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Mechanical Drilling Procedures for Titanium Alloys Using TOPSIS Method

T Menakadevi, P.Muthusamy, J Arivudainambi
Adhiyamaan college of Engineering, Hosur, TamilNadu, India.
Corresponding Author Email: menaka_sar@rediffmail.com

Abstract: *Various types of drilling machines or There are structures, but most Drilling machines fall into four broad categories are divided into: honest sensitive, upright, Radial and special purpose. Simple, drilling is the teacher or tape or a sample provided by another student listening and repeating what is heard. It is new to many teachers for their students more so when introducing language items It is a repetitive exercise. Alternative: Center Punch Set Up, Clean Up the Hole, Clean Up. Evaluation Preference: Hand drill, corded drill, corded drill, Hammer drill and Cordless drill. The result it is seen that Cordless drill is got the first rank where as is the Hammer drill is having the lowest rank. The value of the dataset for Mechanical drilling in TOPSIS Method (Similar for the best solution). By option order technique shows its results in Cordless drill and top ranking*
Key words: *Hand drill, Center Punch, Clean up the Hole, Cordless drill*

1. Introduction

Mechanical drilling relies on a rotating bit tool to cut a wide variety of laminate materials. The bit is usually made of micro-grain carbide, allowing the drill to be reused many times. They can usually be re-sharpened to be reused a maximum of three times. Drilling is a cutting process which A hole of circular cross-section in solids Uses a drill bit to cut. A drill is usually a rotary cutter Instrumental, often with multiple points. To the bit work piece pressed against at hundreds to thousands of cycles per minute is rotated. The first interaction is between drilling operation formation and non-native fluids and Equipment. Drilling fluids are drilling which play an important role during the process, below- Lubricating the whole assembly, drill bit cooling, elevating and infiltrating cuttings making impossible filter cakes. Precision and complete metal parts Machining is very reliable for making Production method. Computer Numerical Control (CNC) through machining, µm level shape accuracy and Surface roughness can be easily achieved. The goal of this initiative is to create a new Digitizing the capabilities of technologies and It is the replacement of industrial production by exploitation. TOPSIS alternately selects short methods. It's a simple one a method widely applicable to mathematics. Model. Further, Relying on computer support, this is the most suitable practice is proper. Technique for Priority Ranking Analysis of technique. Of this technique the main idea is the alternative is very close to positive The best solution and more the best solution to the negative.

2. Mechanical Drilling

Many Laser machining, water-jet machining and electric Non-traditional machinery such as extrusion machinery Functions are created for use. Making composite laminate holes composite The primary applications for laminates are conventional or machine using special drill bits Drilling operations are [1] Along with other normal mechanical drilling logs Calculated MSE from surface measurements One that allows the driller to continuously monitor They created the system. Type of pit bowling To easily identify events through analysis can [2] All Testing of machine drilling speeds Formulas for Derivation Strength of Rocks are attached to the attributes, but Mechanical Drilling in Soft Clay Rocks A paradox that the speed is low We found In hard and solid rocks Drilling [3] Mechanical drilling processes, twist Drilling, vibration assisted twist drilling, ultrasonic Apparatus and Rotary Ultrasonic Apparatus. This is the cut Power, cutting temperature, tool wear and tooling Durability is about hole quality And these processes Chip when drilling using a drill Type. [4] is available A realistic thermo mechanical drilling To create the model, run it with a computer Simulate, and bone drilling Use that simulation to perform parametric

