

Dandy Roll Control Box

VALMORE DICK*, GOYAL M.K.**

INTRODUCTION :

Dandy roll is considered to be a necessity for the manufacture of quality paper and water marking. However, during its run, many mills in India face problems of picking, licking, and consequently breakage. Water spots in paper is also considered to be a source of embarrassment to the paper maker. It is also observed that the clarity of watermark gets effected adversely if the paper machine is speeded up and the Dandy RPM increases. The formation of paper is also observed to be poor with increased machine speed and dandi RPM above 100-125.

The primary function of the dandy control box is to improve "Formation of paper, as well as watermark, and prevent dandy picking, licking."

CONSTRUCTION

A dandy control box is a well controlled vacuum box, having straight slots with both dry and wet chambers. The Sinclair-Swil dandy roll control box is of stainless steel construction with high density polyethylene outer cover strips and divider lips. It is furnished with adjustable deckle seals, horizontal adjustment features, and mounting brackets. To make the seal effective, water wetting arrangements have been provided.

In the wet chamber water supply inlet, along with indication for water level, have been provided. Drain for filler fines in wet box help to keep it clean, without any down time.

(Ref. Diagram—1)

Optimum performance of control box is obtained by keeping a very uniform vacuum between "2"—"4" of water. To achieve such fine control of vacuum, a separate vacuum control system consisting of a sophisticated vacuum controller, an automatic valve, air water

