



Ready to change the lane?

Be part of the top league and apply at Magna in Graz/Austria for a

Master Thesis "Implementation of weighted interpolation elements for connecting a FE spot weld model to the vehicle structure" (m/f/x)

Location: Graz / asap

Your Job!

Spot weld connections are crucial for the structural integrity of vehicles. In a typical vehicle body, thousands of such connections are realized, necessitating a precise understanding of their behavior. Through accurate simulations of the mechanical behavior of spot welds with the finite element method (FEM), potential weak points can be identified and avoided early on. This ensures a reliable and safe vehicle. Furthermore, simulations enable optimization of the welding processes, leading to more efficient manufacturing and cost-effective production. Overall, spot weld simulation significantly contributes to improving the quality and performance of vehicles.

To accurately represent the mechanical behavior of a spot weld, the connection of the spot weld model to the connected body panels plays a central role. This work aims to investigate an alternative connection approach for an existing spot weld model using weighted interpolation elements (NASTRAN RBE3 / ABAQUS Distributing Coupling). The goal is to develop a unified formalism for the two FE-solvers NASTRAN and ABAQUS, and to enhance the quality of the spot weld model.

The following scopes should therefore be included in your master thesis:

- **Develop and implement an algorithm for the alternative connection approach** of the spot weld model
- **Evaluate the quality of the connection** (regarding mesh size and mesh quality)
- **Optimize the quality of the connection** (fine-tune weighting factors and other parameters)

Why You?

- Ongoing technical study at the university / university of applied sciences
- First experiences through internships and study projects would be beneficial
- Basic knowledge in mechanics, strength of materials, mathematics
- Interest in numerical simulation methods (especially FEM)
- Hands-on mentality

You are driven by your passion for mobility, you learn continuously and make sure you never settle. We highly value collaborative, dedicated personalities who enjoy taking responsibility and share their profound technical knowledge proactively. We are convinced that together is the best way to achieve goals. **Dream big. With us.**

That's why: We!

As an engineering and manufacturing partner, Magna in Graz helps traditional OEMs and new entrants to bring their automotive visions to life. At Magna, you will work in an innovative, international and dynamic team, always pursuing the goal of delivering high-quality products. We work in a diverse environment with global development opportunities. Together with our employees we constantly strive to create a better world of mobility. Forward. For all.

- **Services & Benefits**
 - **Exclusively for you!** Everyday employee benefits available from various retailers and service providers
 - **Magna supports!** Multiple on-site consulting services (notary, financial aspects, care consultation...)
 - **Activities for better team spirit!** Sport events, hiking and many other activities
 - **Childcare made easier!** In our Magna Kids-World with year-round childcare options
- **Work & Mobility**
 - **Flextime models and home office:** Magna offers you a specific framework for this!
 - **Arriving at work is easy!** Accessible by public transport and promotion of the climate ticket, parking is available nearby
 - **We walk the walk!** Open corporate culture: Less hierarchy more teamwork, an open-door policy and honest feedback are the backbone of our joint success
 - **Company cafeteria & availability** of vending machines
- **Career**
 - **Be part of it!** Attractive projects in many different fields of work
 - **Meet the world with Magna!** Exciting development opportunities around the globe
 - **Make your journey!** We provide opportunities to upgrade your education and create new professional paths to fully exploit your potential. Think big with us!
- **Health & Sustainability**
 - **Convince yourself!** We support your health and wellbeing with holistic health programs and our Occupational Medicine Center
 - **CO2-neutral facility**

Your profile matters!

The minimum salary stipulated in the collective agreement is € 700 gross per month on the basis of a master's thesis. Depending on your education and specific work experience, there is a corresponding willingness to overpay!

And now: It's Your turn!

We are looking forward to receiving your application.

Please include your CV. As we are excited to learn more about you, please also submit a motivational letter including your salary expectation.

If you have any questions, please don't hesitate to contact us.

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Recruiting & Employer Branding
Magna Steyr Fahrzeugtechnik Engineering

At Magna, considering all dimensions of Diversity & Inclusion is a key strategic pillar. The equal treatment of our employees and applicants represents a significant part of our organizational culture. What really matters for our recruiting decision are your experience, skills and personality.