GOUGH ENGINEERING

SWINGLINK® BUCKET ELEVATOR

DESIGN, MANUFACTURE AND INSTALLATION OF HANDLING EQUIPMENT FOR INDUSTRIES AROUND THE WORLD

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BUCKET ELEVATORS | CIRCULAR SIEVES | VIBRATORY SEPARATORS | LINEAR SCREENS | BELT CONVEYORS
VIBRATORY FEEDERS | BULK HANDLING EQUIPMENT | CUSTOM DESIGN SYSTEMS

GOUGH SWINGLINK® BUCKET ELEVATORS

Gough Engineering have been manufacturing and installing bucket elevators around the world for over 40 years.

The systems are primarily designed to convey bulk, dry, free flowing granular product and powders in a continuous and contained manner.

Typically, these materials range from delicate food stuffs, where gentle handling is required to maintain product integrity, through to abrasive and coarse aggregates and minerals.

Gough bucket elevator systems are suitable for 24/7 use. Careful design and material selection ensure longevity of components and minimises maintenance requirements.

FUNCTIONALITY

Bucket elevators work by carrying product from an inlet point to a discharge point in an open bucket. Product is static in the bottom of the bucket throughout the process, eliminating the possibility of damage during travel.

A continuous line of open, overlapping buckets move past the inlet, where a controlled and consistent stream of product is fed, partially filling each bucket.

The buckets are moved through the bucket circuit on two chains. Apart from being stabilised at the inlet, the buckets swing freely between the chains, remaining upright through the circuit until tipped.

To activate the tip and empty product at the discharge, the buckets are fitted with a cam. The buckets tip as the cam rides up a tipping ramp, inverting the bucket. The ramps can be raised and lowered by pneumatic rams, enabling selective tipping, so product can be discharged at multiple positions.

The system provides advantages against other conveying methods including:

- Vertical conveying provides space saving vs. inclined belt conveyor systems
- Product is moved at up to 18m / minute, giving high throughputs vs. spiral elevators
- Product mixtures are maintained, vs. vibrating conveyor which separate product into layers
- Moving buckets provide safer product handling vs. screw conveying and blowing methods

ELEVATOR CHAINS

Gough bucket elevator systems include 2 circuits of parallel chains.

The chains used in the system are a patented design, specially fitted with roller arms to carry the elevator bucket and allow them to swing freely during travel.

The chains are connected by shafts and sprockets, which synchronise the movement of the chains, keeping the buckets in line, horizontal, and parallel.

Gough elevator chains have been engineered for longevity, and only require replacement on average every 4-6 years depending on material and operation hours.

Chain material options include:

- Carbon Steel
- Zinc Plated Carbon Steel
- Grade 304L Stainless Steel
- Glass filled Nylon (for abrasive applications)
- Acetal Plastic (FDA Approved)

Heavy duty chain, suitable for conveying high density products, and extra high (up to 70 metre) elevations.

PENDULUM BUCKETS

The pendulum buckets swing freely between the 2 circuits of chain. Product rests in the bottom of the solid bucket during transfer for safe handling, maintaining product integrity.

Buckets can be easily replaced by hand without the need for tools. A typical circuit of 100 buckets can be replaced in less than 15 minutes.

Many clients in the food industry operate with 2 sets of buckets, one in production, and one clean set ready for replacement to minimise downtime between production runs.

Material options include:

- Food Grade (FDA Approved) Polypropylene
- Metal Detectable Polymer (FDA Approved)
- Carbon Steel
- Grade 304L & 316L Stainless Steel

Elevator Model	Bucket Width (mm)	Bucket Volume (ltr)	Throughput Capacity (m^3/hour @ max speed)
9M	229	3.7	10.6
18M	457	7.8	14.5
24M	610	10.6	22.3
36M	914	15.7	30.1

FLEXIBLE LAYOUTS

Bucket elevators provide a flexible solution to the problem of transferring product from one production process to another.

The modular design of the Swinglink® bucket elevator allows infinite layout possibilities.

