

Llanwern Annual Waste Report 2015

26th February 2016

EPR Permit Ref: BS3905IP. Tata Steel Strip Products UK, Llanwern Works
Re: PPC Permit Condition 9.7 – “The Operator shall conduct a waste minimisation audit that analyses the use of raw materials, assess the opportunities for the reduction in generation of wastes and provides an action plan for achieving the identified improvements. The review shall assess the current disposal techniques to ensure that the disposal of wastes meets the requirements of the Landfill Directive. A report shall be provided to the Agency. Timescales shall be agreed with the Agency (Natural Resources Wales).”

Introduction

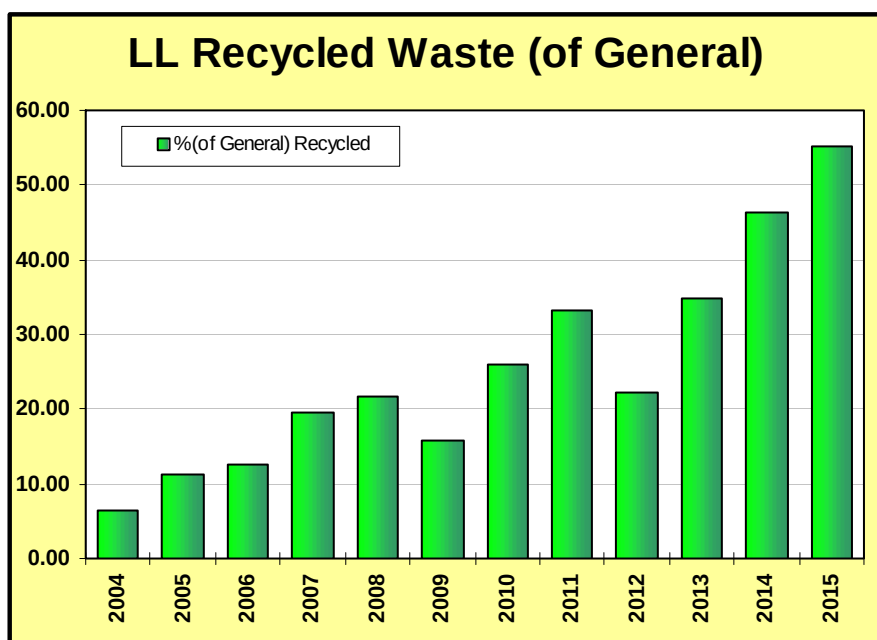
The following report briefly summarises: i) waste performance over the previous year, and details some of the main waste management activities ii) raw materials vs production measures and iii) an overview of some of the process waste types and associated disposal arrangements and opportunities

[1] Site Waste Management

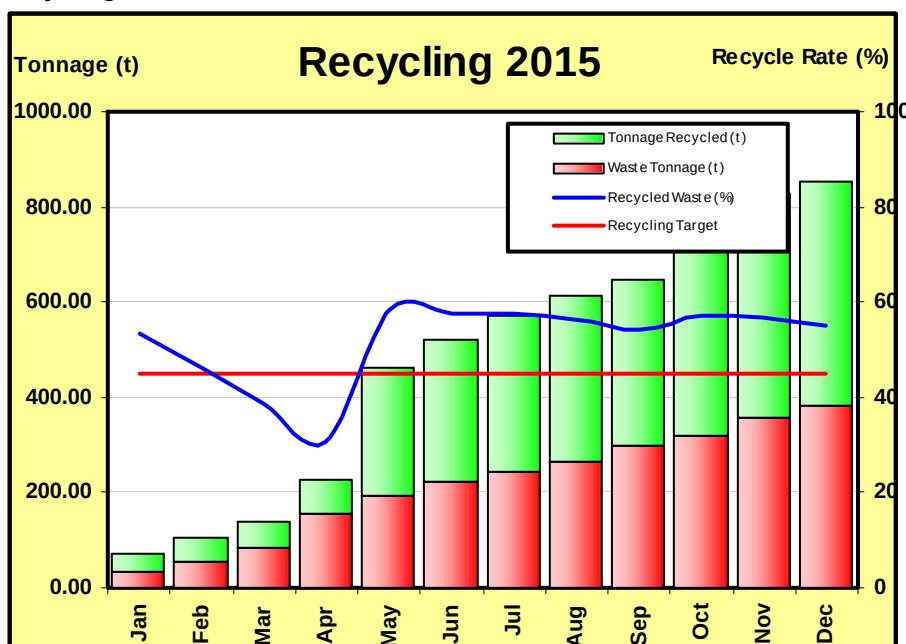
The site waste management contract has been in operation for the second year. Continuity of the same site waste management group has enabled us to sustain and improve on our waste segregation, thus optimising our waste recycling rates and disposal routes, in-line with the established waste management hierarchy. Some of the planned waste improvement projects have been put in place, however due to mothballing of certain operations, some schemes have been put on hold (referenced in Section 4).

