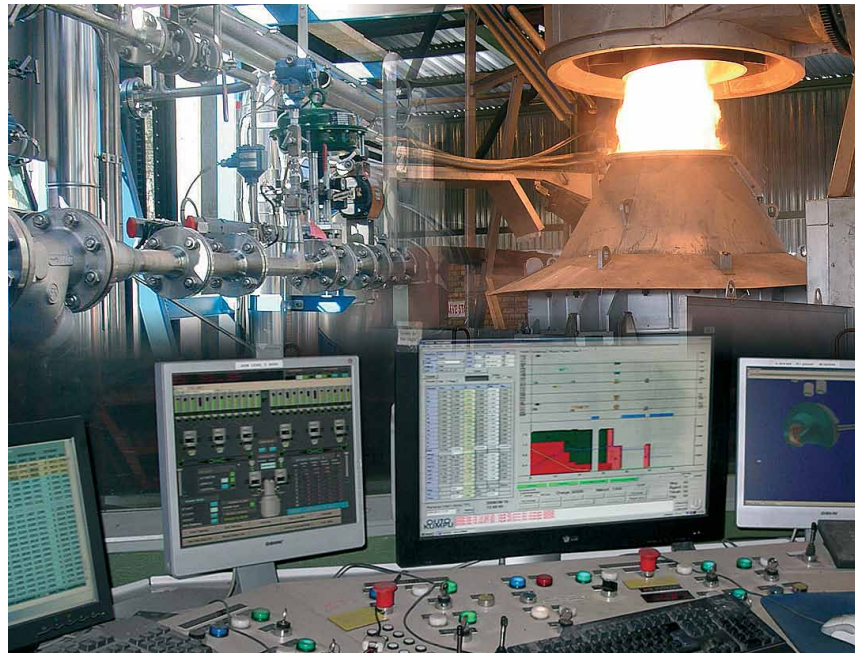


The Complete Solution  
For Converter Process  
Management



UTCAS<sup>®</sup>

The UHT Converter Automation System

## The UTCAS Concept

The UHT Converter Automation System, UTCAS, is a suite of highly sophisticated computer system modules specially designed and developed for converter refining processes.

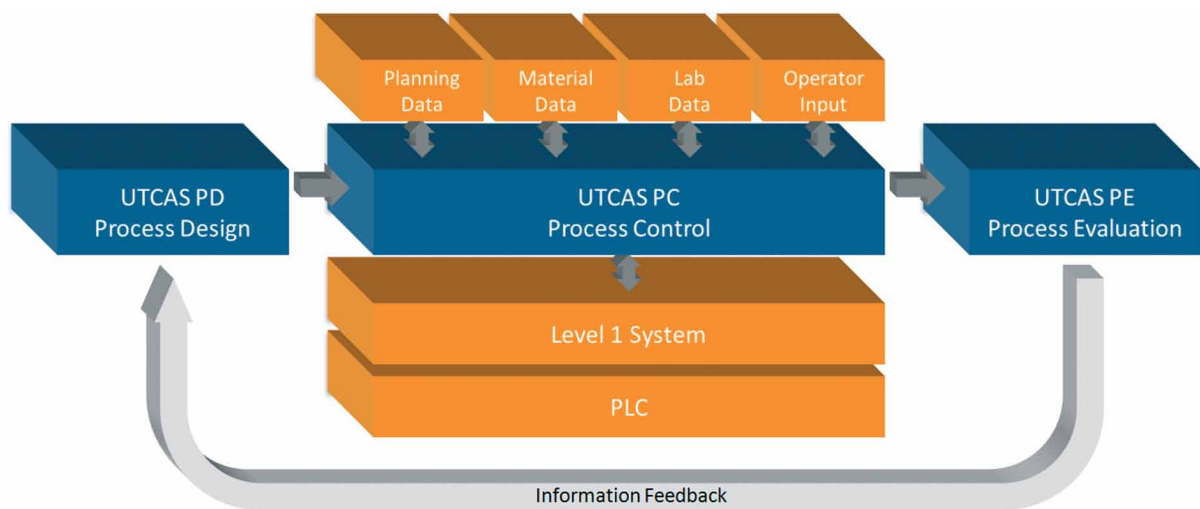
The UTCAS concept does not only include an effective real-time process control system but also advanced tools for process design and production evaluation and will thereby provide a complete solution for converter process management.

The Process Design tool provides an effective instrument for designing best-practice, tailor-made, process routes for each different steel grade. If required, several alternative routes for the same grade can be designed.

