

# Coperion K-Tron Testing Facilities: Optimizing Your Feeding and Conveying Process



Coperion K-Tron can conduct tests with your process materials to answer critical process questions and determine the best configuration of the feeding equipment for a particular product or group of products. Our consulting services cover many areas, including:

- > Tests with actual bulk material
- > Determining refill levels
- > Testing of feeding accuracy
- > Long term testing of feeding system
- > Bin design and selection of flow aid devices
- > Refill systems
- > Mechanical and electrical interfaces
- > Interfaces with upstream and downstream systems
- > Validation

Coperion K-Tron can also help you project the return on investment, for example, by considering the cost of the process material and the benefits of accurately controlling the rate of the ingredient fed into the process.

## Basic Test Procedure

### 1 Analysis of Bulk Material

- Bulk density, particle size, flow characteristics

### 2 Feeder Selection

- Test Lab Database for known bulk materials
- Experience-based selection for unknown bulk materials

### 3 Feeding Test

- Accuracy measurements in the requested feedrange
- Optimization of the feeder configuration
- Evaluation of process safety

### 4 Test Report

- Process parameters
- Feeder accuracy
- Process safety
- Recommendation

The Coperion K-Tron test program starts with a visual analysis of the process material. From this analysis and previous experience, technicians select equipment configurations. They also look for potential problems, such as material flow, and take corrective action.

The equipment performance test is typically based upon 30 minutes of catch samples for continuous feeders, or 15-30 batches for batchers, taken at the stated minimum and maximum operating rates or batch sizes. Based upon the collected data, the linearity and repeatability statements are generated. Results are based on 5, 10, 15, 30, 60 or 120 second samples. For critical applications one second samples can also be generated.

Coperion K-Tron is fully equipped to test self contained vacuum loaders and central receivers. The material test process includes conveying rate, analysis of material degradation and determination of whether a filterless or filtered unit should be used. Test system is configured to approximate field distances and conditions.

Manufacturing plants:

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## Locations

A fully equipped test lab is at your disposal at each of our plants in the USA (Pitman, NJ and Salina, KS), Switzerland (Niederlenz) and China (Wuxi). Smaller test lab facilities are available at other locations.

## Making Test Arrangements

All of the details are coordinated through your local Coperion K-Tron Sales Representative, who will convey the necessary information to the factory and establish possible test dates. All test materials must be received at Coperion K-Tron five working days before the assigned test date. If the material is not received in this time period, the test will be cancelled and must be rescheduled. Material Safety Data Sheets (MSDS) must be supplied for each material being tested.

## Amount of Material Required

The minimum amount of material required to test Coperion K-Tron feeders is generally calculated as the volume of material to be fed in one half hour (not less than the specified hopper volume).

In order to test a self-contained loader, approx. 60-80 dm<sup>3</sup> (2-3 ft<sup>3</sup>) of material should be supplied.

Please consult the factory for liquid loss-in-weight, Smart Flow Meter and central vacuum conveying system applications.

After testing is completed, all materials will be returned to you, freight collect. Please note that Coperion K-Tron cannot guarantee the product will not be degraded or contaminated during testing.

## Length of Time for Testing

After all pre-test information has been received and evaluated, an estimate of the time required will be given. As a guideline, tests involving up to three different materials on various equipment configurations can be completed in one day.

Your presence for one day is strongly recommended. For directions to the Coperion K-Tron plant and other helpful travel information, please contact your Coperion K-Tron Sales Representative.

## Analysis of the Test Results

In order to analyze the data in a manner which is valuable to you, it is necessary for you to know what the critical parameters are for your process and approximately what their limits are. For example, as you analyze a given set of data over shorter time periods, the repeatability will generally decline. It makes no sense to evaluate the data at 15 second intervals if your process is sensitive only to variations of 1 minute (perhaps due to inherent blending or other variability in your process).

Similarly, the desired repeatability which you seek from the feeder should be known before running the lab test. This may be based on the quality standards of your product or may be a function of the constraints of other process equipment.

## Comparing Test Results

When comparing two sets of data, whether between feeder types or between manufacturers, please keep the following in mind in order to get an accurate comparison:

1. Always compare data for the same feed rate (setpoint).
2. Always compare based on the same sample time.
3. Always compare at the same statistical level (1 sigma or 2 sigma or 3 sigma).
4. Always compare data for the same material.

If you do not compare data with these factors constant, you cannot determine the best feeder for your application.

