

Experiences with paper machine clothing

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It has been our endeavour in this article to present some of our experiences with different types of paper machine clothing and to share a few thoughts with fellow paper makers. A lot has been discussed in literature on the different types of clothing liberally contribute to the improvement in the life of the clothing and the quality aspects of the product, besides distributing extensive literature. So, attempt has not been made to touch any theoretical aspects.

It has been generally our experience that four shaft wires (Phosphor Bronze) have higher wear resistance characteristics but have a tendency to give wire marking in the sheet. So they are being used on machines making unbleached wrapping and packing papers. The wires with twill weave are giving less marking in paper though their resistance to wear is marginally lower. So twill weaves are employed for manufacturing papers requiring good suitability.

Recently it was found that a few wires were developing cracks prematurely on the drive side of one of our paper machines, and that the wires were running loose on the drive side. After discussions with the different wire manufacturers, it was learnt that the stretch on their looms was not uniform, and that this can be taken care of by them.

On our 70 TPD MG Machine, 50% synthetic felts, either batton-base or weftless felts of indigenous make are found to be satisfactory in the first suction press position. On the second grooved press, groove marking in the paper has been resulting with felts lighter than 1200 Gsm (even in the case of batt-on-base felts). So felts of 1250 Gsm and above substance of 100% synthetic quality are being employed.

Our experience with the glazing felts is found to be very interesting. 100% synthetic batt-on-base felts of 1400 to 1800 Gsm have been tried. It is found that the glazing is satisfactory in the entire

range, and that the overall life is proportional to the substance weight of the felt. But in the case of 1800 Gsm felt, it was found that the marking coming from the wet end has been eliminated (such as wire or grooved roll marking). The quality of glaze with 1800 Gsm felt is a little less for the first 2 days after start up, but subsequently it has been uniform throughout the felt's life. With 1400 Gsm felts the glaze obtained is alright but the felt could not eliminate any marking on the paper coming from the wet end. All indigenous felts in this position have given felt marking.

Regarding Ribbed Felts, indigenous felts are found to have an edge over some imported felts in respect of the quality of rib marking but their life is generally less by 40%.

Shadow marking from suction rolls is the scourge of all paper makers everywhere. Many suction presses are under loaded to avoid this problem. In the case of the first suction press of our 70 TPD MF Paper Machine, the problem of shadow marking of the suction roll holes could be eliminated only by increasing the substance of the felt from 1000 Gsm to 1200 Gsm (with the design of felt to give good dewatering).

The problems with Fabric Presses are many. A few of them are :

- a) Lower life of rubber roll.
- b) Vibrations and jumping of the pressing roll with associated problems.
- c) Wire marking.
- d) Higher operating cost due to the additional clothing i.e., fabric wire and additional vacuum (air flow) required by the fabric wire suction box.

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These problems have been faced on the second fabric press of our 70 TPD MF Machine. The problem of jumping of the roll has been identified by leading paper machinery manufacturers as coming from the felts and wires. In fact some of the fabric wires even of imported origin were found to be very coarse, giving extensive marking in the paper and damaging the rubber rolls. So the manufacturers of clothing have been approached to offer felts which are not easily compressible. Besides, water cushioning has been arranged for the bellows of the pressing roll to dampen the vibrations. Felt manufacturers have been approached for identifying the correct quality of felt to be run without fabric. All of them have suggested 100% synthetic felts of 1350 to 1500 Gsm substance in multilayer constructions. Though their stability and runnability are good, they are all found to give felt marking, which is highly objectionable for some quality grades. Besides they had to be removed prematurely due to sheet crushing in the nip. We are thus forced to continue the fabric and felt (batt-on-mesh 1200 Gsm, 100% synthetic) combination. It is earnestly hoped that felt manufacturers will come out with suitable felt meeting the specific requirements for such positions.

Regarding yankee machine felts we like to give a rough rule of thumb with respect to their porosity. The porosity of bottom felt is to be

roughly 3 times that of the porosity of the top felt. Owing to the development of synthetic felts and their acceptance by the paper industry, revision of air flow provided for the Uhle boxes (felt suction tubes) has become must. Since the synthetic felts are more porous than the woollen felts, many machines had to be supplemented with more vacuum pumps. It is generally observed that the requirement of vacuum in practice is higher than what is indicated by the felt manufacturers. This may be the case due to the absence of high pressure showering in some machines.

Regarding dryer clothing, the indigenous dryer felts are more or less giving satisfactory results, but seam jointing has been a problem with them. Some of the felts are giving marking after a few months run for low substance paper.

Regarding dryer screens, our experience is that runnability of the indigenous screen is generally alright but their seam stitching is poor. The seams are opening up easily after 30% of their life.

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