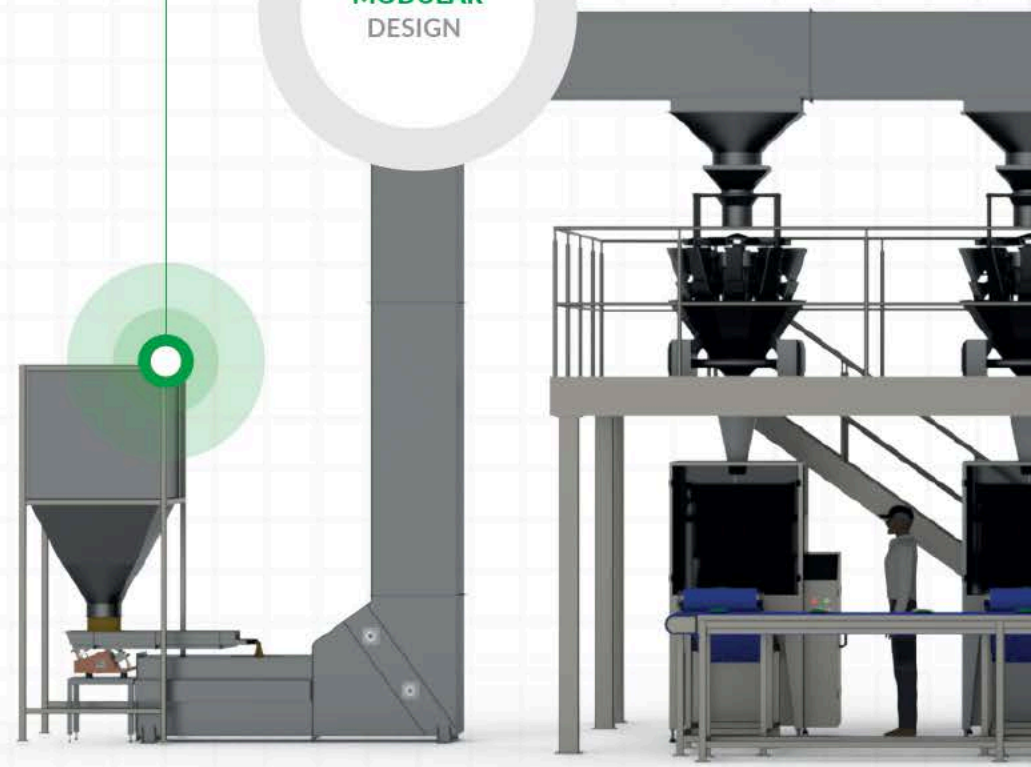
Variable length sections allow any distance of vertical or horizontal movement.

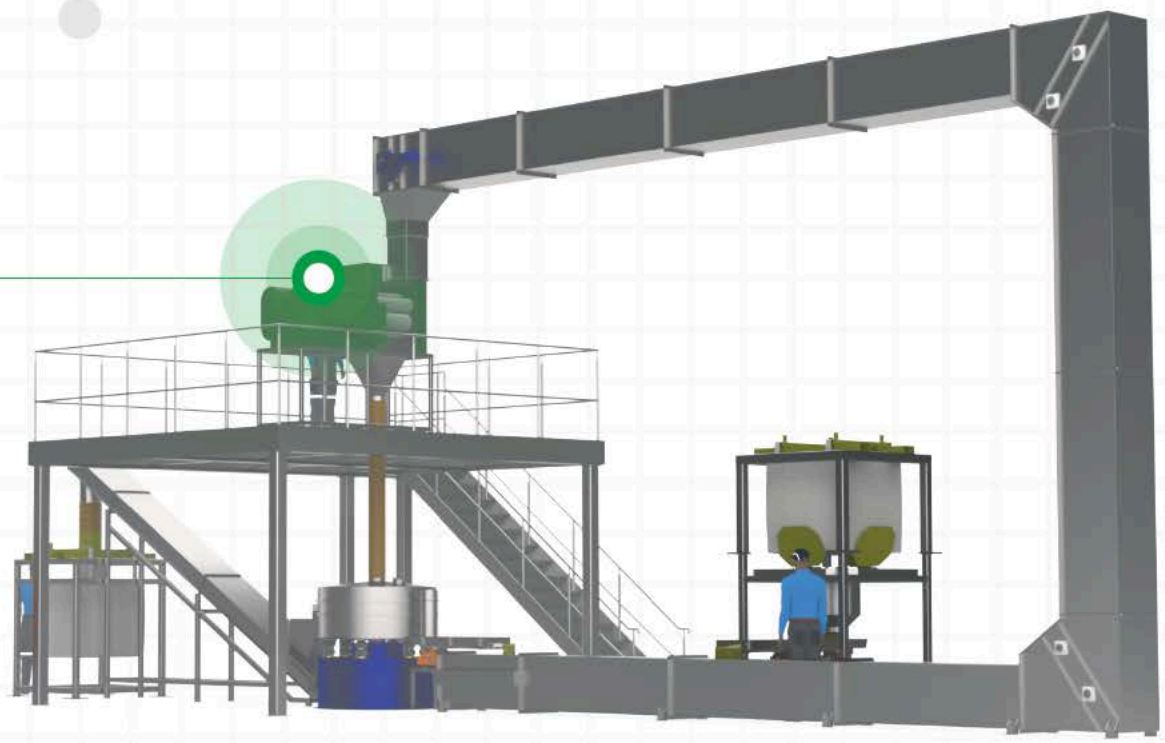
Specially designed corner sections can be manufactured to allow inclined conveying at any angle between 0 and 90 degrees.

