

WOOD CHIP TRUCK LOAD OUT (1993)

British Columbia, Canada



SUMMARY

KAMENGO FEEDERS:	(1) Kamengo Feeder
BIN STORAGE:	5,700 cu-ft bin
POWER:	20HP Hydraulic Power Unit
CAPACITY:	Fills a B-train truck in under 20 minutes
PARTNERS:	DCT Chambers National Research Council of Canada

SIMILAR PROJECTS

Hog Fuel Truck Load Out (1996)
Northern British Columbia, Canada

Processed Pulp Truck Load Out (2004)
Crofton, British Columbia, Canada

Corn Fiber Tall Storage and Feed (2009)
Blair, Nebraska, USA

WOOD CHIP TRUCK LOAD OUT (1993)
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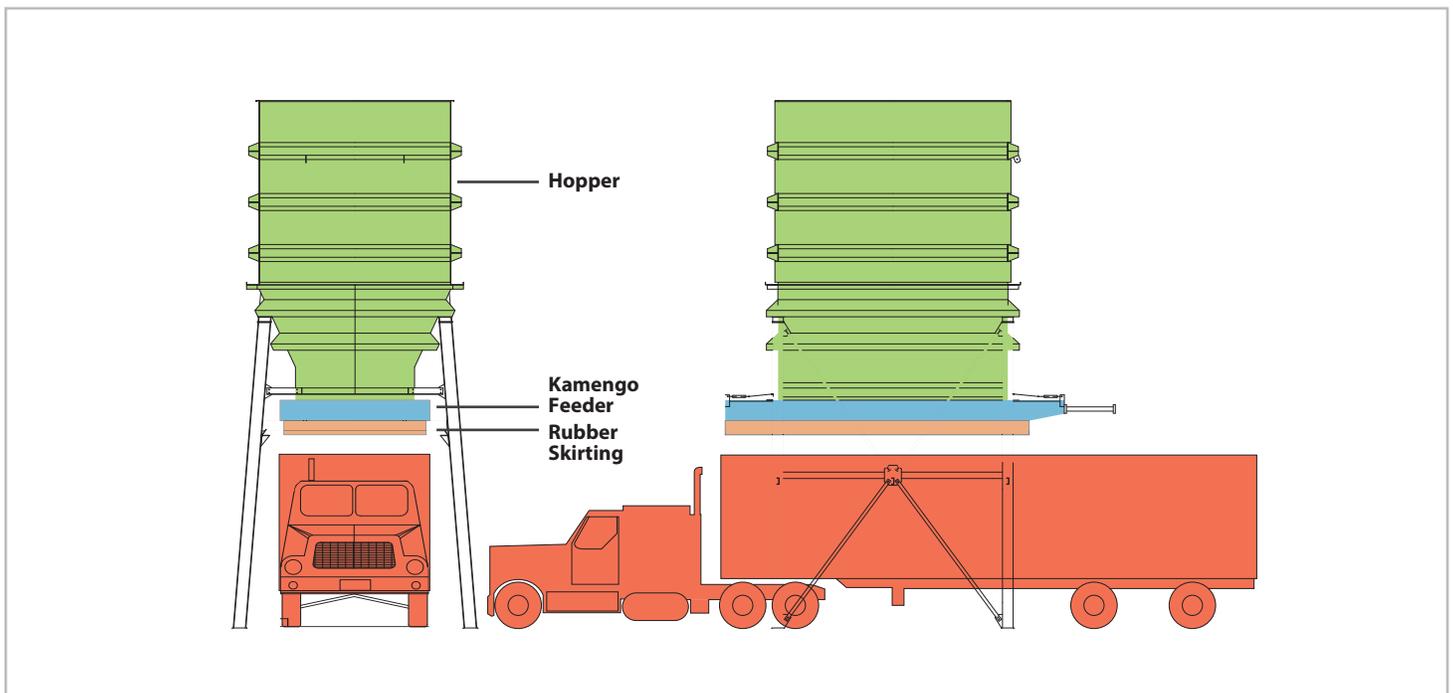
SYSTEM OVERVIEW