Following on from the introduction of the new contract, one of the main KPI measures of recycling i.e. % of material that would otherwise have gone into general (landfill) waste, has indicated an annual performance of 51.8% of material being recycled. This is in excess of the 40% target and improving on 2014's figure of 46.3%. This continues a further year on year trend in improvement against this measure. The progress can be seen as a graphical representation below:

LL Recycled Waste (of General) 2015



Recycling 2015



The performance in this regard has further improved as a result of the route for general waste that was agreed. A significant proportion of this waste stream has been diverted from landfill, to an energy recovery process. This being in-line with a high-level company objective to eliminate waste from landfill. This change has necessitated the defining of a revised KPI (Key Performance Indicator), and associated targets, in order to

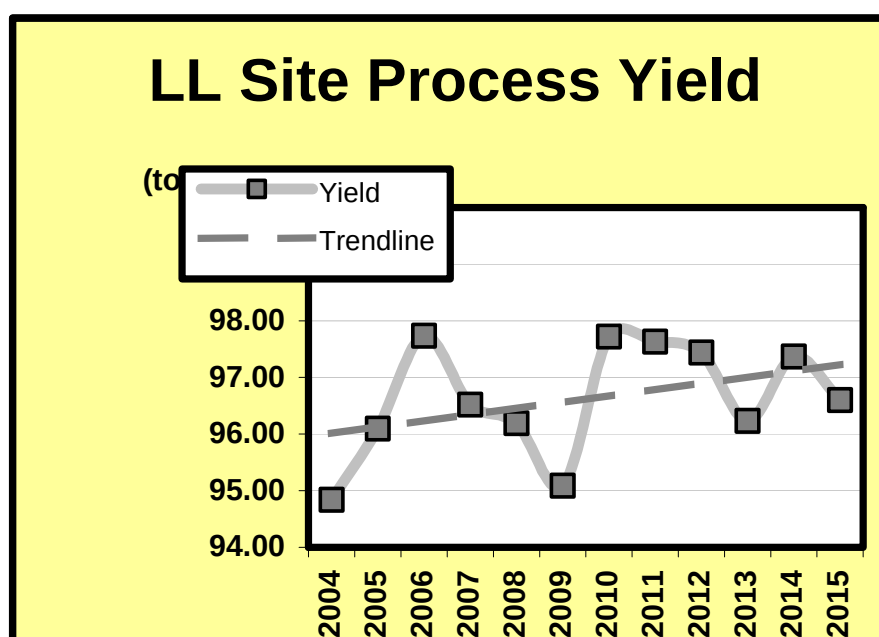
- Better reflect waste management performance
- To enable focus on where improvements can be made in subsequent years

As a result of the 383t of general waste taken from site 131t (34%) was sent to an energy recovery facility and 252t was sent to landfill.

