Modification In Fabric And Inspection Rolling Machine With Automatic Adjustment

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Abstract- *Worm gears can be used to either greatly increase torque or greatly reduce speed. They are also the smoothest and quietest of the gear systems, as long as they are properly mounted and lubricated. Another advantage of worm gears is that they have good meshing effectiveness. fabric inspection and rolling machine is used in industry for checking cloth. In our project we are propose to development in fabric inspection rolling machine. In this machine the main cloth rotating shaft are connected to motor with using chain drive. We are proposed to assembly this mechanism and replace to worm and worm wheel. We have use worm and worm wheel because produces a very high ratio Transfer rotation through 90 degrees Very compact machinery Provides a high static friction able to hold massive loads by static friction. We have used worm and worm wheel in fabric inspection and rolling machine. As well as fix the box. Because oil leakage is in mechanism and cloths are damaged. So, worm and worm wheel are used. Maintenance is decrease after replace the chain drive mechanism. Then efficiency is decreased. Used gear mechanism so friction is low. Reduce oil leakage. And clothes are not a damage.*

In the traditional Inspection Machine, the staff worker found up to 200 defects within one-hour attention. After maintaining attention, more than 20-30 minutes' worker experiences the fatigue, speed of manual fabric inspection is only 5-20 m/min, more than this rate worker will appear leak test. This not only affects human health, but also reduces Productivity. Various methods are selected in fabric inspection, including inspection on a flat table or a fabric inspection machine. In-house or third-party inspectors can do the job.

I. INTRODUCTION

Quality measurement is an important aspect during the production of textile fabrics in lowering costs and improving the finished product. Much of the fabric inspection is performed manually by human inspectors. Many defects are missed, and the inspection is inconsistent, the output depending on the training and the skill level of the human inspectors and also the mental and physical conditions of the inspector. Hence the textile industry has been moving towards automated fabric inspection system. An automated fabric inspection system can provide consistent results that correlate with the quality control standards of the textile industry. Fabric defect detection has been a long – felt need in the textile and apparel industry. Surveys carried out in the early 1975 shows that inadequate or inaccurate inspection of fabrics has led to fabric defects being missed out, which in turn had great effects on the quality and subsequent costs of the fabric finishing and garment manufacturing processes.

The weaving machine is one of the easiest and fastest ways of producing cloth and textile pieces. The automated defect detection and identification system enhance the product quality and result in improved quality to meet both the customer demand and to reduce the cost associated with off-quality. This process also reduces the manual work load associated with the inspection process. Off-line monitoring system has its own disadvantages when it is compared with that of on-line monitoring system. In the off-line monitoring system, the produced fabric is taken to the inspection frame where the quality of the fabric is analysed and the fabric is transfer to the successive process. But in the on-line monitoring system the inspection of the fabric is done simultaneously while the fabric is being produced

1. W.J. Hill, L. Norton-Wayne and L. Finkelstein Year of Publication 1983 attempted to apply a linear feature space classifier to identify defects in cold rolled steel strip he was able to achieve only 55% correct in his simulations despite using a least mean square linear classifier which was very carefully designed and thoroughly evaluated

2. Mr. Nala wade and Mr. Nark`hedeYear of Publication 2016presented a new intelligent and a fabric defect inspection system based on texture feature and back propagation. In this paper an artificial neural network-based fabric defect detection system was demonstrated. The problem is to identify and locate the defects in the fabric by using necessary image analysis techniques'., Y. Takagi, Virk, G.SYear of Publication 1990have used standard area cameras with associated hardware, but they

require many cameras due to their inherent low resolution, making the systems excessively expensive and complicated K Rao Ananth avaram, O. SrinivasaRaoYear of Publication 1990presented the method involves the process of analysing the fabric image capture by a digital camera. The advantage for the manufacturer here is to get a warning when a certain amount of defect or imperfection occurs during the production of the fabricKang T.J. et al Year of Publication 1990analysed fabric samples from the images obtained from transmission and reflection of light to determine its interlacing pattern.

II. METHODOLOGY

work:

It is proposed to carry out "Design and analysis of Rolling Cum Inspection Machine" For this dissertation work, the proposed work is divided into the following phases.

Phase I: -

Types of fabric, their size & process will be studied. Also input parameter like existing machine,3D model will be studied.

Phase II: -

To define actual weight of machine component and actual working of each part will be analysed. Market survey will be done on channel (C-section, rectangular section, pipe section).

Phase III: -

We will make 3D model by eliminating frame, reduces size & convert frame structure in channel structure. After completing 3D model, it will be sends for analysis.

Phase IV: -

After analyses will be go for manufacturing. We will procure B/O part.

Phase V: -

Assembly will be done according to given drawing & testing will have done, that we ensure about inspection of fabric and Rolling will be make properly.

III. RESULT

- **For shaft:**
  Material used for shaft =40C8
  Maximum bending moment=934.4 NM
  Maximum twisting moment=178.18 NM
  Inner diameter of shaft=70mm
  Outer diameter is=80mm

- **For motor selection**
  Power = 0.7729 hp
  Rated power $\cong$1 hp

- **Bearing selection:**
  We have selected bearing of SKF which is UCF20Q
  Sensor selects
  Proximity Sensor
  Motor selected= 1Hp
  Hence maximum torque offered by 1hp motor at 40 rpm
  $=\frac{746X60}{2\ X\ 3.14\ X40}$
  =178.18 N.mm

- **Bearing selection:**
  total load =2943N
  Total no of bearings =4
  Radial load on each bearing = 735.75N
  Outer dia. of shaft = 80mm
  In our case, inner race rotates and outer is fixed
  Race rotation factor = v = 1
  equivalent dynamic load = $P = xvFr + yFa$
  Only Radial load is there
  P=Fr
  P=735.75N
  As per, load life relationship ex,
  From SKF catalogue we have selected bearing with 80mm inner diameter having, C=71.5KN
  let's check the life for same
  $$L_{10} = \frac{c^n}{p}$$
  n =3 ---------- for ball bearing
  $$L_{10} = \frac{71.5 \times 10^{3^3}}{735.70}$$
  =920568 million Rev.
  $$life = 920568 \times 10^6 rev$$

and if we consider 40 rpm speed of shaft and runs for 16 hours then revolution/day = 38400

IV. CONCLUSION

- We conclude that the mechanism adopted in the Design and analysis of Rolling Cum Inspection Machine is successful, because as compared to the old method of inspecting it reduce the time consumption.
- We can find defects easily than conventional defect finding process.
- Our Rolling Cum Inspection machine reduces human effort. And Increase production rate.
- By using rolling cum inspection machine fabric is reminded on beam with proper tightness due to tension adjustment.by this Synchronize production process is carried out.
- For rolling cum inspection machine required one operator only. And also, Fast and easy handling, for operator.

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