



 **McLanahan**



McLanahan DRY SAMPLING SYSTEMS

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The key to any quality or process control program is correct sampling. McLanahan Corporation offers a wide range of sampling equipment to provide the correct solution to your sampling problem. For more than 50 years, McLanahan Corporation has provided accurate and reliable sampling solutions to clients across a broad range of industries handling an extensive variety of bulk materials. McLanahan Sampling Systems are designed to provide a solution to each client's unique sampling situation while complying with relevant sampling standards, respecting sampling theory and following industry best practices.

Sampling is the process of selecting a relatively small amount of a material that will correctly represent a larger amount of that same material. As both producers and consumers of products work to maintain strict quality and process standards, the focus on collecting samples for analysis that accurately and precisely represent the larger lot of material becomes increasingly important.

CROSS BELT SAMPLERS

Cross Belt Samplers are an easily implemented, cost-effective means of collecting representative samples and improving the safety of quality and process control personnel. McLanahan Cross Belt Samplers can be installed on existing conveyor frames without interfering with the conveyor belt. Top-notch design and expertise at McLanahan provide a properly engineered and applied solution that will provide the basis for successful quality and process control programs.

How It Works

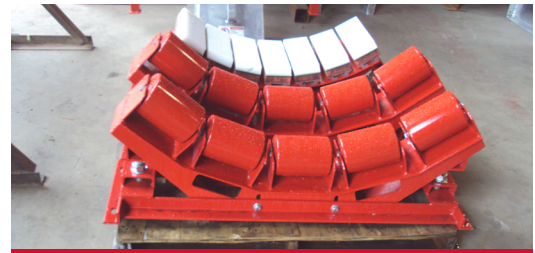
A McLanahan Cross Belt Sampler automatically removes a portion of material from a moving conveyor belt. This is accomplished using a rotating counter-weighted sample cutter assembly that travels through one 360-degree rotation per activation. The cutter assembly quickly accelerates from a parked position over the sampler discharge area and, after a brief period of steady-state motion, passes through the moving material flow before rapidly stopping in its original parked position above the sample discharge – ejecting collected sample material into the discharge. Any fine material that may be present on the surface of the conveyor belt is removed by a wiper attached to the lower rear surface of the sample cutter. When properly adjusted, the result is a clean and accurate swipe across the conveyor belt.

The McLanahan CutZone System

Properly contouring and supporting the conveyor belt is crucial to consistently collecting complete sample increments with a Cross Belt Sampler, especially when fine particle sized material is involved. To address this critical requirement, McLanahan offers the CutZone belt contouring and support system to closely match the profile of the conveyor belt to the radius of the sample cutter assembly rotation. The CutZone system consists of two multi-segment idlers that support the conveyor belt on either side of the sampler and a radiused impact deck that holds the conveyor belt at the correct profile and prevents deflection of the conveyor belt while a sample increment is collected.



Cross Belt Sampler



McLanahan CutZone System

Cross Belt Sampler Specifications	
Conveyor Belt Width	12"-96" [300mm-2400mm]
Conveyor Belt Speed	Up to 1,500ft/min [7.6m/s]
Feed Rate	Up to 10,000stph [9000mtph]
Material Size	12" [300mm]
Installed Power	Up to 150hp [112kW]

**Standard models. Other options are available depending on application details.*

CROSS BELT SAMPLER-BASED SYSTEMS

Cross Belt Sampler-based multi-stage sampling systems are available in a variety of arrangements and configurations based upon the client's sampling application and facility layout requirements. Systems can be provided as an addition to existing infrastructure, as semi-portable skid-mounted units or in a modular building.



