Page: Mechatron:

Dear Professor, dear class. We will now present our project to you, the Mechatron as a turn table ladder firetruck.

Page: Chapters:

This presentation is split into 4 Chapters: Division of Labor, Basic Concept, Problems and Challenges and Lessons Learned

Page: Division of Labor:

Division of Labor

Page: Division of Labor (Table):

The Labor was split into 3 different groups: Construction, Electronics and Programming. Construction was assigned to Mr. Buchberger, Mr. Pilz and Ms. Eglseer, Electronics to Mr. Köglberger and Mr. Templ, and Programming to Mr. Patzelt. The names that you can see here in brackets were not originally assigned to the group but ended up doing more work than two of the original constructors, because the constructors prioritized everything else higher than the project. As an example, all sensor mounts were done by the electronics team and they also had to reconstruct the bottom plate, as well as the motor mounts and much more. The reason for the specific partition of the members was based on personal preference on the topics and their respective knowledge.

Page: Basic Concept, the idea:

As you may notice the concept we chose for our mechatron was a firefighter ladder truck. The idea came solely from the personal interest of some of our team members, which volunteer as firefighters themselves. From the start on we knew that our idea was complex and not everything we once imagined was possible to actually incorporate in the final product.

Page: Basic Concept, the beginning:

We began with several sketches in which we tried to bring our Mechatron to scale but also try not to outgo the set limit of an A4 Sheet. But on the other hand, were we also forced to give it a certain width because of the motors.

Page: Basic Concept, the beginning 2:

The length and height were scaled after this width, otherwise it would have looked stupid and distorted.

Page: Problems and Challenges:

Problems and Challenges

Page: Problems and Challenges (Construction):

One of the very first problems we faced were the dimensions of the vehicle. From the beginning we were determined to make the firetruck as realistic as possible, which also included scaling down the measurements from real life vehicles, to the size of our wheels and their needed space.

Creo is another point on the challenges list, it has proved itself to be rather nerve-wracking, as breakdowns and strings of swearwords have shown. Even with a few years of experience with Creo on our back, the problems didn’t get less. May that be surprise crashes or error codes, that have shown no way of getting behind, with Creo our day to day life never got boring. Another challenge we faced was the 3D printing of the parts, which sometimes became quite nerve-wracking, especially considering the large rear end of the vehicle, which we ended up printing vertically rather than in its normal position as it is placed on the chassis, even though this was the original plan. Moreover, many small parts have proved themselves to be unexpectedly challenging, especially the mirrors and handrailings established a habit of breaking apart once removed from the printer bed.

Page: Problems and Challenges (Electronics):

Our most complicated problem in the process was the proper soldering of the PCB, because we had to help […]

[Page: Problems and Challenges (Programming): Patzelt]

One of the biggest challenges I faced with the programming was the use of a microcontroller that I have never worked with before. There were some failures which will be addressed in the video.

The connection with the controller was also a small hurdle. At first, we tried to use an XBOX Controller, but that did not work whatsoever. But when we switched to a PlayStation Controller, there were no more problems.

The last big problem was the MP3 playback. It would work just fine the first time, but it didn’t work a second time. That took me a few hours to figure out, but in the end, I could resolve the issue.

All in all, I think most things went pretty smoothly. The biggest problems definitely occurred when trying to get some of the extras to work, the basic functionality was up and running shortly after the project was assigned.

Page: Lessons Learned:

Lessons Learned

Page: Lessons Learned (Bullet Points):

For our final part we will look at some of the lessons we learned while doing this project.

The biggest lessons were definitely that being in a larger group makes coordinating the work way more difficult. We had a few problems with people not doing the work they were assigned in the given time which led to further delays and a lot of stress in the end. The larger group also made it harder to find time for a meeting outside of school, because we had to find a timeslot were everyone was free.

Time management was also something that we would improve if we were to do a project like this again. We didn’t set ourselves any deadlines, and that came back to us when the submission date came closer.

In hindsight our problems were mainly caused by coordination and time problems, rather than technical or knowledge issues. This project will hopefully be a preparation for our further career path and reminded us on the importance of preparation and time management before starting on the technical working part of the task.