analysis Use. [5] Torque with increase in fiber volume area The results also indicate that increases Increasing fiber volume fraction is const Increases strength and, therefore, mechanical Increases the resistance of the composite to drilling. [6] With the advent of mechanical drilling recorders, Data to monitor short-term trends was used. Geography Map A couple of days Used to look back, but few Companies use the data to plan their drilling program used [7] Initially to connect the individual layers of material through Bolt/Rivet Connections, Mechanical Drilling required achieve dimensional accuracy and quality of In these composite/metallic structures Holes. Requirements. [9] Nan composites have different properties to conventional composite materials and behave differently under mechanical drilling. Following current research on nano composite drilling and nano composite health risks,[10] Two methods of integrated Thermo-mechanical drilling in the field (CTMD) technology will be demonstrated the field respectively.[11] A third drilling mode is conventional, To use unique drilling technology Allows, for example, soft In rocks, such a conventional method rock formation with sufficient efficiency using can pierce. [12] How machining parameters and processes are affected by recommendations to minimize problems. Therefore, in order to help researchers gain a comprehensive view of mechanical drilling of fiber-metal laminates, [13] Rock removal rates, wear rates and Specific energy for unrefined materials are a typical mechanical drilling case indicates, and after heat treatment of the rock, the proposed integrated thermo- Mechanical Drilling (CTMD) method follows. [14] Premature drill breakage due to mechanical drilling is Fragile of micro drill Because of nature. At an acute angle holes in an hour When drilling, fine hole tip For high lateral force is subject to [15] Its role in the drilling process Litho logy, Bit Type, Down hole Condition, Mechanical Drilling parameters and all other drilling Since it is closely linked to the variables Complicated last but not least, circulation system and drilling mud. [16] Regarding drilling rate and bit wear improved prediction would be desirable. An Improved prediction would be desirable. A by geological and mechanical parameters is determined. One the critical parameters determining drilling efficiency progress are the economics of rock and excavation. [19] After removing the Pieces using swirling water Prepared, drill bits for weakened rock and wear rate of drill bits cutting can be reduced in mechanical drilling. The low thermal conductivity of rocks is large Temperature gradients and near surfaces leading to crack accumulation. [20] Under load conditions, Mechanical drilling robot in less than 0.1 seconds Balances with drilling rate. Proposed Drilling Robot, Horizontal Long displacement or large draw in wells Reduces entire functions during key offers opportunity demand. [21] According to field experience, the mechanical rotating power of the bit more in breaking rock than hydraulic power efficient. Hydraulic potential of soil flow if converted to mechanical rotational energy, it is ROP greatly improved. [22] Establishes Thrust and torque in vibration drilling FRCMs a mechanical model for predicting force. Cutting position, Vibration parameters, whole geometry and FRCMs Vibration cutting taking into account properties this model is based on mechanism. [23] They have anisotropic mechanical properties and Velocity anisotropy of organic-rich shales Analyze their relationships experimentally they did. In particular, the long-term of organic-rich shales they have negligible creep properties documented, [25]

3. TOPSIS Method

Conclusion normalizing the matrix; positive ideal solution and normalizing the matrix; Positive ideal solution and negative ideal solution Calculation of separations. An alternative from PIS and NIS. Proximity in descending order to receive replacement [1] The TOPSIS method was originally developed by HWANG et al Introduced by YOON Introduced; it proposed several for solving criterion decision problems. This According to the technique, The best alternative is close to the positive best solution Existence and negation are from the ideal are far away solutions is far away. [2] Order by similarity of best solution (TOPSIS) approach multiple answers using optional technique an attempt was made to improve. This method is of any kind Ability to improve problem and any number they concluded that it had answers. [3] The aim of the present work is Thermal performance of CFWCT and MCDM-TOPSIS To investigate the optimum operating conditions of a cooling tower, Installed in a specific location using the method is operated. Heat and mass in CFWCT Exchange equations were presented and CFWCT's Thermal efficiency was evaluated with fill height. [4] The application of those MCDM techniques are mostly Conservative and approximate or sub-optimal leading to solutions. Therefore, in this thesis, DESIGN OF EXPERIMENTS AND TOPICS METHODS Calculated TOPSIS Along with the marks, two NTM as EDM and WEDM processes Build regression meta-models to search for optimal parameter combinations for processes. [5] The Calculated TOPSIS Along with the marks, two NTM as EDM and WEDM processes Build regression meta-models to search for optimal parameter combinations for processes. [6] Two Probability Using Relative Entropy A comprehensive weight between distributions is calculated. Calculated detailed weights basically, air quality measurement is based on the TOPSIS system is evaluated using [7] has wide Applications and better in multi-attribute decision making models One. In this method, m replaces n evaluated by attributes, and each the problem is an n-dimensional space with m points is a geometric system. [8] Applied fuzzy TOPICS and network optimization techniques to solve Choice of stem location in deep multiple or body deposits problem Based on TOPSIS system, highway Superstructure selection in the conceptual design of the bridge They are an

