

Hot Strip Mill Down-Coiler Jarret Shock Absorber Application

Application Overview

The function of the hot strip mill down-coiler is to catch the strip as it leaves the final finishing stand and divert it around a mandrel so that it forms a coil. The strip is guided into the mandrel assembly by blocker rolls. The function of the blocker rolls is to keep the strip pressed up against the mandrel for the first few turns of the mandrel. Once the mandrel has finally gripped the strip the blocker rolls are withdrawn through the action of hydraulic or pneumatic cylinders.

When the strip enters the down-coiler (typically at speeds as high as 5,000 feet per minute) the blocker roll assembly suffers a severe impact which is absorbed traditionally by mechanical coil springs. The function of the spring is to absorb the energy of the strip and also to quickly return the blocker roll so that it forces the strip up against the mandrel.

Problem

In the past, it has proven extremely difficult to accurately set the preload of the springs. In addition, the springs lose compression force over time and eventually fatigue and break. A further disadvantage of mechanical springs is that they contain no damping property and tend to chatter as they reposition the blocker roll.

Product Solution

The use of Jarret pre-stressed elastomeric springs to replace the traditional mechanical spring has the advantages of a very accurately pre-set force and spring rate, a rapid but damped return of the blocker roll and the elimination of variable spring forces and spring breakage. The consequence is the winding of a coil with a smooth square face which eliminates the problem of strip edge damage which occurs when a coil with a ragged face comes into contact with the "C" hook lifting mechanism or other coil handling devices. The elimination of this problem results in a considerable reduction in strip scrap due to edge damage.

These spring replacements have been made to downcoilers manufactured by United Engineering. We have all of the information necessary to propose Jarret units. The customer must make modifications to the spring cartridge/housing to utilize Jarret units. Downcoilers manufactured by other mill builders may not have this spring loading arrangement and design information will be required to select Jarret units.

If the downcoiler uses pneumatic cylinders, springs will not be needed because the air in the cylinder will compress enough to provide the "spring" action. There may be a need for **shock absorbers** on these pneumatic coilers to dampen the impact of the blocker roll on the mandrel when the air cylinder is activated.