Multiple inlet and multiple discharge points can be incorporated into one system, joining or splitting product streams as needed.

Combining 2 systems offers conveying in 3 dimensions, to weave product streams through congested production environments.

The systems can be re-developed into different configurations as production requirements and product routes change.

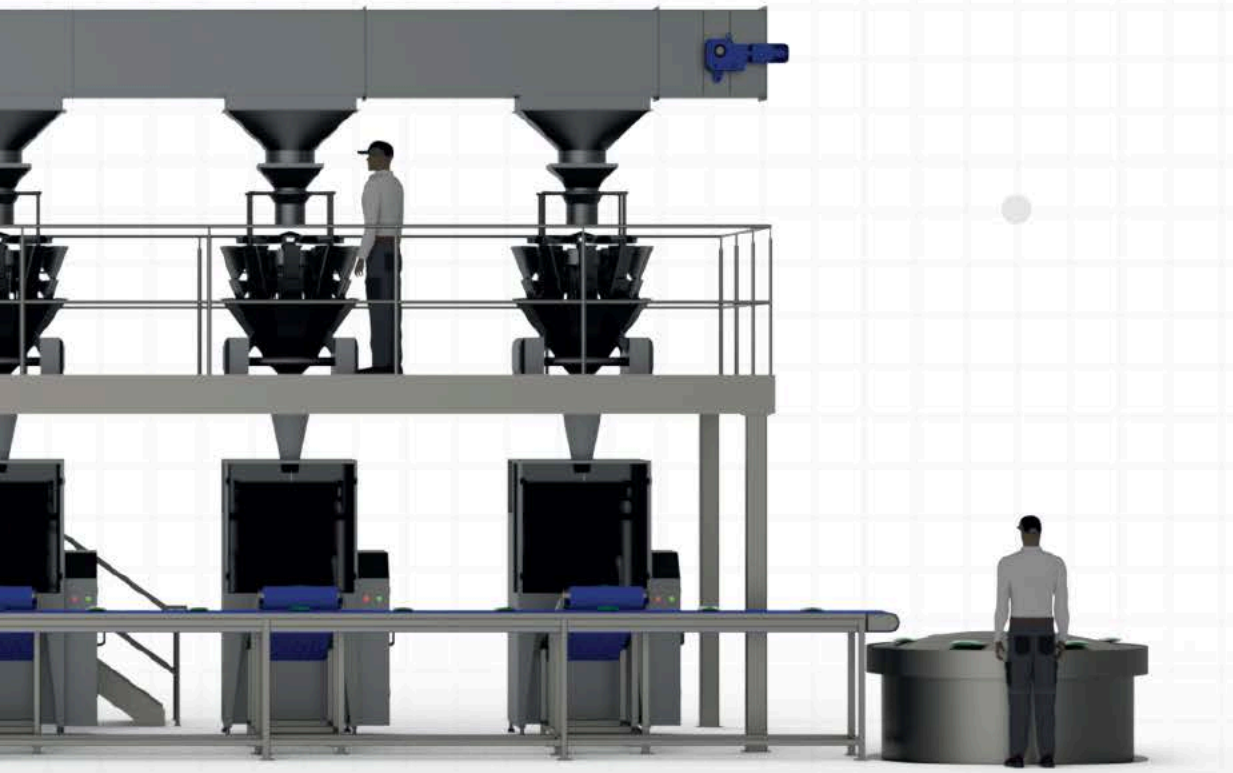


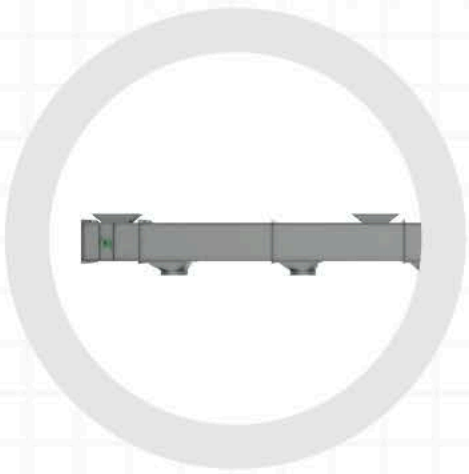


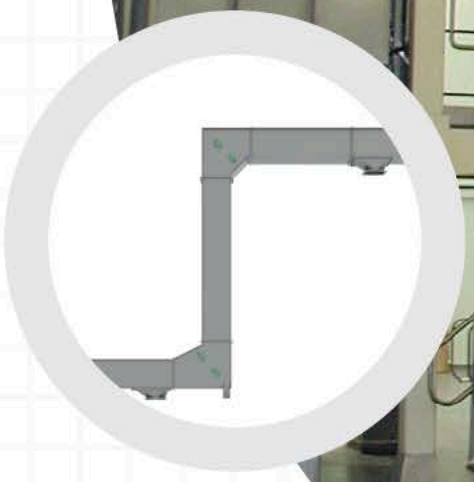
MODULAR DESIGN

ANY LENGTH VERTICAL OR HORIZONTAL MOVEMENT