optimization-based method for solving presented. [9] Quantifying impacts Water level using TOPSIS methodology and quality and weighting value objective and combined with sets of subjective values. [10] SCR is estimated using Fuzzy TOPSIS technique. A typical TOPSIS method of SCR estimation is, Ambiguity or imprecision of assessment Linguistic Limitation in Dealing to overcome this limitation, Fuzzy-TOPSIS method is followed. Of risk factors Linguistics to estimate ratings and weights Words are used and criteria. [11] Time, scales, with unknown weights Extended TOPSIS under neutrosophic synthesis an optimization method for determining weight information model method proposed. [12] Available to achieve the required criteria Identify the optimal alternative from various alternatives TOPSIS method is used to see. In this manner, the compromise ranking basically the optimal solution is selected and selected the solution is positive and the shortest distance from the ideal solution is negative must also have the greatest distance from the ideal solution. [13] Spatial and temporal characteristics of floods CV-TOPSIS method for disaster risk assessment done In the first part, every year Considered a watchdog for the economy, too Flood risk using CVTOPSIS method 263 observations were examined to obtain scores. [14]. It aims at the performance evaluation of the distance using the DEA method in the academic year of the academic Departments of Public Universities in Turkey TOPSIS method. This result in efficient decision making this study also compares and ranks units aims to a measure of competence in themselves [15] the software is based on the AHP method and Weights for selected criteria determines. Final ranking of technologies and hierarchy. [16] One of the known classical MCDM methods for optimal solution (TOPSIS) is a technique of order efficiency through similarity. TOPSIS is the chosen alternative positive ideal a negative ideal is also the shortest distance from the solution the idea is to be far from the solution based on the other hand. [17] According to the TOPSIS method, the observed selected hybrid the ranking of different methods in models is usually very high Given the Highest ranking. On the other hand, the M5T Hybrid LSSVM, ANFIS, MLP, RBF and GEP models surpasses [18]

4. Analysis And Discussion

TABLE 1. TOPSIS Mechanical Drilling

	DATA SET			
	Center Punch	Set Up	Clean Up the Hole	Clean Up
Hand drill	54.08	586.53	64.15	53.05
Corded drill.	47.12	542.97	58.69	36.30
Corded drill.	63.08	622.58	84.18	37.10
Hammer drill.	74.17	328.28	59.60	37.59
Cordless drill	65.33	686.41	59.96	48.89

This Table 1 TOPSIS of Mechanical Drilling Alternative: Center Punch Set Up, Clean Up the Hole, Clean Up. Evaluation Preference: Hand drill, corded drill, corded drill, Hammer drill and Cordless drill. Center Punch the Hammer drill it is seen that is showing the highest value for corded drill is showing the lowest value. Set Up it is seen that Cordless drill is showing the highest value for Hammer drill is showing the lowest value. Clean up the Hole it is seen that corded drill is showing the highest value for corded drill is showing the lowest value. Clean Up and it is seen that Hand drill is showing the highest value for corded drill is showing the lowest value.