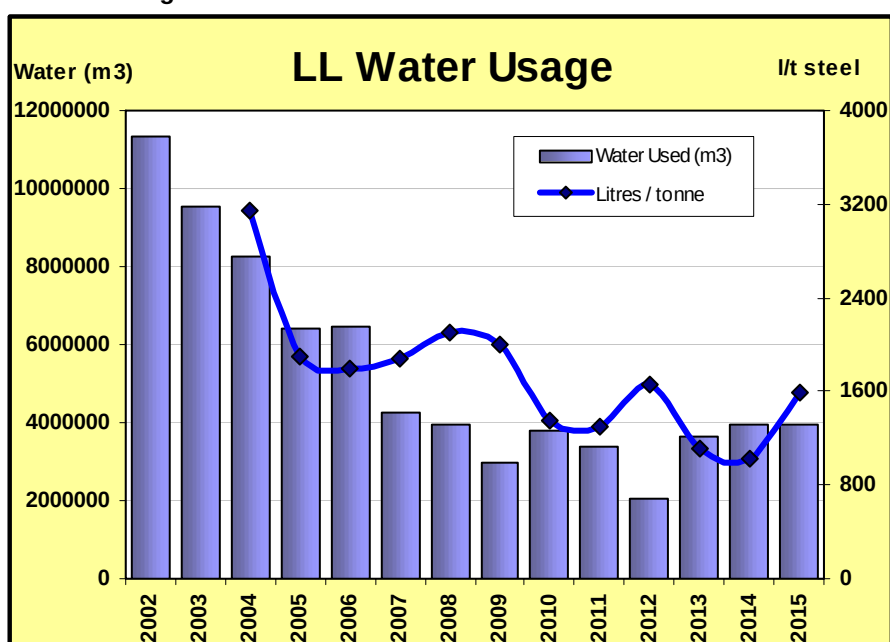
[1] Raw Materials

For an indication of raw materials usage & performance, the graphs in this section show each of the main raw materials (acid, oil, steel, water, zinc) expressed in a 'unit / tonne' format, for a year on year comparison of usage efficiency. This serves to give a good broad overview of performance in relation to each parameter

LL Site Process Yield 2015



LL Water Usage

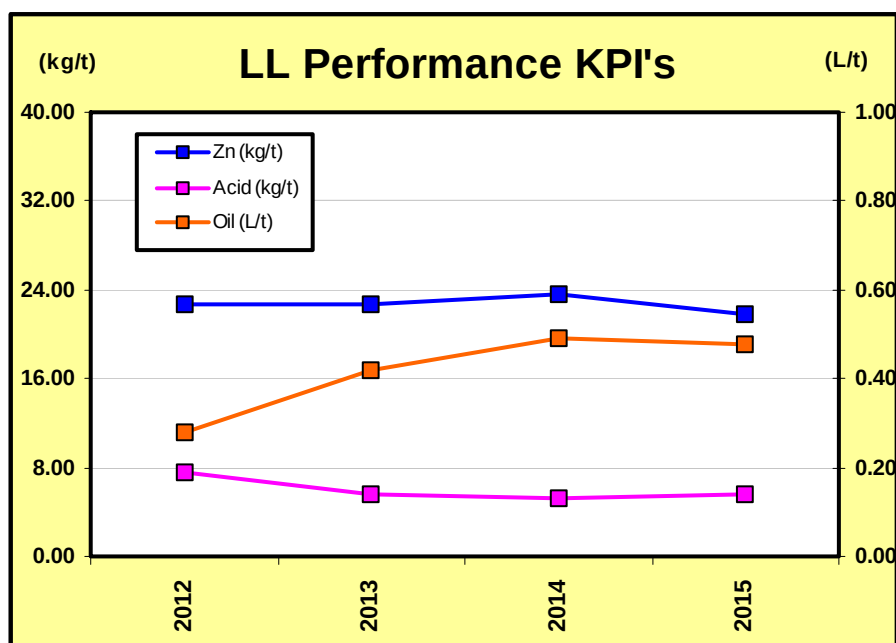


In relation to the above water graph, there is a general downward trend for water usage per tonne of product. The performance in 2015 is a function of a reduced production output in the later part of the year. Some of the contributory factors for this are: an improvement in the distribution system integrity, in conjunction with effective leak detection, and process arrangements e.g. minimizing stop start of certain processes, and use of closed loop systems. This is also against a backdrop of increased 'flushing' of system, for the purpose of helping prevent bacterial growth (such as legionella) in various process & domestic water systems