CAN BE **REDEVELOPED** IN TO DIFFERENT COMBINATIONS







COMBINING
TWO SYSTEMS
OFFERS CONVEYING
IN THREE
DIMENSIONS

CONSTRUCTION

Gough's bucket elevator systems are available in a range of material specifications and finishes.

A standard elevator construction is undertaken using robust folded side panels, joined by cross pieces to form an external chassis. Adding removable covers encloses the system where needed.

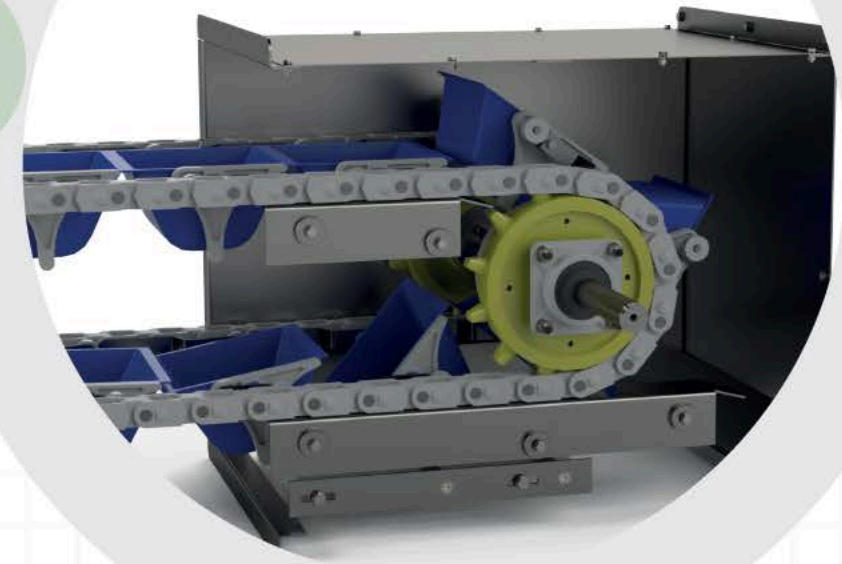
The external chassis is available manufactured from:

