**Introduction**

- True Velocity produces ammunition in a variety of different calibers for the United States military.
- These rounds need to be linked together into belts for different weapon systems.
- Belts require different patterns of different kinds of projectiles (i.e., Ball & Tracer rounds).
- True Velocity seeks an automated solution to creating linked belts for machine guns.

**Objective**

- The goal of this project is to take oriented 7.62x51mm rounds and link them into belts using the US standard M13 link.
- Link rounds at 100 rounds per minute.
- Include quality control measures to ensure operator safety and proper link seating.
- Count the number of rounds that go into each belt: Lengths from 100 to 4500 round belts.
- Prototype must be able to take user input to pattern the belt.

**Problem Statement**

True Velocity currently uses manual linking devices to create linked belts.

This is inefficient because:
1. Manual alignment of rounds and links is slow.
2. Requires multiple employees.
3. Requires manual inspection afterwards.

**Subassemblies**

- **Link Indexer**
- **Round Indexer**
- **Round Feeder**
- **NEMA 23 Stepper Motor**
- **NEMA 34 Stepper Motor**
- **Conveyor Belt**
- **Breather Timing Belt**
- **Plate subassembly**
- **Pushing Actuator**
- **Example Finished Belt**

**Acknowledgements**

Special thanks to: Nancy Finch, Nancy Scroggins, Kenny Sangston, Andrew Bittner, Gene Woten, James Hilkert, Robert Hart

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**Conclusion**

- Using pneumatic and electronic components the Machine Gun Linker is able to link 7.62x51mm rounds into a M13 Disintegrating Belt.
- The Machine Gun Linker is able to link at the goal rate of 100 rounds per minute.
- The Machine Gun Linker is able to link belts with counts of 100-4500 rounds.
- Quality control measures ensure that rounds are linked properly.
- This machine will help True Velocity by taking user input and creating prescribed belts of diverse patterns and counts.
- By automating the process, True Velocity will be able to use less time and employees to link rounds that they manufacture.