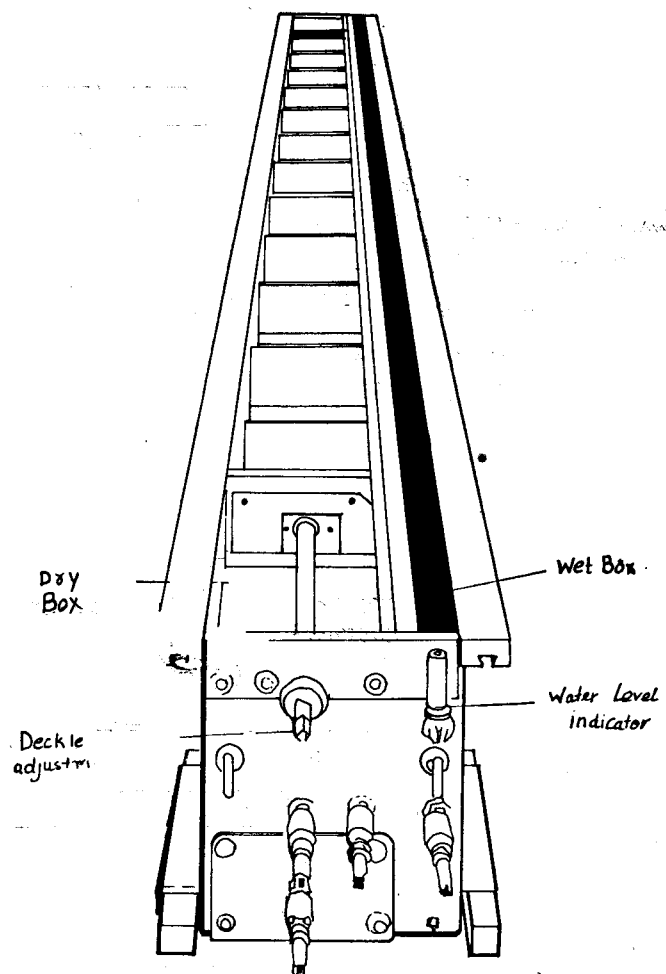


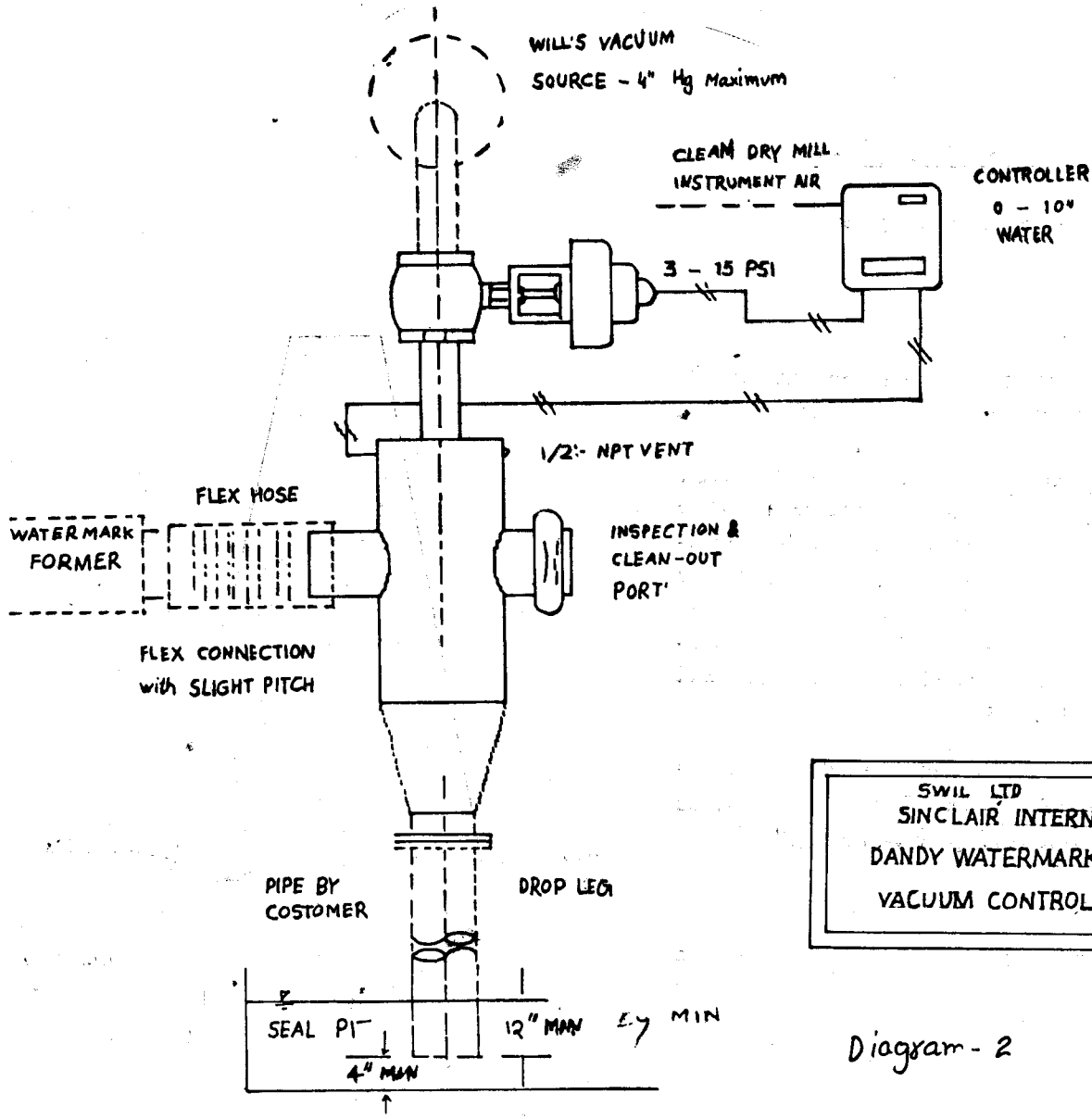
Diagram-1

separator, and a blower is provided. If the mill can provide constant vacuum below 4" of Hg, the blower could be omitted.

Diagram—2 clearly shows arrangement for vacuum system.

* V.P. Marketing, Sinclair International, New York.

**Marketing Manager, SWIL LTD., Calcutta.



PRINCIPLE OF OPERATION :

The stock while travelling on the wire, strikes the wet chamber of the control box with a velocity. (Ref. Diagram-3) This breaks the seal of the sheet on the wire. The impact causes the water from the wet chamber to rise up along the inclined surface of the divider plastic

strip. This causes the realignment of the pulp fibre, redistributes the fines just before the in-going nip of the dandy roll, where pressure gradient is highest. This makes the stock more acceptable for dandy action i.e. for improved formation and watermarking. The water which has risen from the wet chamber from the bottom

of the fourdrinier is sucked away immediately as it passes under the nip of the dandy. This leaves the formation and watermarking nicely embedded. As the freezing of the sheet at the nip of the dandy takes place, chances of water splash marks are greatly reduced. A comparatively uniform moisture across the sheet at the outgoing nip of the dandy also minimizes chances of picking and/or licking.

TRIALS

The system has been introduced several years ago by Sinclair International in USA and Canada and several such systems are running successfully.

FACILITIES IN INDIA

These control boxes are now being manufactured in India by Swil Ltd. Calcutta under collaboration with Sinclair International-USA

GAINS

With the dandy control box clear watermaking—both laid and conventional—at a speed of 1220-1300 FPM have been obtained. Improvement in sheet formation by 40-50% over previous achievement have been recorded.

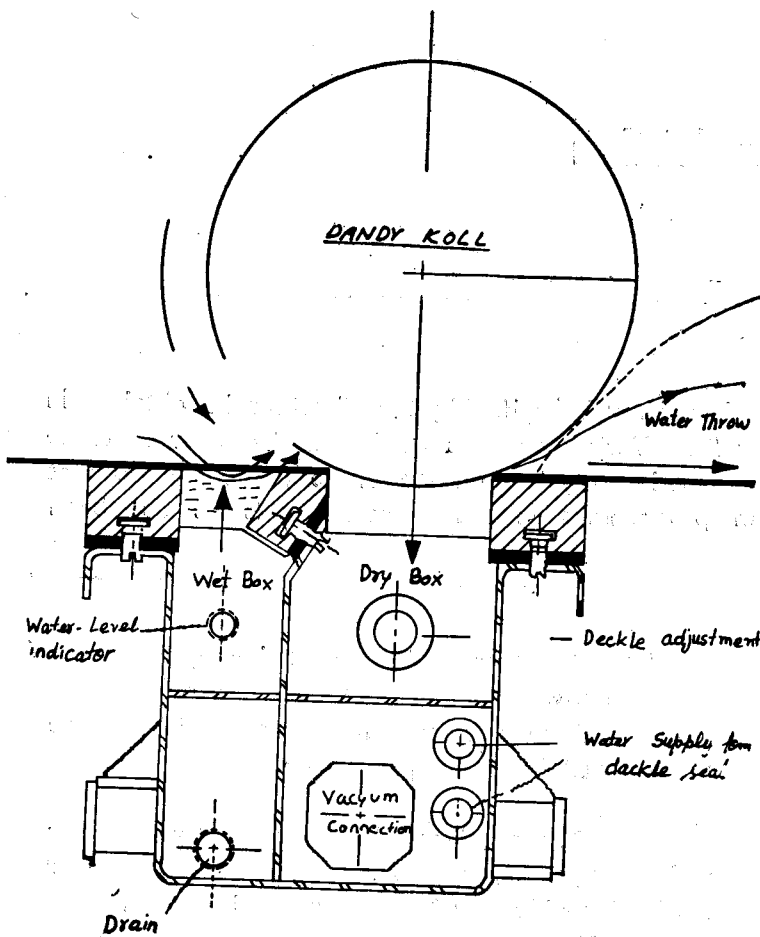


Diagram-3