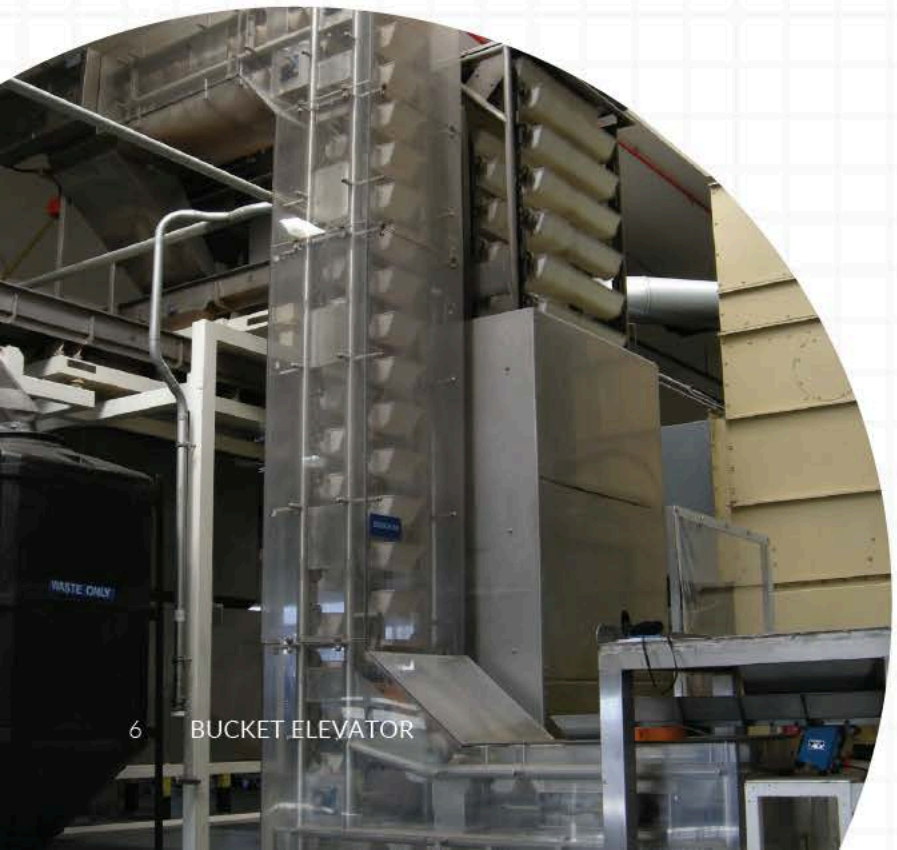
- Powder coated carbon steel
- Grade 304L or 316L Stainless Steel

The removable covers that enclose the system can be supplied in:

- Powder coated carbon steel
- Grade 304L or 316L Stainless Steel
- Clear Polycarbonate
- Stainless steel open mesh

Special open structures, made from hollow square section or tubes, have been developed for specific project requirements, on to which removable covers can be fitted to all sides.

