

Department of Mechanical Engineering

Orion ropes Pvt. Ltd.

Duration of MoU: From 23/02/2021 to Till Date

Nature of MoU: Academic/Expert talk/Guest Lecture/Workshop/Internships

List of Activities conducted under above MoU in Academic Year 2021-22.

Sr. No.	Date	Duration	Title of Activity	Nature of Activity(Expert Talk/Training/Internship etc.)	No. of Participants
1.	08 th Dec 2021	One Day	Internship training on "Design and Manufacturing of industrial ropes"	Internship	9


Name, Designation and Signature of First Party

Principal
SVKM's Institute of Technology, Dhule




Name, Designation and Signature of Second Party

SONJE N.R.
MANAGER A.A.
For Orion Ropes Pvt. Ltd.
DHULE



INTERNSHIP REPORT

A report submitted in partial fulfillment of the requirements of

BACHELOR OF TECHNOLOGY

IN

MECHANICAL ENGINEERING

By

Mr. Divy Rajesh Wagh

Under Supervision of

Prof. Dhiraj Bhandarkar

ASSISTANT PROFESSOR

Name of company

ORION Ropes PVT. LTD

Period of Internship (Duration):

05/07/2021 to 16/08/2021



DEPARTMENT OF MECHANICAL ENGINEERING

SVKM's INSTITUTE OF TECHNOLOGY

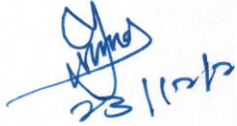
(An Institute affiliated to Dr. Babasaheb Ambedkar Technological University, Lonere)

**Shri Vile Parle Kelavani Mandal's
INSTITUTE OF TECHNOLOGY
DEPARTMENT OF MECHANICAL ENGINEERING**

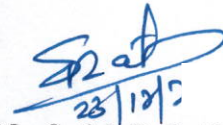


CERTIFICATE

This is to certify that Mr. /Ms. **Divy Rajesh Wagh** student of TY B-Tech Branch Mechanical Engineering PRN No. **2154491612526** has completed the internship program at **ORION Ropes PVT. LTD**, as per the criterion mention by Dr. Babasaheb Ambedkar Technological University, Lonere, Raigad.



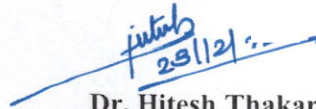
**Prof. Mohammad Juneduddin
Local Guardian**



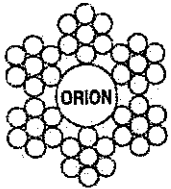
**Mr. Satish R. Patil
Dept. Internship Coordinator**



**Prof. Dhiraj Bhandarkar
Internship Mentor**



**Dr. Hitesh Thakare
Head of Mechanical Engg. Department**



ORION ROPES PVT. LTD.

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Visit us at : www.orionropes.com



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Mobile : 77097-68102

DATE: 16.08.2021

CERTIFICATE OF COMPLETION OF INDUSTRIAL TRAINING

This is to Certify that Mr./Mrs. Divy Rajesh Wagh, has successfully completed Industrial Training in various Department from 05.07.2021 to 16.08.2021 for partial fulfillment towards completion of B.Tech Mechanical Engineering.

WE WISH HIM GOOD WISHES FOR HIS FUTURE ASSIGNMENT



For. ORION ROPES PVT. LTD


AUTHORIZED SIGNATORY

Acknowledgement

It is a great pleasure and satisfaction to present the industrial report on “**Orion Ropes PVT. LTD**” towards the partial fulfillment of the Degree in Mechanical Engineering course as presented by Dr. Babasaheb Ambedkar Technological University, Lonere.

Foremost, I would like to express our sincere gratitude to our supervisor **Prof. Dhiraj Bhandarkar , Mr. N.R. Sonje sir (Plant Head) & Pushkar Patil Sir (Quality Engineer)** for his continuous support and guidance. His expertise and experience have helped us in all times of our training. He has been the source of inspiration and motivation for bringing insight into the project work I don't have words to express my feelings for his timely guidance.

I would like to extend our sincere thanks to **Dr. Hitesh Thakare** Head of department, Mechanical Engineering Shri Ville Parle Kelvani Institute of Technology, Dhule for extending the necessary help required for carrying out the project work.

I am also grateful to Dr. Amol Badgujar, Dr. Md. Modassir Hussain , Prof. Bhushan Behede, Prof. Dattatray Doifode, Prof. Mohammad Juneduddin, Prof. Yogesh Sonawane, Department of Mechanical Engineering for their valuable sharing expertise and sincere encouragement extended to me.

