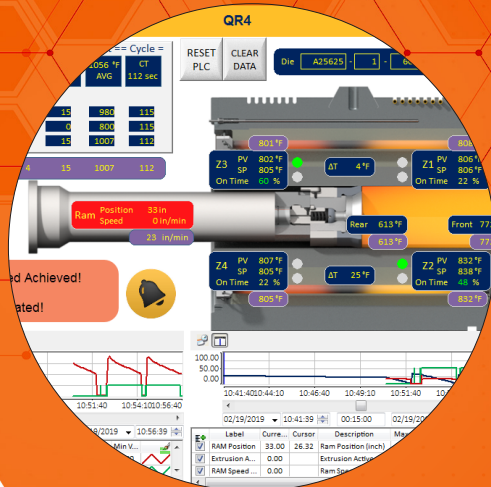


# (VOS)

## VISUAL OPTIMIZATION SYSTEM



### PURPOSE

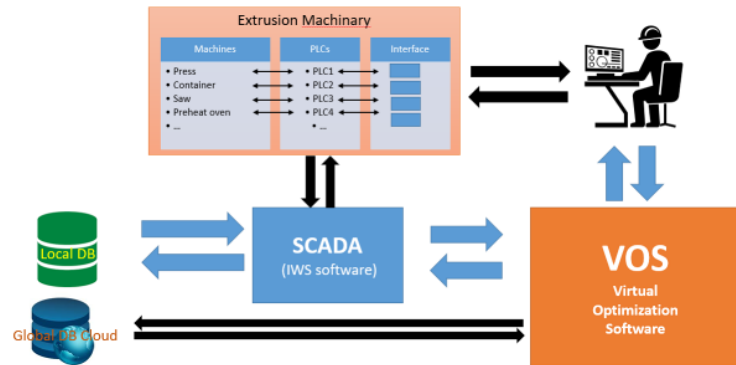
► Increase production by maximizing ram speed and by using proven recipes.

### FUNCTION

The system puts the press operator in charge by providing tools for extrusion cycle tuning. The system can connect to various PLC using Scada server : Press, QR Container, Puller, Die Ovens, Pyrometers, Billet Furnace, Quench, etc.\*

### SYSTEM OUTLINE

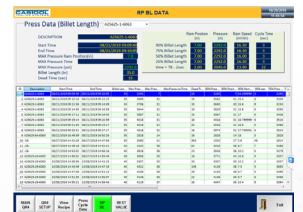
The recipe based visual optimization system is designed to be run at the press. The core strength is the color coded real time comparison to recipe targets.



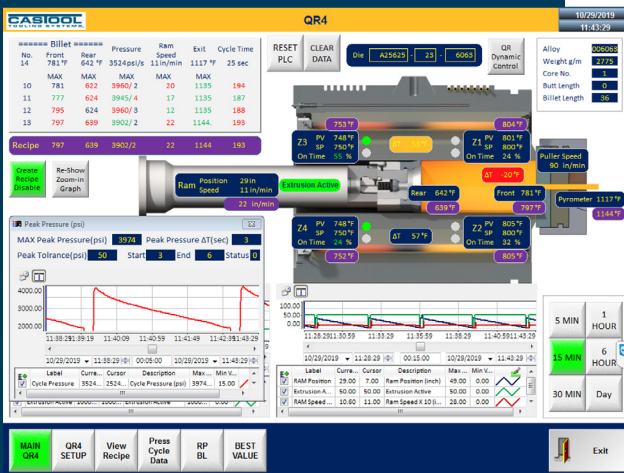
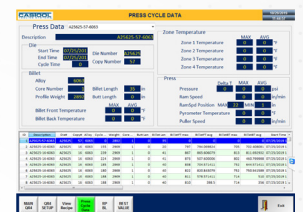
The recorded data are displayed on the monitor so that the operator can see all the useful data on one screen. VOS can analyse the recorded data from previously extruded billets and recommend better recipe (if applicable) for upcoming billets to improve productivity.

### VOS CREATE DATA BASE

- Full data base : pressure, location, speed and temperatures per second; this option takes lots of space but records all the parameters, very beneficial for in-depth and custom analysis of data and research and development purposes but not recommended for all extrusion trials.
- Summarized database: this option summarizes the data just enough to be able to rebuild load curves and temperature history (the required memory for this option is less than 10% compared to full data base)
- Recipe data base : includes given process parameters (ram speed, billet preheat, billet length, material, container set points...) and key information about process and profile such as exit temperature, maximum pressure, surface quality etc.



Data base



## RECIPE MANAGEMENT

- Add, update, delete recipes
- Create recipes specific to profile, copy, alloy and press

## TRACK REAL TIME PRODUCTION STATUS

- Ram speed
- Zone Temperatures
- Temperature Gradients
- Current draw

## GENERATE REPORTS

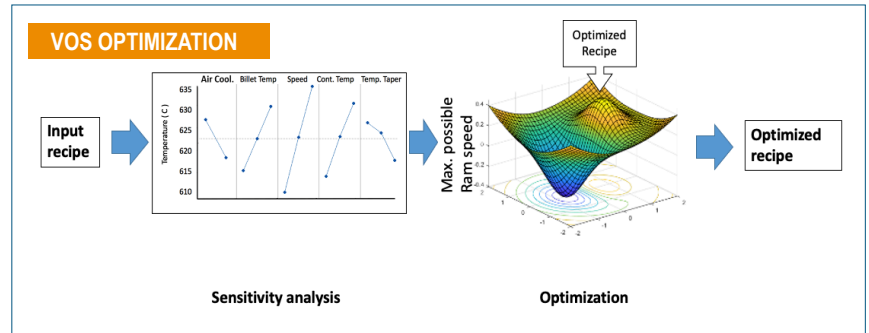
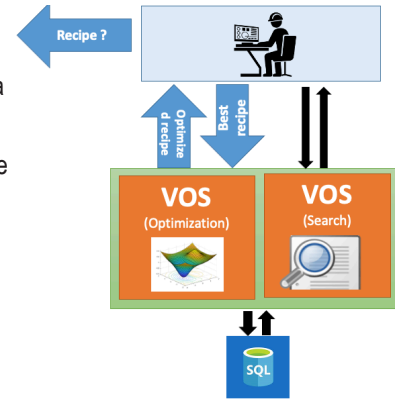
- Zone Temperatures, Ram speeds, Current draw, Temperature gradients
- Custom reports: Billet Temps, Die change times, Exit temperature, Quench

## FEATURES

- Track data per billet
- Operator prompts for manual optimization
- Multiple language support
- 19" Industrial PC with pedestal
- 1 week onsite support and training

## RECIPE OPTIMIZATION

- Optimize the best recipe based on given criteria (process parameters, limits,...)
- Predicts quantitative values i.e: exit temperature and load.
- Suggests the optimized recipe to operator to improve productivity.



## BENEFITS OF THE CASTOOL VOS (VISUAL OPTIMIZATION SYSTEM)

- ▶ Best recipe selection (search)
- ▶ Recipe optimization by sensitivity analysis (Optimization) - under development
- ▶ Artificial Intelligence (AI) - under development

*With Visual Optimization System, Castool again sets a new standard of excellence in the extrusion industry.*

Results may vary depending on individual press characteristics and setup.



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## FUTURE WORK

- Use AI to choose and optimize the recipe based on big data on cloud
- Improve optimization module so that it can suggest changes to extrusion machinery

