10 Pull Roll Stand

10.1 IPC control

While operating the pull roll stand, some places of work have to be occupied constantly, others on demand.

The plant's main control desk including the IPC control must be occupied during all operating and maintenance periods by authorized personnel.

They must be able to react to any operating status and development not covered by the automatic control. The IPC control enables them to select any functionality and to change any settings (see screenshot of IPC temperature panel below). Functioning and application of the IPC control are described in a different volume. Both these manuals have to be available at the commander's desk at all times.

Commander

Temporary places of work are on the operator side of the pull roll stand, where the operator supports film transport during production start, production end and production breaks.

For this purpose a commander desk is situated at the operator side. The commander desk features push buttons with control lights for alternative operating statuses (ON/OFF). For working at the commander's desk, refer to the chapter "IPC-Control" in this manual.

Additional temporary places of work result from maintenance and repair works. For these purposes, the machine is accessible from all sides. Switch cabinets at the pull roll stand are also temporary places of work.

10.2 Start-Up

10.2.1 Required Start-Up Checks

General

- ▶ Clean filter of cooling fans at the motors.
- ▶ Check oil level of gears.
- ▶ Control belt tension.
- ▶ Check belt pulley concerning tightness on shaft (taper look bushing) and alignment.
- ▶ Check rotary union for tightness and concentric running.
- ▶ Check pipings for tightness.
- ▶ Check all safety equipment
- ▶ Lubricate all greasing points.
- ▶ Check the condition of chrome rolls, treatment rolls and nip rolls.
- ▶ Control compressed air maintenance unit.
- ▶ Check moving of pneumatic cylinder for regular movement.
- ▶ Check function and adjustment of the film break detector.

Basic adjustments

- ▶ Adjust all nip rolls and spreader rolls (working width, stops, rate of motion, air pressure).
- ▶ Activate the cutting knife with blades and adjust it.
- ▶ Check film severer unit and adjust it.

Corona treatment

- ▶ Check the electrode distance (normal range 2 to 2.5 mm).
- ▶ Remove the condensate of the station.
- ▶ Check the ozone exhaust.
- ▶ Check valves and clean filter at the cooling unit.
- ▶ Check the granted electric performances and the treatment values.
- ▶ Collect data on the relations between decay of treatment level in relation to time, treatment level in relation to temperature, treatment level in relation to generator output, etc.
- ▶ Check the function of the stop valves (ozone exhaust). In case of film break the stop valve must lock the exhaust pipe.

Thickness gauge

- ▶ Check protection film of source chamber for damage.

Danger!
Danger of radiation! Excessive intake of radiation may lead to death and long term damages to the health. Always make sure that the thickness gauge is properly insulated.

Supply

- ▶ Control water and air supply.
- ▶ Check function of push buttons.
- ▶ Check drive system (driving roller and belt drive running).
- ▶ Record zero profile (at 2 Sigma > 0,2 µ adjust source).
- ▶ Check profile and average control.
- ▶ Check trailing cable above and below.

10.2.2 Preparation

Danger!
All personnel must be informed beforehand about the imminent start-up of the plant.

Before start-up of the plant, all safety and protective devices must be remounted correctly. This applies especially after maintenance works.

- ▶ Turn on the pull roll drives 30 min. before starting the plant (activate "pull roll drives run" at the commander).
- ▶ Check for full functionality of all safety and protective devices.
- ▶ Lock all protective doors and reset all safety and protective devices.

The measuring head must be in parking position.

Thickness gauge

Commander

- ▶ Press "reset" push button; malfunctions are neutralized
- ▶ Press "open to thread" push button (all guide rolls, edge cutting devices, spreader rolls and treatment systems move to parking position, system is ready for thread-up)

10.2.3 Starting Sequence

- ▶ The edge cutting device (air ventilation, grinder fan, conveyor fan) is activated automatically through the IPC.

- ► Operating personnel must cut off the thick edges of the film at the TDO outlet on both sides (operator side and drive side).
- ► Thread the film through the pull rolls on to the winding station and put it on the scrap winder.
- ► Activate "overspeed" at the control desk in order to tighten the slack film in front of and in the pull roll area.
- ► Activate "close inlet" at the control desk (preselected components like edge cutting device, front nip and spreader rolls move to their working positions)
- ► Wait until the trimmed edges have reached the waste winder, then cut off the edge trim (activate "chopping" button at the safety fence) and exhaust it
- ► Activate "close outlet" at the control desk (preselected components like rear nip rolls and rear spreader roll units move to their working positions, stretching parameters switch from fault ratio to production ratio, thickness gauge is turned on, treatment units get activated)
- ► Wait until profile is acceptable
- ► Turn winder from scrap winding position to production winding

10.2.4 Turn-off Sequence

- ► Move treatment systems (through monitor) and DMG (through push button or monitor) to parking positions.
- ► Disable film break detectors at MDO outlet.
- ► Cut the film between MDO and chill roll
- ► Activate "pull roll drives stop" button at the control desk in order to turn off all drives.

Information
The safety switches at the doors of the pull roll fence will only be released if all rolls have stopped. This will be indicated by a control lamp (doors released) at the control desk.

10.3 Modes of Operation

10.3.1 Independent Mode

The speed of the different machines can be independently selected. Before threading the film into the MDO, automatic mode will be activated.

10.3.2 Tandem Mode

The tandem mode controls the speed of the pull rolls in accordance with the casting machine.

10.3.3 Service Mode

The service mode is activated via a key switch on the commander. The service mode on the monitor allows manual forward and backward rotation by means of the foot pedals.

Danger!
Never fix the foot switches to the floor. The operator has to be able to move them freely into all zones during operation.

10.4 Operation of the Components

10.4.1 Thickness Gauge

The different modes of operation ("auto" or "independent") can be selected on the monitor.

- ▶ Switch off the thickness gauge on the monitor or locally by pressing the push-button on the thickness gauge.

Information
For further information refer to the instructions for the thickness gauge in the specific manual.

Danger!
Danger of serious radiation! Pay attention to the local radiation protection regulations

10.4.2 Spreader Roll Unit

The operation is via commander in "auto" operation or individually via preselection on monitor.

10.4.3 Pivot

Operation is done via the commander in "auto" operation or individually via preselection on the monitor.

10.4.4 Corona Treatment

The corona treatment is built-in fast in operating position.

Information
The electrodes are moved automatically into parking position in case of film break.

10.4.5 Piping

► Open the cooling valves on production start to prevent excess pressure in the roll.