With regards to yield, the graph depicts overall site production yield, calculated from scrap arisings Vs production tonnage. Whilst there are many factors that can affect yield performance, there is nevertheless an observable trending improvement in this broad performance measure. Specifics aside, there is appreciable site focus on yield performance due to cost implications, and from an environmental perspective, this also means less energy & material usage in the up-stream processes

Comprehensive data for the following performance graph has only been available for a limited number of years, and as such the dataset has yet to fully develop to a point whereby it can supply usable trend information. It is however included here for information purposes, and to supply a base level with which to observe future efficiencies. As with some of the other parameters, these performance indicators can be influenced by a variety of factors, not least of all: variable production tonnages, product specification etc. with various units sometimes only operating in accordance with product demand, and raw material (steel slab) supply. That aside, it is still considered useful information by which to both: observe trends, and to compare performance with comparable production facilities.

Site KPI's



[3] Process Waste Streams

This section details the specific process waste streams, and outlines the disposal / recycling route of each

Liquid Waste Oil [Recycle]

Waste oil arisings come from a number of sources, either directly from processes, or indirectly from oil separators & interceptors. Such arisings undergo a variety of processing, including: gravity separation, chemical & thermal treatment, centrifuge, magnetic separation etc. in order to achieve an oil specification that can be sold to a third party for re-use as lubrication oil following further off-site re-processing

Hot Mill Scale [Recycle]

This is primarily oxidised iron scale, which forms during the Hot Mill reheating of steel slab. The scale designation also includes small quantities of similar metallic dusts e.g. from de-scaler bag-filter plants, roll grinding processes etc. If the material is of suitable specification, it is suitable for re-cycling back into steelmaking processes

Hot Mill Sludge & Filter-cake [Recycle]

Almost identical to Hot Mill scale, but containing a quantity of oil rendering it not suitable for re-use into steelmaking processes without further treatment. Therefore depending upon specification & treatment capacity, this material is either dispatched for in-house treatment, or sold to a third party for recycling via alternative means e.g. for use in cement or monolithic products

Ferrous Chloride Solution [By-Product]

FeCl_2 is a by-product of the pickling process, and is formed by the reaction between steel and hydrochloric acid. The solution is collected & stored by a third party, and is subsequently used in the water treatment industry

Ferrous Hydroxide [Disposal – 3 point test met]

During the Pickling process, the rinse waters used in the final stages of the process are collected & treated by a dedicated effluent treatment plant. The product of this process is a FeOH Ferrous Hydroxide filter cake. Despite it having a high Fe content, the recycling options are limited due to presence of small concentrations of Cl, which negates the option to recycle into steelmaking via the Sinter Plant process. As there are no other viable treatment options, the material is dispatched for Non-Hazardous landfill

Chromate Waste [Disposal]

Chemical used for the passivation of galvanized steel coil (which include chromic acid), are collected in a waste tank for removal by a specialist Hazardous Waste contractor for off-site treatment & disposal

Zinc Dross [Recycle]

In the Zodiac galvanisation process, Zinc dross is skimmed from the surface of the molten zinc-coating bath, and is then bulked-up into an adequate quantity for dispatch to a metal re-processor based elsewhere in the EU for recycling – Transfrontier Shipment of Waste protocols therefore apply

[4] Improvement Plan

Aside from routine activities that endeavour to achieve improvements in the performance items detailed in this report, the setting of specific project objectives & targets is now integrated into the site ISO14001 management system. Since 2014 although some of the proposed improvement activities have been put in place, as a result of the mothball to some processes taking place during 2015 there have been

some schemes that have had to be put on hold as a result of the current business position.