Ammonia@Max

Production managers of ammonia plants are under pressure to maximize profitability due to global competition, worldwide market saturation, tightening legislation on ecosphere load, and fluctuating oil/gas prices. IPCOS optimization solutions for ammonia plants relieve these pressures and increase margins.

THE BENEFITS ARE OBVIOUS:

Benefits of base layer control optimization and maintenance services:

- Improved plant stability (optimal on-stream factor)
- Minimal alarms (operators can focus on essential operations)
- Minimal operator interventions
- Standardization of controls (ease of maintenance)
- Highly trained operators and maintenance engineers

Benefits of MES layer control optimization and maintenance services:

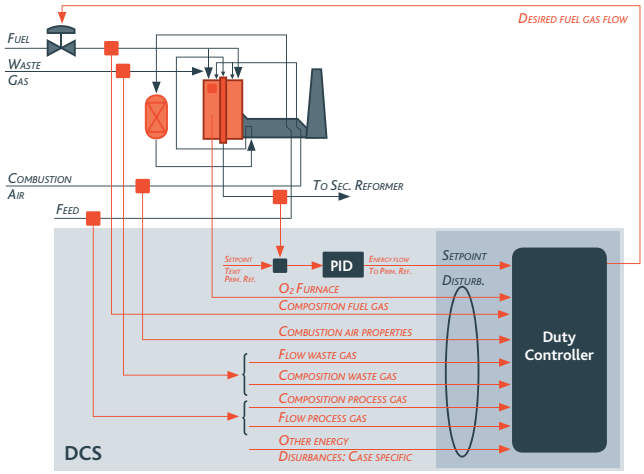
- Increased ammonia production (up to 2%)
- Minimize specific natural gas consumption (up to 1%)
- Increased steam export or minimized steam consumption (depends on plant layout)
- Online key performance indices computations used for accurate performance monitoring

OPTIMIZATION SOLUTIONS FOR AMMONIA

Layered approach

IPCOS and our partners help you achieve optimal operation of your ammonia plant, from solving basic instrumentation and control problems to high-end optimization.

Some examples:



Base Layer automation and control:

- Major review and optimization of existing controls
- Tuning of controls and optimization of control structures (duty controllers, reformer pass controller)
- Board to DCS migration
- Standardization of controls
- Documentation
- Instrumentation/actuators review and upgrade (e.g. pneumatic to electric)
- Advanced maintenance services on base layer controls
- Performance monitoring services for basic controls
- Engineer and operator training
- Instrumentation maintenance (e.g. online analyzers)

Manufacturing Execution Systems (MES):

- Data reconciliation, yield accounting and other online KPI computations
- APC installations and maintenance
- Process Information Management Systems (PIMS)
- Real-time optimization

inca

FERTILIZER & SYNGAS SOLUTIONS

CONTROL TARGETS OF APC ON AMMONIA UNITS:

REFORMING:

Constant and optimal make-up gas composition, reduce fluctuations

Uniform optimal methane cracking

Tolerate heating value fluctuations of fuel gas

Optimize energy usage (compressors, firing etc.)

Avoid coking in the reformer tubes

SHIFT CONVERTERS:

Maximize CO conversion

Keep temperature specifications

CO2 REMOVAL:

Minimize aMDEA solution flow for given CO2 slip

Minimize stripping steam for given CO2 slip

Maximize total throughput taking care of the allowed CO2 slip to the methanizer

COLD BOX:

Constant H2/N2 ratio

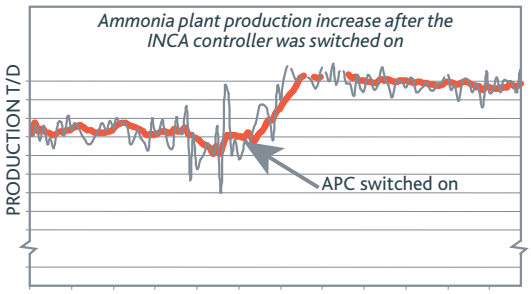
SYNTHESIS:

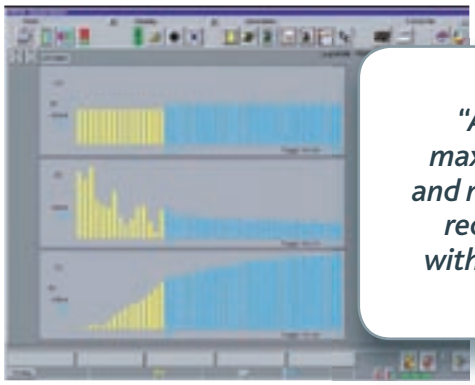
Maximize conversion rate at minimum energy consumption (compressor)

Maximize steam production

STEAM GENERATION:

Maximize production of high pressure steam





OPERATOR CAN OBSERVE FUTURE MOVES OF THE INCA CONTROLLER ON THE DCS

Ammonia Operator:

"APC has increased the maximum production level and minimizes the production reduction during periods with disturbances and plant problems."

Ammonia @Max

OUR PARTNERS

IPCOS works together with Uhde, Stamicarbon, Haldor-TopsØe, Johnson Matthey for designing dedicated APC solutions for their licensed technologies.
The combination of in-depth process know-how from the licensors, APC technology, APC implementation experience and process knowledge of IPCOS guarantees best performance APC solutions resulting in sustainable benefits for customers for many years.
IPCOS also teams up with Naizak, Ceamag and Siemens for APC solutions.

REFERENCES

YARA
Benefit studies on several ammonia, urea units | Tuning of existing controllers | APC installation on several ammonia units | APC installation on urea unit | Global APC framework agreement

PCS NITROGEN
Tuning of existing controllers | Design and implementation of duty controllers | APC Benefit studies on an ammonia unit | APC installation on ammonia unit

KEMIRA
Benefit studies on an ammonia unit | Tuning of existing controllers | Design and implementation of optimal controllers

BASF
Benefit studies on an ammonia unit | APC installation on an ammonia unit

PIC (KUWAIT)
Tuning of existing controllers | Design and implementation of duty controllers

IPCOS

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