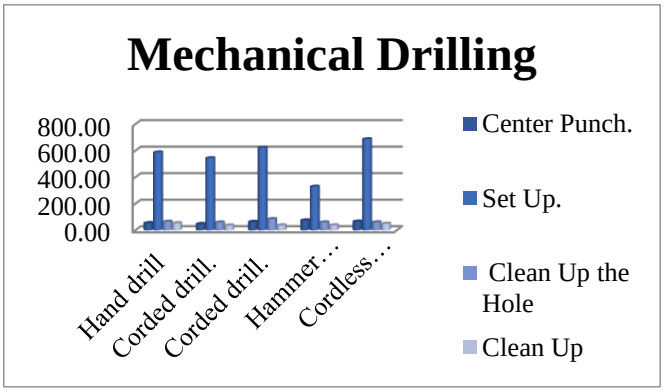

FIGURE 1. TOPSIS of Mechanical Drilling

This figure 1 TOPSIS of Mechanical Drilling Alternative: Center Punch Set Up, Clean Up the Hole, Clean Up. Evaluation Preference: Hand drill, corded drill, corded drill, Hammer drill and Cordless drill.

TABLE 2. Squire Rote of matrix

2924.6464	344017.4	4115.223	2814.303
2220.2944	294816.4	3444.516	1317.69
3979.0864	387605.9	7086.272	1376.41
5501.1889	107767.8	3552.16	1413.008
4268.0089	471158.7	3595.202	2390.232

Table 2 shows the Squire Rote of matrix value.

TABLE 3. Mechanical Drilling in Normalized Data

Normalized Data			
Center Punch.	Set Up.	Clean Up the Hole	Clean Up
0.3934	4.27	0.434545	0.54975886
0.3428	3.95	0.397559	0.37617807
0.4589	4.53	0.570226	0.3844685
0.5396	2.39	0.403724	0.38954638
0.4753	4.99	0.406162	0.50664865

Table 3 Normalized Data shows the informational set for the Center Punch Set Up, Clean Up the Hole, Clean Up. The Normalized data is calculated from the data set value is divided by the sum of the square root of the column value.

TABLE 4. Weight

Weight			
0.25	0.25	0.25	0.25
0.25	0.25	0.25	0.25
0.25	0.25	0.25	0.25
0.25	0.25	0.25	0.25
0.25	0.25	0.25	0.25

Table 4 Weight shows the informational set for the weight all same value 0.25.

TABLE 5. Mechanical Drilling in Weighted normalized result matrix

Weighted normalized decision matrix			
0.098361	1.067	0.109	0.137
0.085702	0.988	0.099	0.094
0.11473	1.132	0.143	0.096
0.134901	0.597	0.101	0.097
0.118823	1.248	0.102	0.127

Table 3 Normalized Data shows the informational set for the Center Punch, Set Up, Clean Up the Hole, Clean Up. The Normalized data is calculated from the data set value is divided by the sum of the square root of the column value.

TABLE 6. Mechanical Drilling in Positive Matrix

Positive Matrix			
0.135	1.248	0.099	0.094
0.135	1.248	0.099	0.094
0.135	1.248	0.099	0.094
0.135	1.248	0.099	0.094
0.135	1.248	0.099	0.094

Table 6 Positive Matrix shows the informational set for the value Center Punch. 0.135 Set Up 1.248, Clean Up the Whole 0.099, Clean Up 0.1097.

TABLE 7. Mechanical Drilling in Negative matrix

Negative matrix			
0.086	0.597	0.143	0.137
0.086	0.597	0.143	0.137
0.086	0.597	0.143	0.137

0.086	0.597	0.143	0.137
0.086	0.597	0.143	0.137

Table 6 Positive Matrix shows the informational set for the value Center Punch 0.086, Set Up 0.597, Clean Up the Whole 0.143, Clean Up 0.137

TABLE 8. Mechanical Drilling in Si Positive & Si Negative & Ci

SI Plus	Si Negative	Ci
0.191	0.471101	0.71202
0.265	0.395248	0.5981933
0.126	0.537652	0.8107416
0.651	0.075878	0.1043342
0.036	0.653589	0.9472062