I extend our regards to **Dr. Nilesh Salunke**, Principal Shri Ville Parle Kelvani Mandals Institute of Technology Dhule, who supported us in all except during our project work. I extend our gratitude towards the management, Shri Ville Parle Kelvani Mandal for providing the required infrastructural facilities. Last but not the least unending gratefulness to our faculty members support staff friends and family for their endless support throughout the work thus leading us to achievable objectives.

Mr. Divy Rajesh Wagh

SVKM's Institute of Technology, Dhule

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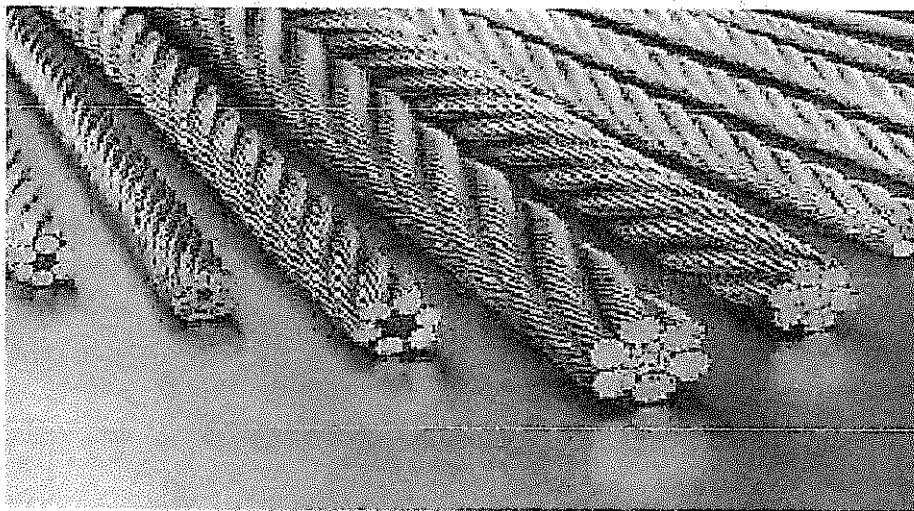
1. INTRODUCTION

Established in 1992, **Orion Ropes Private Limited** is the second flagship of our legacy (Orient wire Ropes Private Limited being the first; Est. 1974) in wire rope manufacturing with the state-of-the-art infrastructure and highly effective & efficient team that makes us one of the oldest leading wire ropemanufacturing companies.

Our brand is synonymous with Best Quality, Best Customer Service, Values, Customer Satisfaction & Relations. This is not only third generation family business, but also a business full of families. This is why we have always been connected to our roots.

We are approved in all major government, semi-government, public and private sector companies as vendors. Our reach is neither affected by the distances nor by the topography. Customer demands, and we supply. We are known to deliver unbeatable service and unquestionable quality. Our clients are spread across the globe in more than 20 countries and in every state and city in India.

We always work on, 'how to serve our customers better?' And this has been the mantra of our longevity and the very base of our existence.



6*36 STRANDS ROPE

1. Which qualities should be there in an employee while working in company?

- **Good communication:** As with most roles, it's important that leaders are good communicators. In many ways, they are the voice of the company, so being able to effectively communicate with their team and employees is vital in their position.
- **Empathy:** Leaders need to display a great deal of empathy. This involves understanding others' wants, needs and concerns. Not only will this create a harmonious working relationship, but displaying empathy will earn trust and respect from your colleagues and employees.
- **Positivity:** Positivity can go a long way in boosting morale and promoting a healthy work environment in general. Leaders should have a good attitude and stay positive throughout their everyday tasks. When employees see them being positive, they're more likely to be positive themselves. Leaders should aim to inspire others through their positive outlook.
- **Confidence:** As a leader, it's important to have belief in your abilities. When you display a reasonable amount of confidence, you can help motivate others as well as give them hope for the company's future.
- **Vision:** In order to make a company profitable, it's important for leaders to have a good vision. This means they have the motivation and ability to think beyond the present and plan for the future strategically.
- **Responsibility:** Since leaders have a variety of tasks they'll need to complete, it's important that they're responsible in the workplace. This means prioritizing their duties and staying focused on what needs to get done for the company.
- **Transparency:** Leaders should also be transparent about the company's state, its goals and more. This means being open, honest and effectively communicating with others in the organization. The more transparent you are as a leader, the more your employees will trust you going forward.
- **Motivating:** As a leader, you'll be responsible for not only leading your team but empowering them to perform to the best of their ability.
- **Delegation:** It's important that you're able to effectively delegate and manage your team of employees.
- **Humility:** Leaders should be modest about their motivations and actions. It's important for

employees to see that their superiors can make mistakes, too.