The real-time process control system can practically run the process fully automatically from start to end – following the pre-defined process design – ensuring that the best-practice is repeated heat after heat.

The Process Evaluation tool is used to evaluate produced heats with a focus on the effectiveness of the process being used, providing feedback for future process design.

By taking advantage of all UTCAS modules, it is possible to drastically increase productivity, improve quality and, at the same time, lower production costs.





## What makes UTCAS a unique solution?

The very heart of UTCAS consists of a set of highly advanced thermodynamic and mathematical models.

The models are based on the latest results from university research combined with many years of empirical trials and studies.

The capacity of the models is utilized by two powerful functions – Tracking & Prediction and the Process Optimization.

The Tracking & Prediction function allows the operator to consistently follow the actual heat state as well as the final (calculated) heat state, giving great opportunities to correct problems and deviations before they arise. The process can quickly be turned back on track without losing time and extra costs.

The Process Optimization function makes it possible to balance the process to simultaneously meet all defined targets for steel and slag composition, steel mass, process temperature and tapping temperature. It will calculate the exact amounts of gases and materials in order to move from the given start conditions to the defined targets in the most economic way.

Before starting the process, the Process Optimization is used to generate an initial process plan based on the actual incoming composition, mass and temperature.

During processing, the Tracking & Prediction and Process Optimization functions are administrated by the process control system. The Tracking & Prediction will pick up any deviation in gas or material input as well as results from sampling and temperature measurements. The Process Optimization will then re-calculate the process plan ensuring that the right corrections are made in order to meet the final targets.

Both the Tracking & Prediction and the Process Optimization functions are available for simulation and evaluation purposes – by the Process Design and Process Evaluation tools. This is extremely useful for the testing of process changes and when designing processes for new grades.

## UTCAS Makes Money!

The Process Design tool will ensure lean and cost efficient process administration, a uniformed and consistent practice and cost savings due to fewer mistakes in real production.

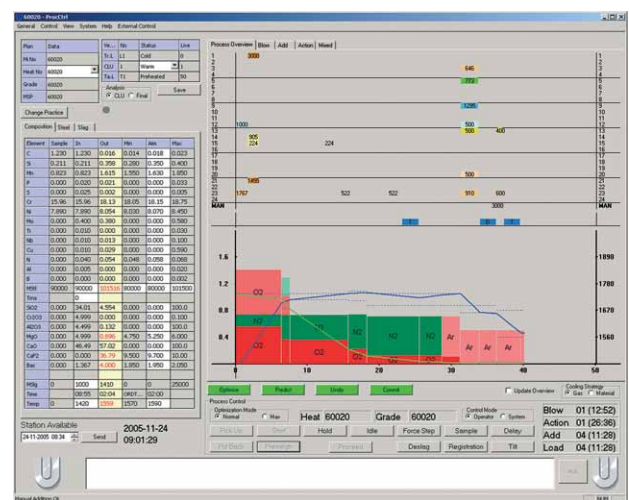
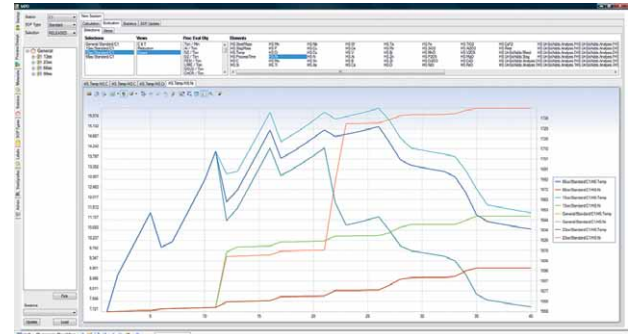
The real-time process control system, together with the adaptive and dynamic Tracking & Prediction and Process Optimization functions will greatly enhance productivity and stability. It will also improve the precision in product quality and heat size control.

Since the required process gases and materials are minimized and dynamically re-calculated, the production costs will decrease.

The operators are provided with very powerful support functions when there is a need for quick decisions and no room for mistakes. This will lead to a less stressful working situation and also that less experienced operators can be capable of handling complex and difficult situations.

UTCAS can also be configured as a “flight simulator”, providing the perfect operator training environment.

The Process Evaluation tool serves as a knowledge base for future process corrections and is very useful for process development – in short as well as long terms.



## Integration

UTCAS can either be installed together with a complete new PLC package supplied by UHT or it can be integrated with an already existing PLC/automation system via an open and easy configurable OPC interface.

To allow for full integration, UTCAS provides easy-to-use interfaces for legacy systems such as raw-material, planning and lab systems.