Table 8 Si Positive & Si Negative & Ci shows the graphical representation

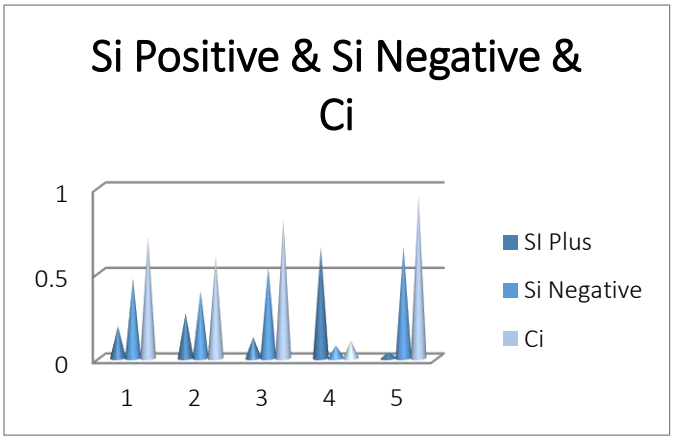

FIGURE 2. Mechanical Drilling in Si Positive & Si Negative & Ci

Figure 2 Si Positive & Si Negative & Ci shows the graphical representation

TABLE 9. Mechanical Drilling in Rank

	Rank
Hand drill	3
Corded drill.	4
Corded drill.	2
Hammer drill.	5
Cordless drill	1

Table 9 Rank shows the informational set for the Hand drill is in 3rd rank, Corded drill is in 4th rank, Cordless drill is in 1st rank, Hammer drill is in 5th rank, Corded drill is in 2nd t rank.

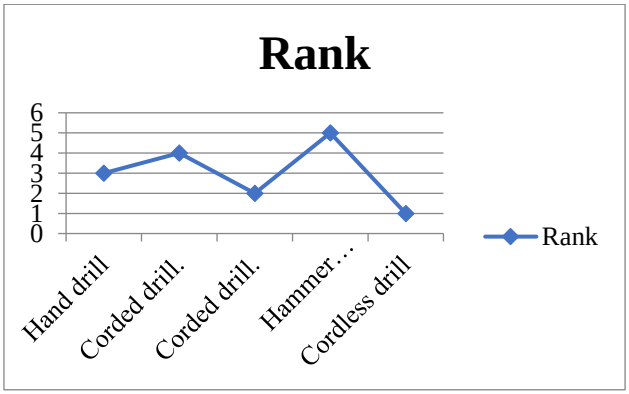

FIGURE 3. Mechanical Drilling in Rank

Figure 9 Rank shows the informational set for the Hand drill is in 3rd rank, Corded drill is in 4th rank, Cordless drill is in 1st rank, Hammer drill is in 5th rank, Corded drill is in 2nd t rank.

5. Conclusion

The result it is seen that Cordless drill is got the first rank where as is the Hammer drill is having the lowest rank. Along with other normal mechanical drilling logs Calculated MSE from surface measurements one that allows the driller to continuously monitor they created the system. Type of pit bowling To easily identify events through analysis can All Testing of machine drilling speeds Formulas for Derivation Strength of Rocks are attached to the attributes, but Mechanical Drilling in Soft Clay Rocks A paradox that the speed is low We found In hard and solid rocks Drilling Two methods of integrated Thermo-mechanical drilling in the field (CTMD) technology will be demonstrated the field respectively. A third drilling mode is conventional, To use unique drilling technology Allows, for example, soft In rocks, such a conventional method rock formation with sufficient efficiency using can pierce. Spatial and temporal characteristics of floods CV-TOPSIS method for disaster risk assessment done In the first part, every year Considered a watchdog for the economy, too Flood risk using CVTOPSIS method 263 observations were examined to obtain scores. It aims at the performance evaluation of the distance using the DEA method in the academic year of the academic Departments of Public Universities in Turkey TOPSIS method. This result in efficient decision making this study also compares and ranks units aims to a measure of competence in themselves

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