2. Counted stock available in the company

Diameter of rope (mm)	Quantity(bundles)
1	5
2.12	7
0.67	8
0.70	0
0.73	291
0.75	159
1.27	15
2.6	9
1.22	0
1.04	18
1.50	8
1.18	8
0.78	9
0.93	10
0.82	19
1.30	0
2.46	6
1.78	25
1.01	5
0.80	5
1.75	11
1.82	7
0.85	6

3. Calculated the stock of V-Belt

Size	Actual Stock
C-82	3
C-83	1
C-130	2
C-145	1
C-142	5
C-117	4
C-132	9
C-100	1
C-90	1
C-86	1
C-80	1
C-88	1
C-64	3
C-79	2
C-130	3
C-89	2
C-125	3
C-98	5
C-128	5
C-96	5
C-94	6
C-135	10
C-120	5
C-109	2
C-116	2
C-124	3
C-162	6
A-22	5
A-25	1
A-39	1
A-42	1

A-43	2
A-44	1

4. Stranding Machine

Cables for fixed installation in wire channels or long walls or long sealing's of rooms need to be bendable. Cores for moveable electric devices and units need to be flexible. The required process ability is achieved by using stranded conductors inside the cable which are produced on stranding machines.

Stranding is the process where a particular number of stranding elements are joined together while winding them round a common axis.

Stranding is a result of rotating and forward movement. The rotation creates winding of the stranding elements around an axis or a center element. The forward movement is made using a capstan.

The most common and simplest stranding system is the 6-wire system. This system has a center element and 6 wires are helically laid around this center element. All additional layers on top of this one have 6 wires more than the layer before. For example, 1+6+12+18+24 etc.

When using the 6-wire system all wires in all layers have exactly the same diameter. Such a design is called concentric design.

- Lay-length

The lay-length is the measurement parallel along the axis that every individual stranding element needs for one complete winding around the axis.

- Stranding direction

The stranding direction can be indicated when looking on the rope in the roll axis. When looking on a right-stranded rope the stranding elements are going from front left to down right. For this direction the character "Z" is indicated. The character "S" is symbolic for left stranding. The assignment of "S" or "Z" is related to the center of the character which either goes right to left or left to right.

The cross lay stranding has an opposite direction of each layer to the one before.

When designing the cable with mono lay all layers have the same stranding direction.

- Round conductors

When compacting a round conductor this is usually made using the stranding nipple and/or compacting rollers. Both ways of compacting are reducing the cross section of the individual wires until the strand has the requested diameter. The geometric shape of the cross section regarding the single wire is unevenly changed.

- Sector conductors

To reduce the cross section of stranded conductors, especially for energy cable, sector shaped conductors are replacing round conductors. Multi wire sector conductors are always compacted.

Depending on cable design there are 60°, 90°, 100° and 120° sectors. The sum of the angle of the individual conductors has to be 360°.

Compacting and production of sector shaped conductors is usually made using compacting rollers.

- Type of machines

There is a wide range of machinery and accessories for stranding. For the best choice of the right stranding line, cable type (data cable, energy cable, special cable) material characteristics and quality requirements for this cable as well as available space and manufacturing program are the factors to select the right equipment.

Generally, the idea is to have flexible machinery. Flexible means that the stranding line can handle as many as possible of the stranding duties to be produced.

Our delivery program includes the following stranding lines:

Tubular and skip stranding lines for production of steel strands, copper strands and aluminum strands.

Rigid stranding lines without back twist for the production of copper strands and aluminum strands and ropes. This machine can be delivered with row by row loading or individual loading.

Planetary stranding machines with back twist for the production of steel ropes or for armoring of cables. The machines are equipped with back twist and can operate with 0% and 100% or variable back twist.

Closing machines such as:

- Drum twister
- Bow cable
- Planetary machines

5. Wire Torsion Strength Test

Metal wire is very useful for carrying signals and power, because of its ability to conform to numerous shapes. A good wire material must be able to withstand repeated bending, twisting, and pulling, while maintaining structural integrity and the desired material properties. Wire torsion tests are a measure of wire ductility, and help to ensure sufficient wire strength to withstand normal loads. Typical wire torsion test systems contain one stationary and one moveable grip, with the ability to apply a constant axial load. The axial load ensures that the wire does not bend from the axis of load application or fold over on itself. A popular method of applying the axial load is through a deadweight pulley system, like the one on the test machine pictured. The deadweight ensures a constant axial