Semi-Portable Skid-Mounted Arrangement



Module Building-Based Two Stage Sampling System

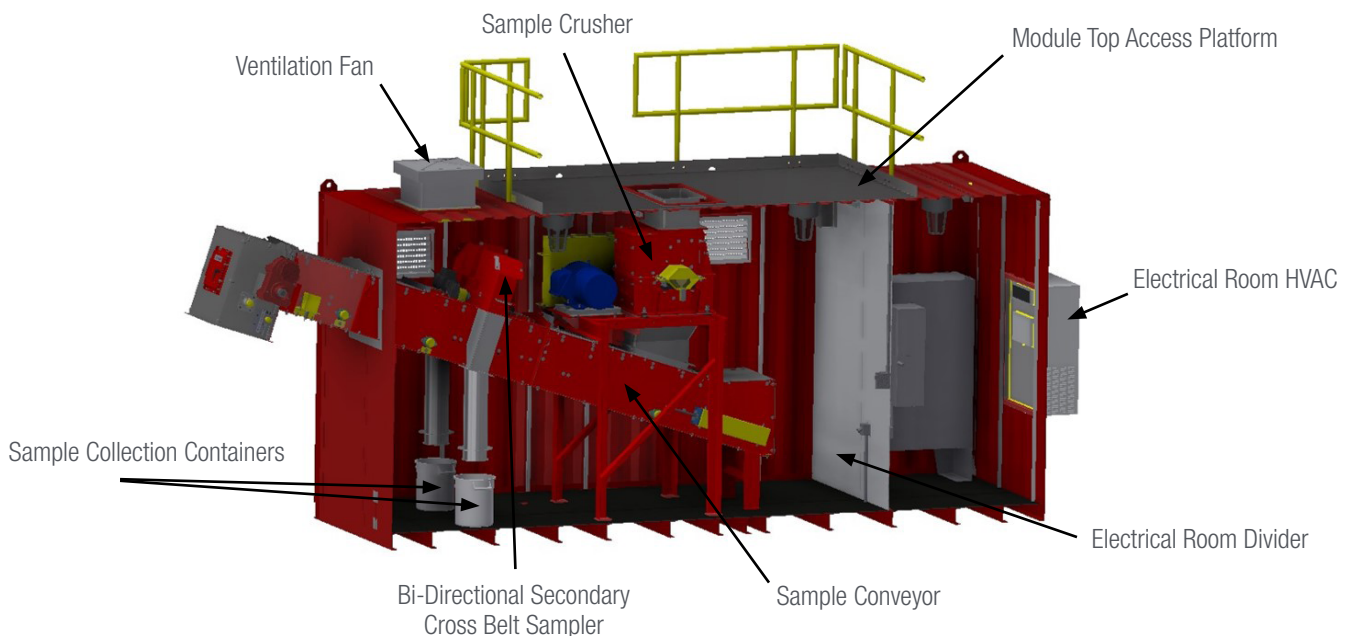


Mirrored Module Building-Based Two Stage Sampling Systems



Two Stage Sampling System in Existing Structure

Module Building Cutaway



DRY SAMPLING SYSTEMS

FALLING STREAM SAMPLERS

Falling Stream Samplers are a common type of sampler that are used to collect sample material from a main process flow that is either in a free-falling condition or traveling through some trajectory, such as at the discharge of a conveyor.

A Simple Design for Easy Maintenance

Falling Stream Samplers tend to be simpler in design and function and usually offer highly reliable operation with relatively low maintenance requirements. This style of sampling is well suited to high flow rate applications where minimal downtime is a requirement, such as loadout systems. Falling Stream Samplers come in all manner of shapes, sizes, and configurations, but regardless of the machine in question, the basic function of this type of machine is essentially the same. A sample cutter is parked on one side of a moving material flow. When a sample increment is to be collected, the cutter drive assembly (which varies by machine type) will move the cutter through the material flow at a constant speed, collecting a sample increment.

Drive Units

Falling Stream Sampler drive units vary by machine type but are usually one of three types of drives: gear-reducer driven rack and pinion, gear-reducer driven chain and sprocket, and hydraulic cylinder.



