

IT'S A WRAP

Panu Kantosalo, Cross Wrap,
explores how automatic wrapping
and bale opening solutions can
help in waste fuel handling.

Cross Wrap Oy's bale wrapping and bale opening solutions benefit waste fuel handling in many ways. For the most part, the systems ensure a high-quality fuel intake with beneficial effects on logistics and working safety.

As a machinery engineering and manufacturing company, Cross Wrap has

over 25 years of experience in manufacturing automatic bale wrappers and bale openers for different industries. The waste to energy sector is a big part of Cross Wrap's customer base and there have been many patents and projects engineered specially for waste handling and waste fuel materials.

Nowadays, most Cross Wrap machines are used in the waste to energy business, and the patented crosswrapping method has become an industry standard when baled waste materials need covering. The Cross Wrap method offers gentle yet effective bale conveying movement during the wrapping cycle, which helps to keep the bale production and wrapping lines clean, and the machinery



Cross Wrap Bale Opener is specially engineered to open RDF and SRF bales.



By using wrapped waste fuel, storage is safe and the material takes up less space compared to storing or transporting loose material.

layouts, bale tracks, and conveying lines simple.

Wrapping materials such as refuse-derived fuel (RDF) and solid recovered fuel (SRF) improves their handling, transportation, and storing. Wrapped waste fuel bales are easy to transport by lorries, boats, or by train, and they can be even stored outside with no litter, odour, or leakage problems. There is no need for special transport when the otherwise hazardous waste fuel is kept inside a clean and tight wrapped protection.

In better form

Waste fuels need to be baled if they are to be transported over long distances. Today, the waste processing companies that manufacture and trade waste fuels are the main source of baled RDF and SRF. They gather the materials from surrounding communities, process them, and then sell the end products to waste to energy plants or cement manufacturers.

The process needs to be on a constant flow in order to maintain good service and efficiency. This constant flow can be ensured by having the baled waste fuel buffer stored on the premises. Wrapping even makes it possible to store the material outside and on tightly-formed bale stacks, which is the best solution for keeping costs down. This buffer storing method also benefits the end user, because it enables the safe and compact storage of fuel material at their location, and it is possible to use it flexibly as the input capacity of each plant may vary.

The wrapping also benefits the maintenance of the fuel's calorific value. The airtight wrapped package does not allow the baled material to be composted with air, so the fuel's calorific value stays as high as it was when baled. This also keeps the outside moisture away from entering into the baled and wrapped material, so the RDF or SRF material is easy to use and the odours are kept low when the material is in its optimal form.

Safety first

The safe storing, handling, and transportation of RDF and SRF is possible when the materials are kept in baled and wrapped form. If the material is kept in loose piles it can ignite easily by a process of self-combustion, or can even light on fire by direct sunlight or another heat source.

Wrapping ensures that the waste fuel is kept as stable as possible and, as additional oxygen is kept out of the equation, the material is much safer to store, without the risk of fire. By wrapping the material, the working environment

is safer and cleaner, and this method also lowers storing costs when there is no need for additional covered spaces and structures to protect the material from outside elements.

The wrapping method also helps reduced concerns around pests, birds, and insects. This keeps the working environment safer, cleaner, and clear for workers.

Production boosts

Cross Wrap's latest CW 2200 Bale Wrapper represents the company's long line of industrial wrapping machines. The basic wrapping operation has stayed the same during the 25 year history of Cross Wrap, but the machine's mechanical and electronic



CW Direct Wrapper is good in tight spaces and when it is beneficial to use only wrap without ties.

components have evolved every year, offering the best possible wrapping result.

The newest line of machines uses the latest automation programmes and the most sophisticated user interfaces, which are easy to learn and use. The efficiency of operations is boosted by high automation, accurate programmability, and specially tailored wrapping programmes that suit a customer's capacities, baler operation, and bale sizes.

The system can be tailored to customer needs and the machine layout can be adjusted to suit the required production capacity. The basic idea is that, when there is a smaller capacity output from the baler, the wrapper feeding line can be shorter, as can the storage conveyor. When the capacity is higher, the infeed side of the wrapping line needs to incorporate everything from the feeding conveyor to the buffer bales before the wrapping cycle. In higher capacity installations, a longer storage conveyor is also helpful and gives the unloader more time to operate and unload the wrapped bales without hurrying.