Current technology for storing and loading chips has remained largely unchanged for over fifty years. Existing storage and load out systems consist of bins with clam-shell gates or bucket loading from outside storage piles. Clam-shell type bins are normally limited to a maximum storage capacity of one trailer load, because the chips tend to hang-up or bridge in bigger bins. Also, it is difficult to partially unload a bin, as once opened, the gates cannot fully close. It is also difficult to control the discharge of chips from these bins. Because chips are poor flowing, little or no material comes out until the gate is fully open. At this point, the full load of material can suddenly come out within a short period of time, causing damage to the trailer and spillage of chips. The spilled material leads to fibre losses and dusting problems. It is also difficult to distribute the load which is time consuming and inefficient. As a result, trailers often carry less than optimum loads.

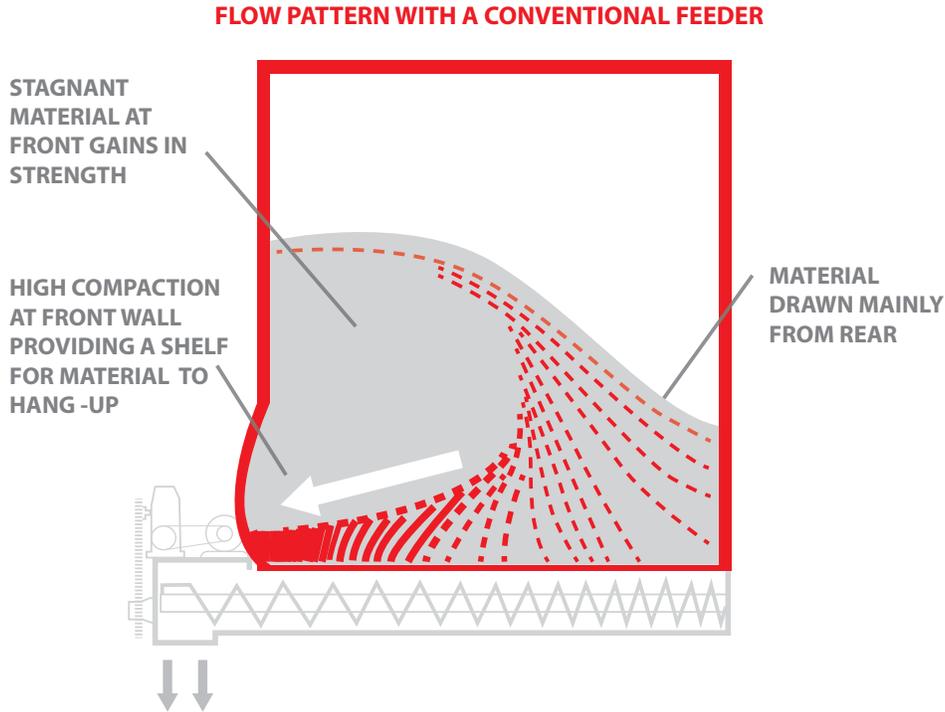
This truck load out bin is a pilot scale system built to test the advantages of using a tall mass flow bin and Kamengo Feeder for loading truck trailers with wood chips. The pilot tests proved that a Kamengo Feeder can fill 15-26% more chips in a truck trailer than can be filled by a conventional truck loading system. This extra loading significantly reduces transportation costs. Further, the pilot scale system proved that chips can be reliably stored in and discharged from a mass flow hopper with a Kamengo Feeder.

The pilot scale system was built with a 5,700 cu-ft bin. A full scale system is envisioned to include two back-to-back bins with enough storage capacity to fill three B-train (double trailer) trucks in less than 20 minutes each.

SYSTEM LAYOUT



WHY DO CONVENTIONAL FEEDERS PLUG?



WHAT IS HAPPENING INSIDE THE BIN?

Most feeders draw material primarily from the rear of the bin, with little material drawn from the front. This problem is particularly severe when handling low bulk density fibrous materials. With fibrous materials, the pulling action of the feeder is felt well above in the bin, resulting in severe compaction, and in extreme cases, distortion of the front bin wall.