Bottom Dump Style Sample Cutter

Falling Stream Sampler Specifications	
Conveyor Belt Width	12"-96" [300mm-2400mm]
Conveyor Belt Speed	Up to 1,500ft/min [7.6m/s]
Feed Rate	Up to 20,000stph [18000mtph]
Material Size	12" [300mm]
Installed Power	Up to 40hp [30kW]

**Standard models. Other options are available depending on application details.*



Falling Stream Style Secondary Sampler



Drive Base Assembly for a Standard Duty Overhead Carriage Style Falling Stream Sampler

FALLING STREAM SAMPLER-BASED SYSTEMS

Falling Stream Sampling Systems are typically installed in a transfer tower where a conveyor discharges into another portion of a process or where material is free falling in transfer chutework.

The goal of a sampling program is to accurately represent a relatively large amount of material with a relatively small amount of sample. A greater amount of sample collection and processing completed within a mechanical sampling system, in an automatic fashion, will result in a more correct, efficient and cost-effective sampling program.

A complete mechanical sampling system will incorporate as many types of sampling equipment as necessary to meet the needs of the application and satisfy layout requirements while minimizing the total number of pieces of equipment. More handling and transferring of samples introduces more potential sources of error into the sample collection and handling process.



Falling Stream Sampler-Based Two Stage Sampling System



Falling Stream-Based Loadout Sampling System



Overhead Carriage Style Falling Stream Sampler



Two Stage Falling Stream-Based Sampling System

DRY SAMPLING SYSTEMS

SAMPLE CRUSHING

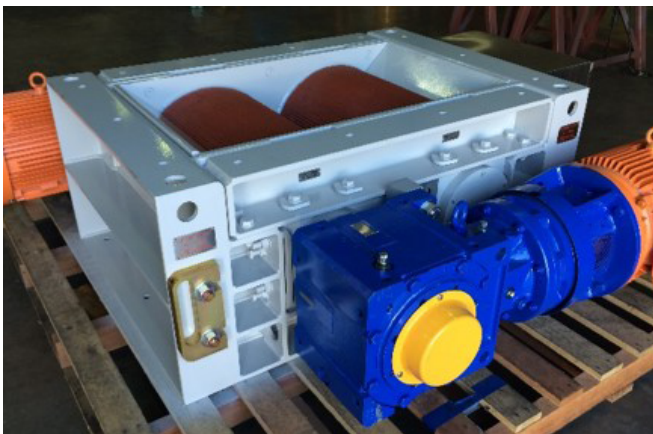
Dependable, heavy-duty crushing options for low feed rates is a market niche covered by the McLanahan line of sample crushing products. From Jaw Crushers, to Hammermills, to Double Roll Crushers, an option likely exists within the McLanahan product offering that will meet your low tonnage, high dependability requirements.



The McLanahan Sample Hammermill Crushers (MiniMacs) are typically used in applications processing moderately hard, friable materials with low abrasiveness. Similar to other types of Hammermills, these machines are capable of a high reduction ratio and can generate a relatively high amount of fines in the crushed product.



Rockertooth Crushers feature a high crushing ratio and a unique “rocking” style of impact hammer. They can process mildly abrasive, moderately hard, friable feed material that contains larger lumps of material or small amounts of harder inclusions. These machines can also be fitted with fixed hammers to produce relatively coarse crushed output gradations or for lump breaking applications.



Sample Double Roll Crushers and Mini-Sizers are simply smaller scale versions of the Double Roll Crusher and Direct Drive Crusher (DDC) product groups for which McLanahan has become well-known. These machines tend to produce a more cubical product with minimal fines generation.



Sample Jaw Crushers are smaller scale versions of the popular overhead eccentric design. Sample Jaw Crushers feature the same operating principles and robust design associated with larger jaw crusher offerings in a more compact, lower feed rate configuration.

AUGER SAMPLERS

In an ideal situation, bulk materials are mechanically sampled from a moving material flow. Examples of ideal sampling locations include on a moving belt conveyor, free-falling in a vertical chute or as material is discharged from a conveyor at a transfer point. In actuality, this is not always possible, and other means of sample collection must be used. The most common example of this situation is where material to be sampled is confined in some type of container for transportation purposes.

Bulk materials are frequently transported via truck, rail, or other container, and often there is no other option for sampling other than to collect samples from the transport container, particularly in as-shipped and as-received situations. These are the types of applications in which Auger Sampling Systems are well suited.