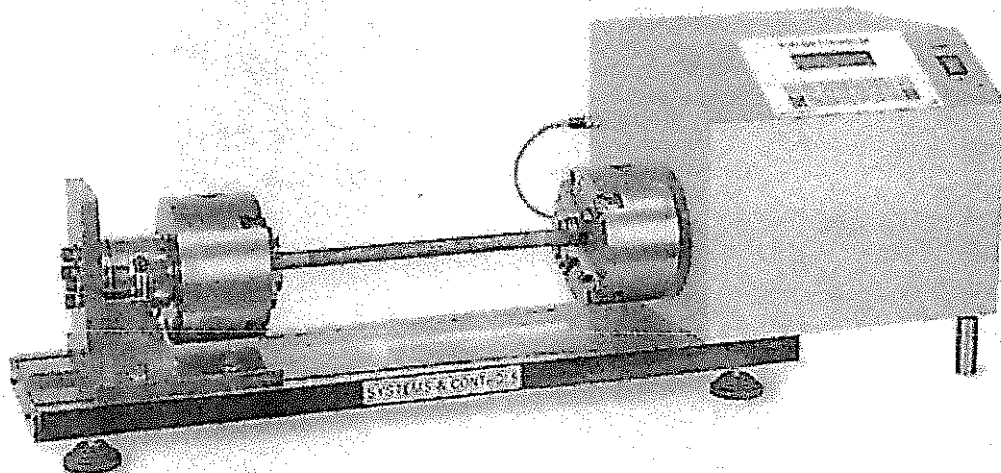


Figure 2 Torsion Tension Machine

load throughout the test, regardless of wire shortening or elongation due to material deformation. ASTM and ISO have developed standardized test methods for testing the

torsional properties of metal wire. These tests apply an increasing torque until failure, by twisting the wire specimen at a constant angular velocity. Popular methods for torsion testing of wire are ASTM A938 and ISO 7800. Test Resources offers a wide range of electromechanical, electrodynamic, and servo-hydraulic torsion and axial-torsion test machines for testing the torsional properties of wire. The torque capacity of these machines ranges from 62 to 17,750 in-lb. The machine featured above is a 160 series torsion machine with a deadweight system for applying a constant axial load on the wire specimen to keep the wire from overlaying on itself or moving out of axis.

6. Quality policy

We have a fully equipped laboratory to monitor and maintain a well-defined quality assurance system in the factory manned by professionally qualified and experienced technician.

Our Quality Assurance System has been approved by:

TUV AUSTRIA CERT GMPH to cover requirements of EN ISO 9001 : 2015

B.I.S. to cover manufacture of Engg. Ropes to ISO 2266/02

Directorate General Factory Advice Service and Labor Institute (IDLR)

Directorate of Industrial Health & Safety

We produce ropes conforming to various specifications like:

Indian Standard (BIS)

British standard (BS)

German Standard (DIN)

U.S. Federal

Russian Standard (Gust)

Japanese Standard (JIS)

American Petroleum Institute (API)

International Standard (ISO)