POOR FLOW PATTERN RESULTS IN HANG-UPS

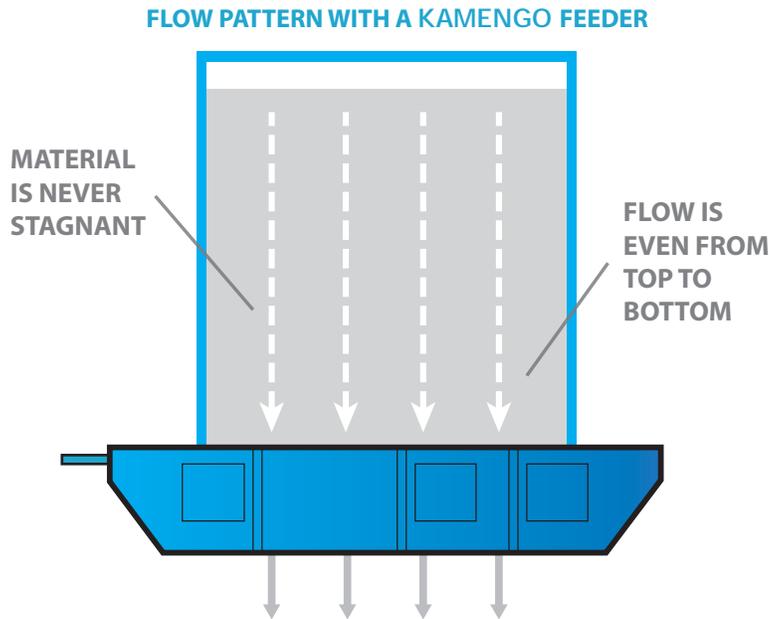
The compacted and stagnant material at the front of the bin is a major cause of bridging and hang-ups. Also, with material drawn mainly from a small section at the rear of the bin, live storage is greatly reduced, and stable rat-holes are permitted to form, resulting in dangerous bin hang-ups.

PUTTING ENERGY TOWARDS THE WRONG PURPOSES

Most feeders withdraw material by developing a shear line at the hopper/feeder interface. This shearing action not only contributes to compaction of the stored material, but also results in excessive wear of mechanical parts.

To learn more about reliable bin and feeder design, visit our website at www.kamengo.com.

HOW IS THE KAMENGO FEEDER DIFFERENT?

