

	<i>per month</i>
Tinplate production	> 21 000 t
Net operating time	590 h
Consumption of tin anodes	> 100 t
Consumption of electricity	6 400 MW.h
Consumption of filtered water	34 000 kl
Consumption of de-ionized water	3 000 kl
Consumption of steam	8 000 t

Evolution of Electrotinning and Tinplate

Although improved in details, the electrolytic tinplating processes as used at present show little difference from those first implemented thirty to forty years ago. Most significant advancements are primarily related to the equipment and the tinplate itself. Trends are set towards tin and steel savings as well as higher line output and efficiency.

The need to conserve tin has led to the discovery of new additives for the Halogen plating solution that aim at reducing further the losses of stannic tin. Accurate on-line coating gauges have been developed in the past five years that assist in keeping closer coating mass tolerances and, therefore, in avoiding unnecessary 'overcoating'. Improving the continuity of the alloy layer at the steel-free tin interface and, consequently, the additional corrosion protection it offers have made it possible to specify lighter tin coatings for the same end-uses. Similar results are also achieved with the improved lacquers applied by the can makers.

Steel savings are made by reducing the thickness of the tinplate. This results from constant development of

can maker's manufacturing techniques and from new can designs.

Finally, electrolytic tinning lines have greatly benefited from a number of developments in electrical controls and electronics. Over the years, these have enabled safe increases of line speeds (up to 700 m/min), resulting in higher outputs. Also, automation has reduced the size of the crews required to operate large lines (5 to 7 men).

It can be concluded, in the light of the above, that the dominant position of electrolytic tinplate in the food-packaging industry appears firm against competition from other products. This position is ensured by the efficiency of the production units, which results in a competitive price, and by the proven record of adaptability to new developments in both the manufacturing and consuming industries.

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Book review

Doyle, William S. *Strip Mining of Coal; Environmental solutions*. Park Ridge (New Jersey), 1976. 352 pp. \$32.

Surface mining of coal is still in its infancy in South Africa. The environmental repercussions following large-scale disturbance of the land surface, and the secondary effects of the disposal of waste products and effluents from mining, have not yet become apparent. In other parts of the world where the surface mining of coal has been practised for decades, the deleterious effects on the environment of earlier mistakes, carelessness, or ignorance have aroused such public and civic indignation that far-reaching legislation has now been enacted to protect the immediate and contiguous land surfaces, both in the short term and in the long term. In the light of the experience of these countries, especially Europe and the United States of America, there can be no excuse for making the same mistakes in South Africa.

William S. Doyle examines the various methods of surface mining for coal, analyses the various sources of environmental pollution, and details the measures that can be and have been taken in practice to counteract the undesirable consequences. The headings of the

various chapters of this excellent book tell their own story:

- Surface Mining Land Use and Methods
- Land Reclamation Methods
- Sediment and Erosion Control
- Revegetative Studies
- Spoil Amendment Studies
- Acid Mine Drainage
- Mine Spoil Potentials for Work Quality and Erosion
- Studies of Effects of Mine Drainage
- Recovery of Acid Mine Lakes
- Area Reclamation Projects
- Surface Mined Land Reclamation in Germany
- Reclamation Costs
- AMD Control for a Small Company — Costs and Effects.

The theoretical text of this volume is amply supplemented by case studies, statistics, and observations drawn from a wide coverage of actual situations in the U.S.A. and Germany. Methodology and control techniques are clearly explained and illustrated. Anyone carrying the responsibility for disturbing the surface of the land by mining should welcome the wealth of information and guidance presented in this volume.

H. M. W.