The production data is stored into the UTCAS database. From these data, complete heat reports are generated. UTCAS also provides several interfaces for external data collection, to data warehouse or business systems such as SAP.

## Recent major Installations

The latest version of UTCAS is today in successful use at the Outokumpu plant in Avesta, Sweden and also at both converters at the Acerinox Columbus plant in Middelburg, South Africa. At these sites, UTCAS has contributed to a fully automated process of 100% of the production – all in all well over 1 million tons of stainless steel per year.

# UTCAS Product Packages

## UTCAS PD

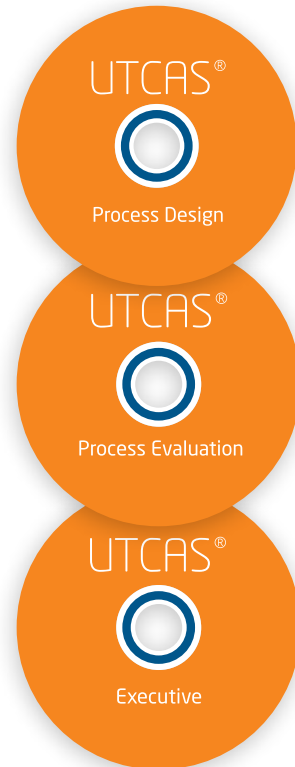
The UTCAS Process Design can, together with a database be installed separately as an off-line tool for designing and simulating processes. This would be the ideal tool for process metallurgists in every day work for process development. It is also the perfect environment for operator training.

## UTCAS PE

The UTCAS Process Evaluator can be supplied together with UTCAS PD or together with the UTCAS Executive package. It provides many useful functions for production data processing, reporting and deeper analysis of the process metallurgy and thermodynamics.

## UTCAS Executive

The UTCAS Executive is offered as the preferred full solution package including UTCAS PD, UTCAS PE and the real-time process control system – UTCAS PC. This package provides all that is required for a fully automated process management including tools and interfaces for integration in any existing system environment.





## UTCAS Service Packages

### UTCAS Integration

For each product package, UHT also provides a suitable and tailor made integration package.

Our integration packages include installation, technical interface adaptation, training and commissioning with the ambition to maximize customer value in the shortest possible time.

### UTCAS Process Support

In addition to our integration package, we can also offer a more substantial long term process support package including expert knowledge in further process development and utilization of the many possibilities of UTCAS.

### UTCAS System Support

On the technical side, most customers will benefit from a system support agreement including free upgrades and patches as well as remote assistance.

The exact scope and duration of training and support packages are to be agreed upon.

### UTCAS Training Support

In our UTCAS Studio in Uddeholm we have a fully operational converter process simulation environment – much like a flight simulator. Here we offer the possibility to simulate and evaluate your process. We also provide full training packages including metallurgy, process design and engineering and hands on process control operation.



## Stainless Steel, FeCr or FeMn

Regardless if you are a producer of stainless steel, FeCr or FeMn – the flexibility of the process design and the modeling capability will support any of these processes.

No matter if your converter size is 150 tons or 10 tons – the UTCAS platform will be the perfect solution in any case.



## Good Operators?

So, you have very good operators and therefore the benefits would be less?

In fact, you could benefit even more. Skilled and alert operators will have more free time to plan ahead, to evaluate the current and upcoming production situation and pre-optimize the following heats. Being one step ahead means a great difference. UTCAS can put a whole new dimension to your production.



## Business Solutions

Of course, every site and process is unique in some way and therefore we would very much like to come and visit you and learn more about your situation. Together, we can discuss in what way that we and UTCAS can be of assistance.

Regardless of your current situation, your future plans and needs, we are sure that we together can find a really good and attractive business solution.

Our company has over many years earned a worldwide reputation of good, long and solid customer relationships. We focus very much on customer satisfaction and we always do a little more rather than a little less.

You are also very welcome to visit our UTCAS Studio in Uddeholm where we can demonstrate all the UTCAS facilities, simulate your own process and discuss possible improvements.

Vast metallurgical experience, forefront technology and cost saving equipment have established Uvån Hagfors Teknologi AB as a reliable supplier of metallurgical products, innovative processes and advanced control systems to the iron, steel, ferroalloy and foundry industries worldwide. We concentrate our activities to granulation- and converter refining- technology for metals.

UHT supplies key equipment as well as turn-key plants. Our program includes plant and system design, engineering and equipment, installation, training of personnel and start up of equipment.



UVÅN HAGFORS TEKNOLOGI AB