

## Q-CROP

### Shears solutions for crop head optimization

#### BENEFITS

Cassette-type drum shears, designed for off-line maintenance and no unscheduled downtimes

Very fast in-line knife changing with hydraulic unclamping

Very compact and robust, custom-designed to fit existing layout and space

Lower power requirements due to optimal design ratings

Different cutting contours with a pair of knives on each drum for special applications

Specially designed crank shears for extra thick and strong transfer bar

ROI: 1 year

#### PROCESS

Transfer bars rolled in a roughing stand of a hot strip mill will have both ends out of square, the so-called tongue on the heads and fishtail on the tails. A crop shear - either drum or crank type - is used to cut off the transfer bar ends before they enter the finishing mills.

Apart from cutting the unwanted ends, it is important to cut the 'right' length in order to reduce yield losses. Thanks to Danieli's vast experience gained through several installations worldwide, we have been able to supply shear equipment with the best solutions.

'Smart' automation featuring a crop shear optimization system (CSO) minimizes cropping losses, thereby improving yield.

In the case of a mill upgrade to widen the product range, Danieli's special design of the drum-type and crank-type shears enhances the shearing capacity several times, while keeping the same foundations, or adopting minor modifications, and with very short downtimes and uninterrupted production.

#### EQUIPMENT

Danieli's drum-type crop shears are very compact and sturdy, and best suited for modernizations. These shears can have either a bottom or top-driven drum with a single knife on each drum. For applications in mills with extra-thin strip rolling, different cutting contours are possible with a pair of knives on each drum, which cut the heads in a curved shape for easy threading in the finishing mill. Danieli's drum shears are maintenance-friendly and fitted with quickly



Danieli DanCut knives on a drum shear. All DanCut shear blades are made in tough, hardened tool steel and allow multiple resharpenings up to the minimum resisting section of the blade.

Compact and sturdy drum shear with cassette design.



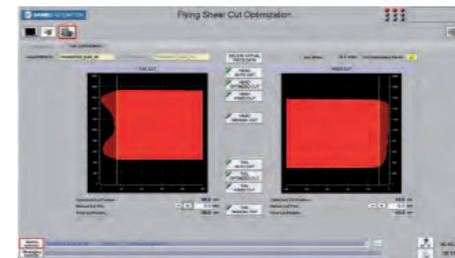
Crank shear in operation (Far East).



Drum-type shear in operation (Far East).



Danieli Automation on-screen display of crop optimization system.



changeable knives that are unclamped hydraulically. Gears on the both drive and non-drive end on top and bottom drums make the machine very sturdy to perform the complete cut without any burrs.

The cassette-type design with a bedplate bolted to the foundations and a detachable hydraulic drum cassette make these shears best suited for high productivity without long maintenance downtimes.

Crank-type shears are designed by keeping in mind extra-strength steel transfer bars in large cross-sectional dimensions. Danieli's crank shears are of robust construction with closed-type frame design and are driven by gear reducers coupled with flywheels for optimal motor power. Crank shear knives move parallel to each other, creating enough overlap for perfect, reliable cutting of extra thick transfer bars without leaving any shearing chips. Knives are clamped with pre-loaded springs and can be unclamped by hydraulic pressure in a few minutes.

#### PERFORMANCE ACHIEVEMENTS

The drum shears are of robust design to withstand cutting forces even at lower temperatures, and their cassette-type design means that a complete drum set is ready to be replaced at any time. Moreover, there are no production losses if any unscheduled maintenance is needed. Danieli's crop shears are fitted with in-house manufactured superior-quality knives - DANCut - to achieve the best possible results. Danieli's Q-CROP automation package makes the best combination for a precise optimized cut each and every time. Fitted with CCD camera and speed laser meters, the automation system analyzes the head and tail images to make the best decision on the optimal cutting length. With crop optimizer, yield increase to 0.3%, product mix increase more than 25%.