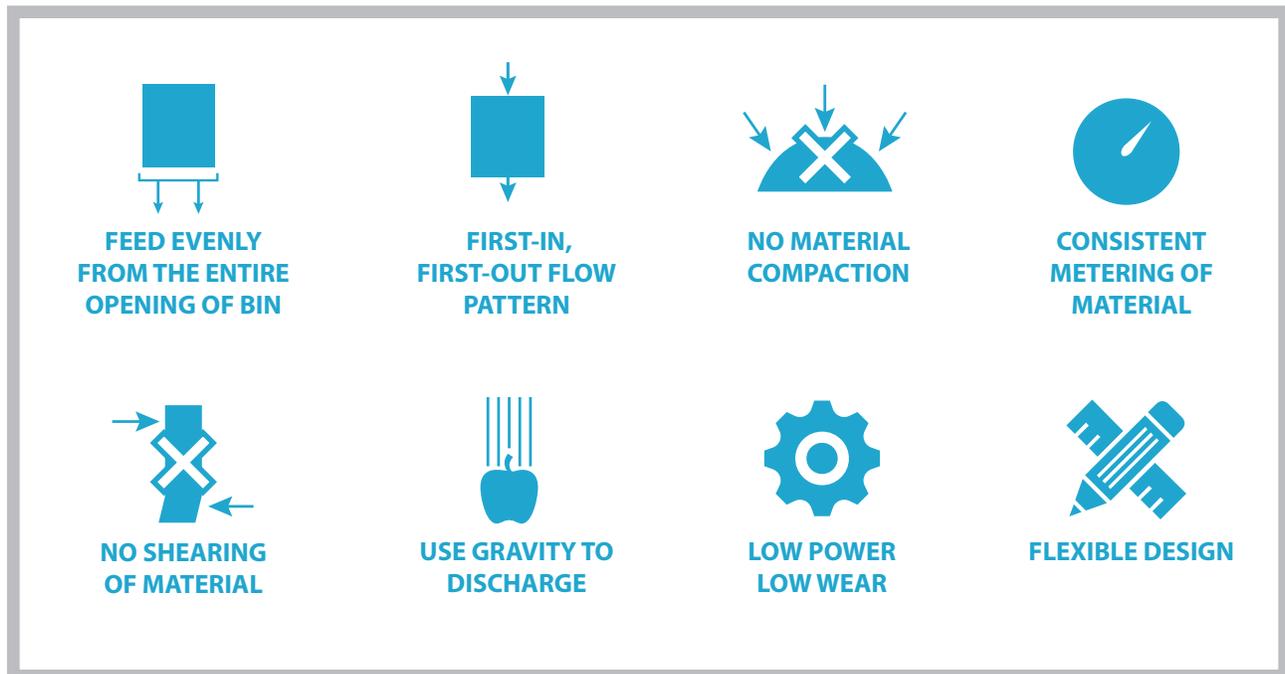


The Kamengo Feeder is different because it meters material evenly from the entire hopper outlet. With no stagnant pockets, the stored material is not afforded an opportunity to hang up.

Also, the Kamengo Feeder does not use brute force to extract material out of storage. Instead the Feeder relies on gravity and good bin geometry to reliably discharge the stored material. As such, the Feeder does not compact material, and thus allow it to gain strength and hang up. Also, because the Feeder does not put energy into shearing the material out of the bin, it requires far less power than a conventional feeder, saving energy and minimizing wear.

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KEY FEATURES OF THE KAMENGO FEEDER



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KAMENGO SPECIALIZES IN THE STORAGE AND FEED OF DIFFICULT FLOWING BULK MATERIALS

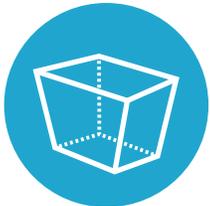


What makes Kamengo different is the tool kit we use to solve complex materials handling challenges:



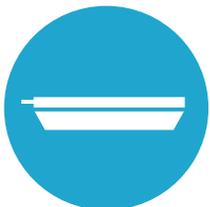
Equipment To Characterize The Flow Properties Of Fibrous And Cohesive Materials

In the 1980's Kamengo developed new testing equipment capable of characterizing the flow properties of stringy, fibrous and cohesive materials.



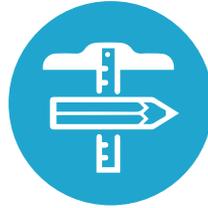
Design Protocols To Determine Correct Bin, Feeder And Chute Geometry

Kamengo has developed design protocols that use a material's flow properties to determine the bin, feeder and chute geometry required to promote reliable material flow. Correct equipment geometry will deny a stored material the conditions it needs to gain in strength and hang-up.



The Kamengo Feeder: Proven Solution For Handling Difficult Flowing Materials

The Kamengo Feeder resolves many of the shortcomings of conventional feeders. The Feeder withdraws material evenly from the full discharge opening of the hopper *and* does not compact stored material, resulting in a fully live bin. With installations running 24/7 for more than 20 years, the Kamengo Feeder has proven that it is a reliable solution for handling difficult flowing materials.



The Kamengo Feeder: A Design Advantage

The flow properties of difficult flowing materials often demand a fully live bin. A fully live bin is very difficult to achieve with a conventional feeder, but is easily achieved with a Kamengo Feeder.



Skilled Design Practice

Over the past 25 years, Kamengo has developed a design practice capable of tackling complex projects, including retrofits of storage and feed arrangements that suffer from plugging. Kamengo has the engineering capability to deliver complete packages of materials handling equipment including storage bins, feeders, chutes, structural work, and conveyors. We have delivered solutions for biomass, ore concentrates, fly and wet bottom ash, wood chips, pellets, and FGD gypsum.

► **We invite you to explore how Kamengo can apply its specialized tool kit to solve your materials handling challenges.**

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