JOHN DEERE SMART TEST ANALYSIS

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Top 10 Worst performing tests *(based on FPY) (select to filter)*

Test	FPY
Steckdose_USB.seq	96.39%
Steckdose_Kraftsteckdose_ECE...	96.60%
Pick_Up_Hitch.seq	97.50%
Steckdose_Greenstar.seq	97.52%
Steckdose_Kamera.seq	98.68%
Steckdose_Mehrfachsteckdose.s...	99.02%
Zigarettenanzuender.seq	99.14%
Steckdose_GSD.seq	99.41%
Steckdose_Signalsteckdose.seq	99.46%
Kuehlbox.seq	99.47%

Objective

Our objective is to clean and analyze John Deere's Smart Test data to help pinpoint weaknesses in the 6M and 6R Utility Tractors' test performance

Assumptions & Challenges

Assumptions:
- The Smart Test follows a tree like test structure
- Tests are graded pass/fail based on the Result value falling between the tests given min and max values

Challenges:
- Test names were in German
- The Data was complex and dirty
- There was a large amount of data The test metrics specifically CPK & PPK were difficult to calculate & outlier removal was necessary

Data Description

2,016,219 rows and 56 columns of unique test occurrences over 15 weeks for John Deere's 6M and 6R Utility Tractors. The origional dates and times of the test occurences were changed for data privacy reasons

Methodology

- Entered the data into R and cleaned the data
- Created visuals of the data to better understand it
- Removed outlier result values
- Calculated FPY & PPK by unique path
- Calculated CPK by unique path grouping by week
- Created a tableau dashboard to iterate through the data

Results & Findings

- Product Line
  - 6R is the worst performing product line with an FPY of 98.70%
- Statation
  - SCG0000499715 is the worst Performing station with an FPY of 91.83%
- Test
  - USB Steckdose is the worst performing test based on FPY with an FP of 94.85%
  - Kraftsteckdoese-ECE-auf RHK is the test whose outcome varies the most with a PPK of 0.13
- FPY
  - The overvall average FPY is 98.93%
  - USB Steckdose performs the worst with an FPY of 96.39
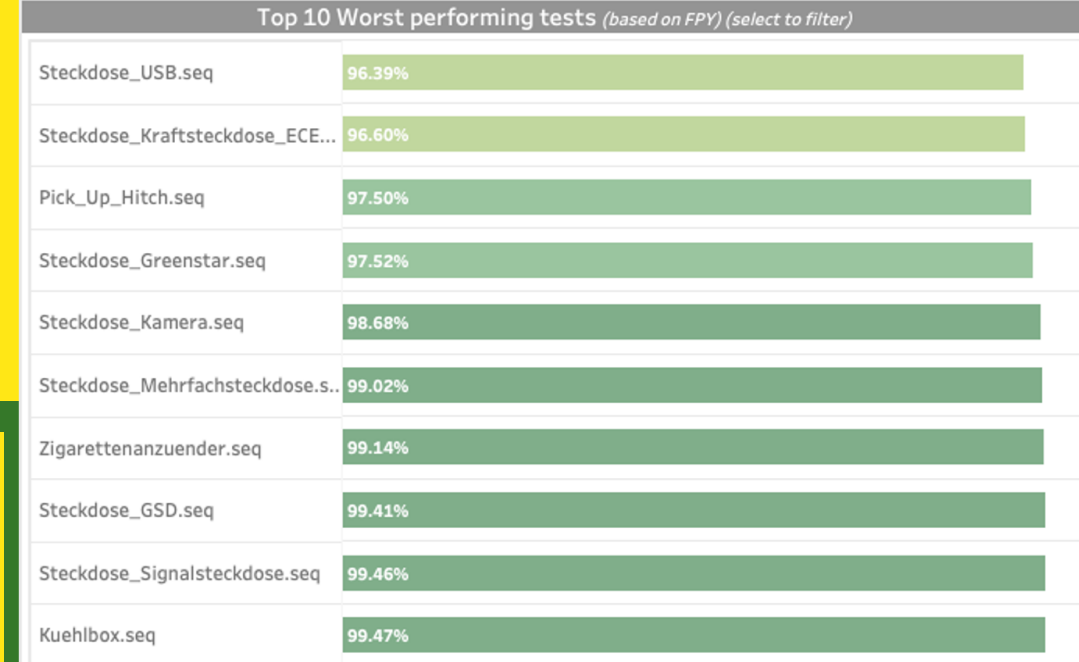
Buisness Recommendations

We recommend that the stakeholders:
- Analyze the part difference in the 6R model that cause it to perform worse than the 6M model
- Investigate station SCG0000499715 including employee experience & parts utilized
- Investigate the USB sockets used and find out if source of the issue weather it be: supplier's product quality, installation error, etc.
- Oversee the process involving Power socket ECE on RHK (Kraftsteckdoese-ECE-auf RHK) to see why there is such a variance in result values of the test.

Result Value Distribution

FPY	PPK	Min	Max	Result AVG
96.22%	0.13	2.50	3.20	2.61