“Improved Equipment Design for Phosphoric Acid Concentration Loops and Defluorination Systems”

By: Andre Boucaut – SGL Carbon

Bio:

André Boucaut, Senior Manager, Head of Project Engineering at Grenoble - France, for the product group Process Technology of the business unit Graphite Material & Systems at SGL CARBON.
Graduated in 2004 of a Master of Science Degree in chemical and process engineering at the university "Institut Nationale Polytechnique de Lorraine (INPL)” in Nancy - France, 3 years of study at the National Graduate Chemistry School "Ecole Supérieure des Industries Chimiques" in Nancy - France.
14 years of experience in sizing, technical selection and commissioning of equipment and systems for chemical application dealing with corrosive media such as hydrochloric acid, sulfuric acid and phosphoric acid.

Abstract:

Most processes produce phosphoric acid from phosphate rock at an output concentration of 27-30 wt% in P2O5.
For downstream processing the required phosphoric acid feed concentration is usually higher, e.g. fertilizer industry requires up to 40 to 55 wt% in P2O5.
Typically this concentration is done via a forced circulation evaporation loop under vacuum conditions.
As the phosphate rock contains always scaling agents this step is suffering by heavy scaling. Production cycles, maintenance and cleaning time are of most importance for the production performance. In case purified acid is required an acid purification, reconcentration and defluorination step follows the concentration step.
Corrosion resistance technologies and optimum equipment and process design is for all of above mentioned a key factor to achieve excellent results.
This presentation focuses on the optimal design of phosphoric acid concentration loop, defluorination system, for which improved equipment design are required to ensure superior product quality and higher production rate. It will compare it to alternative equipment and system in respect of reliable operation and economic considerations.