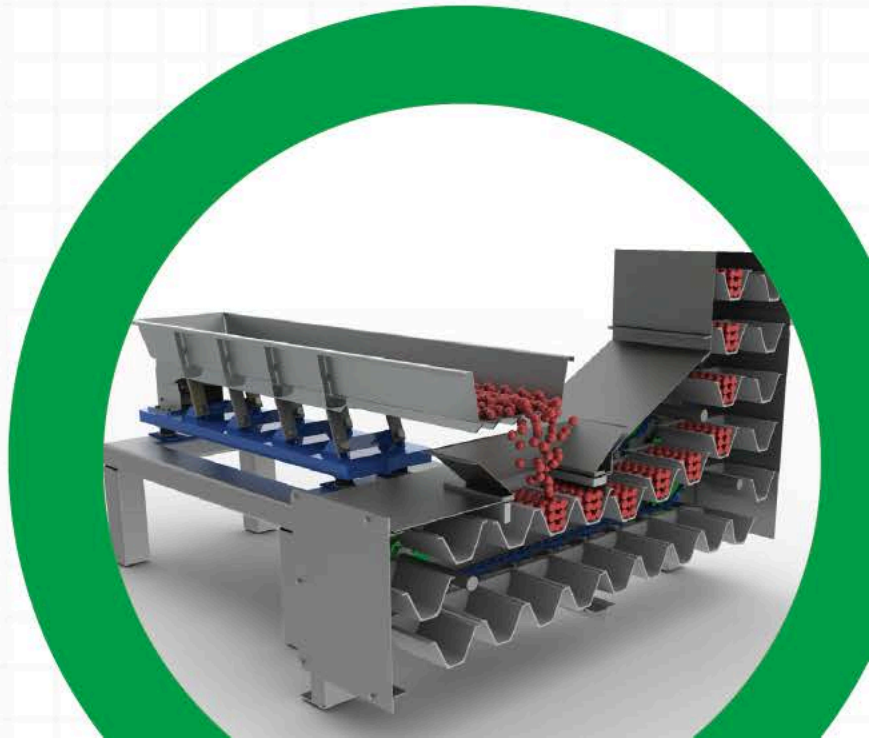




VIBRATING FEEDERS, HOPPERS & CHUTES

As part of a complete system supply, Gough Engineering also supply vibrating feeders, product hoppers, and transfer chutes. All can be designed and manufactured as needed.

Vibrating feeders provide the even and controlled feed required at the inlet of the bucket elevators, and have instant stop/start control of product flows to respond to control system inputs.



MOTOR SPECIFICATION

Gough bucket elevators are driven by a shaft mounted motor gearbox with torque arm.

Motor power is determined by the application requirements.

Motors are supplied with a control panel mounted inverter, which can allow variable speed and variable torque safety control.

The inverter is supplied pre-programmed with torque setting suitable for normal operations. Should an overload condition arise, the excess torque requirement will stop the motor, protecting personnel, and minimising system damage.

ATEX rated drive systems can be supplied.

SYSTEM FEATURES & OPTIONS

Design engineers at Gough develop each bucket elevator to meet our customers exacting requirements. Through this interaction a number of system options have been developed that can be applied to new systems. These include:

Access & Inspection

Hinged and safety interlocked maintenance doors, covers and windows can be included as required.

Extraction

Dust extraction spigots can be incorporated at the inlet and discharge points where there could be potential for pluming of powdered product when entering or leaving the buckets.

Discharge Chutes & Transfers

Chutes at the inlet and discharge points channel product during transfer, preventing spillage and product loss. These can be custom designed and manufactured to meet the customers' requirements.

Connectors

Special connections, such as BFM fittings can be included as needed and matching connectors supplied.

Automatic Chain Tensioning

The automatic chain tensioning device comprises two gas struts that apply a constant force to the tensioning shaft at the bottom of the elevator, maintaining the required chain tension and reducing the risk of failure from poor maintenance.

Controls

Bucket elevators can be incorporated into existing control systems, or appropriate control panels can be supplied.

Control systems can include:

- Rotation sensors for system monitoring and control feedback
- Door safety interlocks to stop movement when operators require access
- Stop/start response to product levels along the product stream

INSTALLATION, COMMISSIONING & AFTER SALES

Gough Engineering provide full installation and commissioning services. All systems are fully supported by a complete range of spare parts manufactured in the UK.

Service engineers are available for annual service, and to respond to unforeseen events, to keep production lines running.

GOUGH ENGINEERING

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SIEVES, SCREENS AND SEPARATORS | PRODUCT HANDLING EQUIPMENT | PARTS AND SERVICE

MATERIAL MANAGEMENT WITHIN PRODUCTION PROCESS