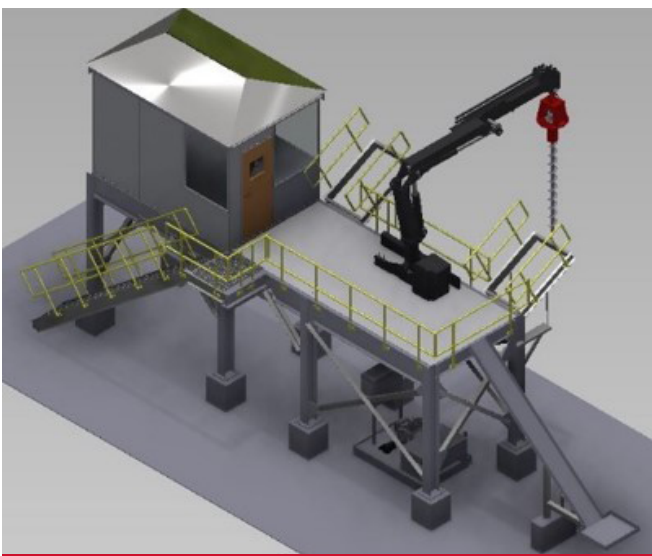
Once primary sample increments are collected by the primary Auger Sampler, processing those increments is the same as in any number of other multi-stage sampling systems for which McLanahan has become well-known.



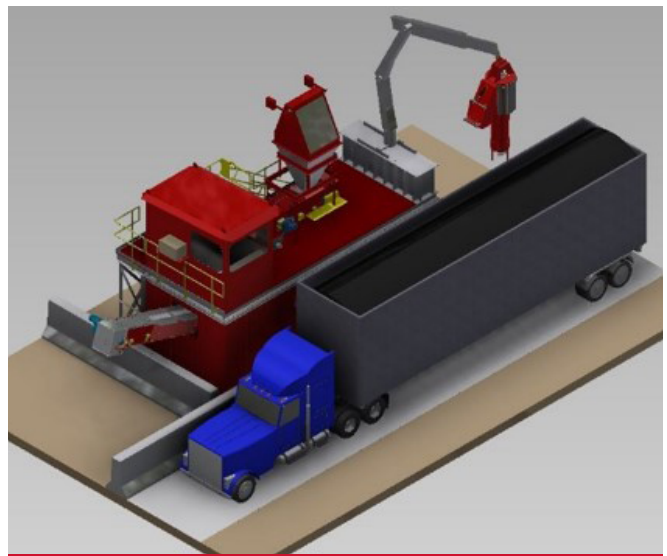
12" Diameter Sample Auger



20" Diameter Sample Auger



Single Stage Truck Auger System



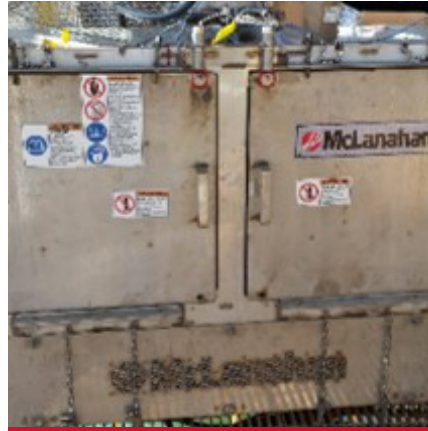
Two Stage Truck Auger System with Sample Building

OTHER SAMPLING EQUIPMENT

A complete mechanical sampling system can consist of a number of different types of equipment that may not be specifically limited to sample collection equipment. Other types of equipment can include crushers (Hammermills, Jaw Crushers and Roll Crushers), conveyors, mixers, dividers and multi-station collectors, to name a few common machines.



Automatic Diverter Gate for Crusher Bypass



2 Station Linear Sample Collector



8 Station Rotary Sample Collector



Vezin Sampler



Traveling Hopper Secondary Sampler



Motor Control Center



Heavy Duty Sample Conveyor