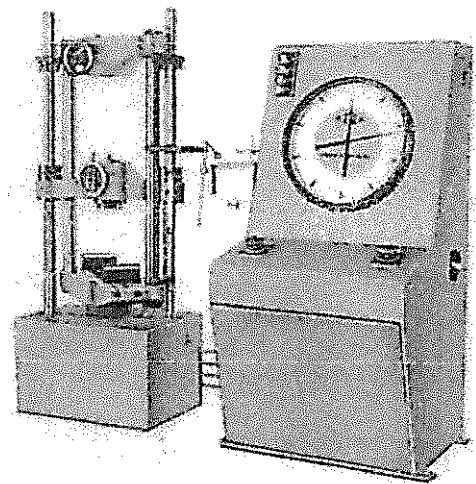


Figure 3 UTM

6. Performed a tension test on UTM

Specifications of UTM- UTM100TON

Specimen- 16/6*36/UNG/RSO/CWR

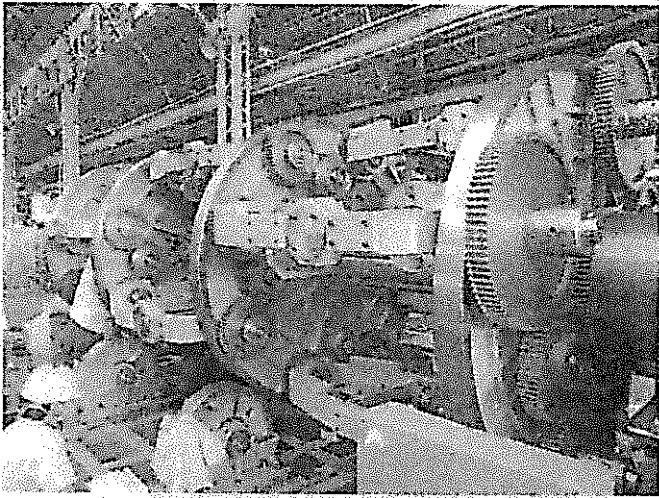
16 – Rope diameter

6 – Number of strands

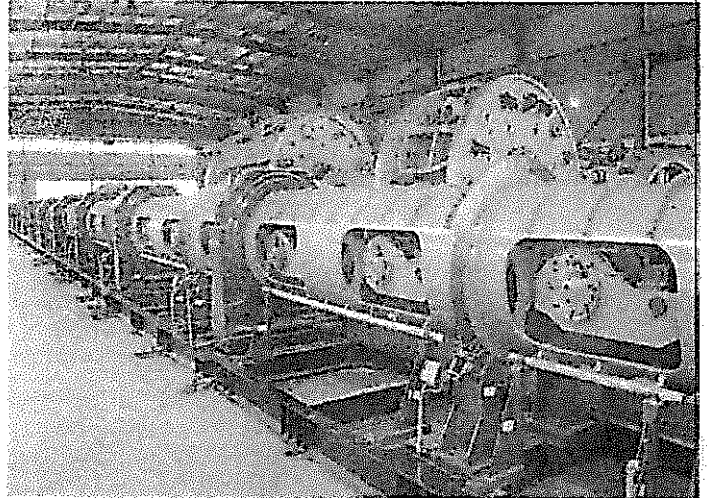
36 – Number of wires in one strand UNG – Ungalvanized

RSO – Right hand ordinary lay CWR – Core wire rope

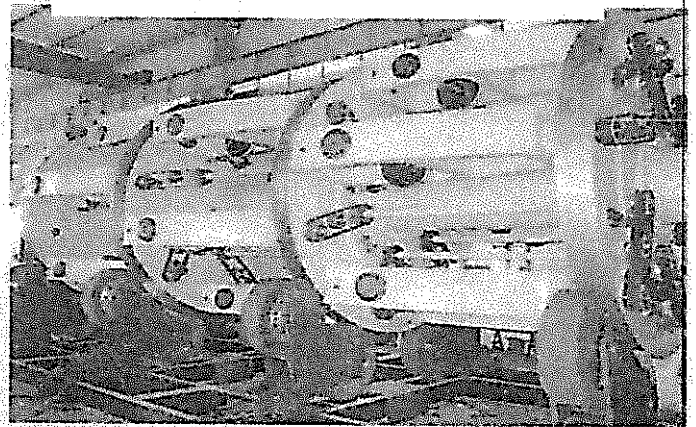
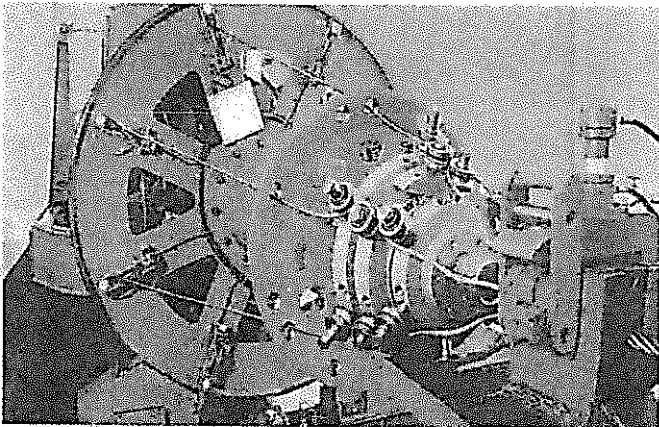
To break a specimen of 16mm diameter a 161KN of force is required



4 Bobbin stranding machine



2 Bobbin 36 strands Machine



Closure Machine

7. Conclusion

In review this internship has been an excellent and rewarding experience. I have been able to meet and network with so many people that I am sure will be able to help me with opportunities in the future.

One main thing that I have learned through this internship is time management skills as well as self-motivation. When I first started, I did not think that I was going to be able to make myself sit in an office for eight hours a day, five days a week. Once I realized what I had to do I organized my day and work so that I was not overlapping or wasting my hours. I learned that I needed to be organized and have questions ready for when it was the correct time to get feedback. From this internship and time management I had to learn how to motivate myself through being in the office for so many hours. I came up with various proposals and ideas that the company is still looking into using. I am still keeping my options open for new opportunities. I enjoy this line of work, but I am not sure if there is enough room to grow through this company. I will continue to work hard in my position and hope to continue to learn about the industry and meet new people. This was an excellent experience and I hope that other interns got as much out of it.

