CASE STUDY

AGROCHEMICAL

COUNTRY: USA
PRODUCT: 25 m² Thin-Film Evaporator – Model LVSI-2500 with major components
KEY BENEFIT: Concentration of several temperature sensitive products, low residence time

Concentrating Agrochemical Product

Background:

Our client purchased a line of crop protection products from another company. After an agreed-upon tolling period with the original company, the client was tasked with building their own production facility. The previous location utilized short-path evaporation for the concentration process step.

The client was looking for process improvements for its new facility. Short-path technology was sub-optimal due to entrainment issues at the operating pressure (30-40 mmHg) and limitations with the wiper-blade design.

Using LCI Corporation's diverse know-how related to thin-film, wiped-film, and short-path evaporator designs, a solution was suggested to the client and their engineering company.

LCI Solution:

Testing: LCI recommended testing at LCI's Charlotte, NC pilot facility to create representative product samples and generate data for scale-up. Using test data, LCI was able to scale-up to production-scale equipment while proving that a vertical, fixed-clearance, thin-film evaporator rotor design was ideal to concentrate their proprietary product under vacuum with no thermal degradation/product loss.

Process Design: LCI engineered a full component system, including the thin-film evaporator, vacuum system, condensers, pumps, instrumentation, and control valves. P&IDs/PFDs were developed by LCI for third party use to properly install, pipe, and ready the system for startup. The thin-film evaporator and components were designed for multiple products at different feed and concentrate compositions making turndown flexibility of utmost importance.

The feed rates range from 4,000-10,000 lb/hr and the evaporation rates from 1,800-6,000 lb/hr. The comprehensive scope of supply reduced the client's vendor management requirements while taking advantage of LCI's experience specifying/supplying major components and systems used in concert with the LCI thin-film evaporator.

25m² LCI Thin-Film Evaporator

Results and Comments:

The LCI equipment was installed in 2014 and commissioned ensued in late 2014. Equipment is currently operational at specified rates with exceptional product quality. LCI personnel attended pre-startup installation checks and assisted with onsite startup of the equipment.