

coating on the nylon or rayon ply used in the tires. All five of the largest tire manufacturers have installed radioisotope gauges on their rubber calenders for this purpose.

One of the most successful and widespread uses of isotope thickness gauges has been in the manufacture of coated abrasive materials, such as sandpaper and emery cloth, where it is difficult to control the weight of adhesive and abrasive uniformly by other means. Gauges are located immediately before and after each coating operation, and the signal representing difference in weight is used to adjust the calenders. (Figure 5.) One manufacturer producing over 500 different types and grit sizes of products reports annual savings of at least \$12,000 through this use of beta gauges. The savings are mainly attributed to reduced material waste and lower scrap production. Other users of this technique emphasize that increased uniformity of the product is the greatest advantage of this gauging system, which allows their product to command a premium price.

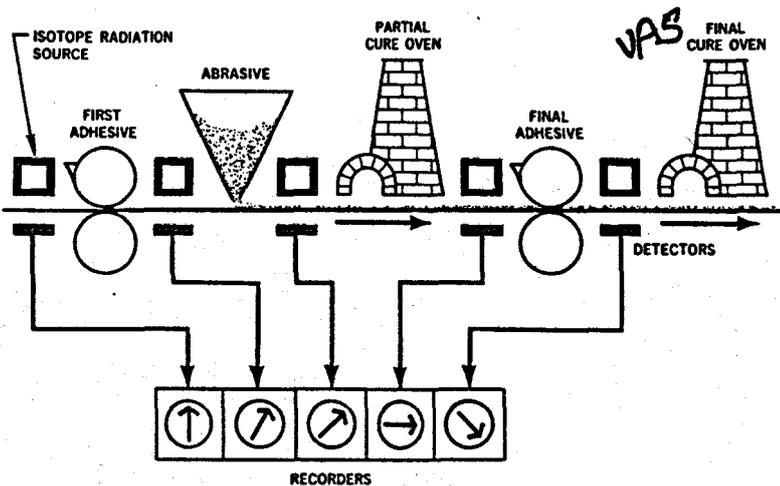


Figure 5. Use of multiple radioisotope gauges with remote controls.

An important and typical application of gamma density gauges is in ore processing for the measurement and control of pulp density in the underflow thickeners. At a large copper mine the need for such process control arose because of water conservation problems. When the capacity of the mine and reduction plant was increased from 15,000 to 22,500 tons of ore per day, it was found that the process required an additional 3,000 gallons of water per minute. The plant was legally restricted to the use of 10,000 gallons of water per minute