



# Winder

## Examples



FSU Turret Unwinder with expansion chucks



R Single Rewinder with following roller



FSU Turret Unwinder with lifting table



FSR Turret Rewinder with winding shaft



U Single Unwinder with expansion chucks



FSU Turret Unwinder with expansion chucks

## FSU/FSR und U/R

Unwinders and rewinders which match performance requirements are developed and manufactured as part of a complete line system, for all KROENERT lines.

A variety of winder types, depending on web width, production speed, materials and production requirements, are used.

Besides films, foils and papers, special materials (e. g. fleece) can be processed. Due to the high degree of standardization the winders can also be easily integrated with non-KROENERT machines as standalone units.

KROENERT offers a broad spectrum of standard and specialized winders.

## SINGLE AND TURRET WINDERS

for paper, film and foil





## Turret Winders: FSU (unwinder)/FSR (rewinder)

- Compact design and short web path
- Version with winding shafts or expansion chucks (shaftless)
- Version with drives or brakes
- Take-up of two reels with maximum diameter
- Direct drive for winding shaft resp. expansion chucks
- Integrated pendulum roller for web tension regulation
- Ultrasonic diameter measurement system
- Centric reel alignment
- Take-up of reels of different widths without downtime
- Adapter for different diameter cores
- Following rollers configured with regulated pressure
- Automatic reel change at web speeds of up to 1.200 m/min possible
- Splice rate > 99,5 %
- Reduction of residues
- Reduction of tail length

### Options

- Unwinder reel direction change without downtime
- Contact or gap operation of following roller
- Both winding directions
- Movement of complete un-/rewinder with edge control
- Guiding idler rollers driven
- Tapeless rewinding
- CFRP guiding and pendulum rollers
- Integration and connection of systems for reel handling incl. frequency-controlled turret drive



## Single Winder: U/R

- Versions with winding shafts or expansion chucks (shaftless)
- Versions with drives or brakes
- Both winding directions
- Adapters for different diameter cores
- Lateral adjustability
- Web tension regulation by means of load cell roller or diameter detection

### Options

- Movement with edge control
- Following rollers configured with pneumatic-hydraulic pressure or contact roller (winder)
- Hydraulic reel lifting system



## Special Winders

KROENERT has developed special winder configurations for individual and challenging tasks. Our focus in this case is on the reduction of waste and improvement of efficiency, as well as on materials which are difficult to process. Examples include:

- Unwinder for aluminum foil of 6  $\mu\text{m}$  with patented following roller control
- Unwinder in butt-splice configuration, without material web storage
- Rewinder for adhesive tapes without air inclusion or telescoping

### Reel Handling Logistics

The logistics of reel handling are, like the winders, adapted to individual requirements.

The degree of automatization is critical, since a variety of reel handling systems is available:

- Crane systems
- Semi-automatic lifting tables
- Fully-automatic lifting tables
- Reel feeding systems (manual or automatic)
- Manipulators for core assembly
- Systems for core preparation
- Connection to fully automatic material handling and storage systems

## Technical Data

	<b>FSU/FSR 10/13/15</b>
Working width	600 - 3.300 mm
Speeds	up to 1.200 m/min
Reel diameter	max. 1.000/1.300/1.500 mm
Reel diameter	min. 250 mm (at semi/fully-automatic splice)
Core	cardboard, aluminum, plastics, carbon
Core diameter	76/152 mm and more
<b>Substrate</b>	
Paper/cardboard	20 - 700 g/m <sup>2</sup>
Polymer films	2,5 - 750 $\mu\text{m}$
Aluminum	from 6 $\mu\text{m}$
<b>Web tension</b>	
unwinder	20 - 1.500 N
rewinder	50 - 2.500 N
Reel drive	AC drives