The modular line structure also helps to adjust the line in tight spaces and there are options for additional turning tables for changing bale line direction and additional bale labelling, weighing, litter conveyor, remote control, film watch, and safety fence options. All these options help to give higher output and offer a boost in production.

Another model

Cross Wrap's second bale wrapper model is the CW Direct Bale Wrapper, which is used together with two-ram balers. This bale wrapper attaches directly to the two-ram baler and wraps the outcoming bale directly from the bale chamber. This method makes



The Cross Wrap Bale Wrapper at the end of a waste fuel baling line.

it possible to only use wrapping to seal the bale, with no need for bale tying.

The CW Direct Bale Wrapper minimises littering and creates the shortest possible wrapping line, which can be helpful in tight spaces and retrofits. The storage conveyor can be optioned in terms of capacity and need, as well as other additional options being available, such as labelling, remote control, or turning tables, just like with the CW 2200 Bale Wrapper.

The CW Direct Bale Wrapper can also be equipped with additional bale strapping or a wire tying unit, which offers more possibilities for the usage of the baling line. If the tying unit option is chosen, the bales can only be tied if the material does not need protective wrapping. This gives the operator the option to choose between the different operation models when running the baling and wrapping line with changing materials.

When the direct wrapper is used to wrap RDF and SRF material, the main benefit is that the wrapping can be done without any bale ties. This way, the wrapped bales are easy to handle on the user's side and the fully recyclable wrapping film can also be used as a burning fuel or recycled in further processes.

The latest Cross Wrap development is an optional CW Netting Unit, which can be attached to the CW Direct Bale Wrapper. This option reduces the need for wrapping film and is especially good in cases where the baled material consists of larger material pieces.

Delivery

Due to the company's history, there are many CW machines in use around the world. The CW Bale Wrapping method has become an industry standard in waste bale wrapping and, as most of the world's waste fuel bales are baled to cubical form with channel or two-ram balers, this has created a need for a cubical bale wrapping solution.

Cross Wrap's approach to gentle bale conveying and single-stage wrapping with adjustable programming and modular line design has been used in various industries, such as waste handling, recycling, and board manufacturing.

Bale opening

Cross Wrap has also tackled the task of bale opening. For this demanding task it engineered the CW Bale Opener, which automatically opens the bale wrap, together with ties, and separates them from the bale content. The machine's precision allows the operator to run the infeed with high capacity and minimum manual work.

The beginnings of the bale opener go back as far as 2002, when the first machine was engineered for a customer with a specific need to have their bales opened automatically. This is an example of customer need and a problem at hand being conquered by innovative engineering and with high effort.

Nowadays, there are multiple Cross Wrap Bale Openers operating around the world in cement manufacturing facilities and in waste-to-energy plants. The latest machine deliveries are going to a major cement manufacturer in Spain and in Turkey. The newest machine delivery to cement manufacturing will be an automatic Cross Wrap Dewiring machine that will dewire SRF bales at an updated site.

Whether the need is to open wrapped bales or only tied bales, Cross Wrap has designed machinery for the job. Operating the machines is easy and the benefits of moving to automatic bale opening include lowered costs and improved efficiency.

The way of the future

The modernisation and automation investments of cement kilns are planned carefully, as the whole plant is only as good as its weakest point. For this, most of the machinery investments undergo tight evaluation and screening. And for this, industry-proven solutions that have been incorporated into similar operations elsewhere are economically the safest way to modernise operations. Cross Wrap has been a bale opener choice for many cement kilns and waste-to-energy plants. Companies thrive on engineering and finding solutions that help customers gain positive effects, and these are key factors in transforming industry operations. As global economics start to value waste as fuel more and more each day, the industries that can benefit from it are stepping in by using more waste fuel. ■

About the author

Panu Kantosalo has been Cross Wrap Oy's Marketing Manager for the last one and a half years. He has a Master of Science degree in organisational communications from the University of Jyväskylä, Finland, and has a Bachelor's degree in media design from JAMK University of Applied Sciences, Jyväskylä, Finland.