

microscopy were used for the study. Vartha Venkateswarlu et. al [9]The author has investigated Failure analysis and optimization of thermo-mechanical process parameters of titanium alloy (Ti-6Al-4V) fasteners for aerospace applications. The titanium alloy (Ti-6Al-4V) fasteners is subjected to fatigue failure as Socket head hole piercing into shank. For optimizing strain rate experimentation is done. Metallurgical test with optimum process parameters shows no proof of heterogeneity in microstructure. A.N. Delavar et. al [10]The author has investigated cracking causes in ISOMAX unit such as reactor, valves tubings etc. The study is attributed by four parameters which may lead to failure and detailed investigation shows that the failure was due to the stress corrosion cracking (SCC) caused by the presence of chloride in the used anti-seize grease. Armando Ortiz, et. al [11]The author has studied spark plug failure due to combined effect of strong magnetic field and undesirable fuel additives. The magnetic field causes short circuit which in turn lead to inefficient combustion and deposition of soot on the insulator surface. On the other hand organ metallic anti-knocking agents present in low-grade fuel results into failure. The complete remedy for the problem is to action taken by government for imposing compliance with fuel composition norms. Loveleen Kumar Bhagi et. al [12]The author has studied fracture of low pressure (LP) steam turbine blade of a 110 MW thermal power plant. These blades were made from chrome alloy steel X20Cr13 (Tempered martensitic stainless steel). The study consists of the visual examination, SEM fractography, chemical analysis, hardness measurement, and micro-structural characterization. The cause of failure is corrosion-fatigue. Abdel-Monem El-Batahy et. al [13]The author has studied Fatigue failure of thermowells in feed gas supply downstream pipeline at a natural gas production plant. Due to High flow velocity of the pipeline medium increased the wake frequency above the natural frequency of the used straight type thermowell. This results into a resonance where large amounts of energy is absorbed and high stresses are produced. The problem was solved by installing new modified truncated conical-type thermowells .M. Attarian et. al [14]The author has studied Nickel based super alloys used as gas turbine blade material. The failure occurred because of excessive temperature exposure resulting into oxide grooves on fracture surface of blades. Yong-De Li et. al [15]The author has studied Failure analysis of the flash evaporator in an alumina production plant. The failure of the flash

evaporator is caused by caustic embrittlement. The macroscopic observations, metallurgical observations, microscopic observations and EDS analysis were performed in this study. A.H.V. Pavan et. al [16]The author has studied Pinion shafts used for transmitting torque from motor to gear box used in bowl mills of fossil fuel fired power plants. Fractography shows that the initiation of a crack from the keyway corner. Mechanical testing shows that that the yield strength of the material was lower than the specified value. Hence, this study says that this was a consequential failure .K. Gurumoorthy et. al [17]The author has investigated premature failure of tapered roller bearings. The investigation is carried out with the help of visual examination, chemical composition, micro hardness, microstructure, retained austenite measurement, wear debris analysis and scanning electron microscope (SEM). The cause for premature failure was stated as misalignment that led to uneven load distribution of the rollers and the raceway. BorutZorc et. al [18]The author has studied Elevator chain wheel shaft break failure. The study is carried out for knowing that Even though the warranty period has already expired and to verify the shaft material conformity with technical documentation and identify the cause of the resulting break. The shaft break occurred due to dynamic, alternating and rather low tensile-compressive stresses. It has been suggested that the shaft break may be avoided by surface hardening of the shaft. A.H.V. Pavan et. al [19]The author has investigated Metallurgical analysis of SA-106 Gr. B pipe failure during hot bending These grade pipes are used for feed-water reducers in Pressurized Water Reactors (PWR) , liquid ammonia transport from ammonia heater to urea reactor , drain lines in power reactor components etc. The study shows that cracks developed due to higher inclusion content coupled with over-stress. The over-stress was caused due to sudden thermal expansion during induction heating process. S. Tattoni et. al [20]The author has investigated Collapse of prestressed reinforced concrete in marine applications for durability and faults analysis. The failure of the prestressed R.C is due to Corrosion hence analysis of service life is done. The external section of the strands having no adequate protection. In order to obtain accurate failure analysis strut and tie model is used .Arup Mallick et. al [21]The author has studied failure of cold drawn wire due to Hydrogen embrittlement. Fractography analysis is used to find out the root cause of this particular failure. The wire breakages during drawing operation results into heavy loss. The experimental study confirms that failure is due to Hydrogen embrittlement. Gys van Zyl

et. al [22]The author has studied failure of conveyor pulley shaft. The shaft fails due to improper reconditioning of the shaft. The reason of shaft failure is due to fatigue. Michael K. Budinski et. al [23] The author has studied failure of rubber hose in anhydrous ammonia service. The Fractography shows that rupture propagates from inside to outside of the hose. The rubber hose pipe is ruptured because the loss in mechanical properties of the first and second reinforcing layers reduced the maximum allowable pressure of the hose below the operating pressure experienced during an ammonia transfer. P.O. Maruschak et. al [24]The author has studied fatigue crack growth in a bimetal of continuous caster rolls. The study shows that Due to the intensified plastic deformation within this section, which, leads to the enhanced dislocations density and rapid exhaustion of plasticity (macro level), and, on the other hand, speeds up the crack growth at the macro level.

2. CONCLUSIONS

As earlier stated that to know why system fails we need to perform different types of analysis. All the authors from different background they have taken particular cases for the study and evaluated. While investigating the failure of mechanical systems they have gone through analytical as well as experimental approach to conclude the same.

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BIOGRAPHIES



Amit M. Patil is currently working as Asst. Professor in Department of Mechanical Engineering, at MIT Academy of Engineering, Alandi, Pune. He has completed M.E (Design Engineering).



Amol M. Kolhe is currently working as Asst. Professor in Department of Mechanical Engineering, at Pad. DR D Y Patil Institute Engineering & Technology, Pimpri, Pune. He has completed M.E (CAD/CAM)