

The Co2 Spar Rechner is the backend for the YoungCaritas Kleidertausch
CO2 Savings Calculator, developed as a final semester project to improve
the original system with:

- A complete admin dashboard
- User registration & approval
- Persistent data saving via PostgreSQL
- A flexible CO₂ item management system

### WHY?

Previously, the YoungCaritas CO<sub>2</sub> calculator had issues like:

- Too simple with limited item options
- No user management
- No data persistence

The concept of "saving CO₂ through reuse" is socially impactful and fits YoungCaritas' mission and I volunteered to make it actually usable by during Kleidertausch events.

## WHAT I DID

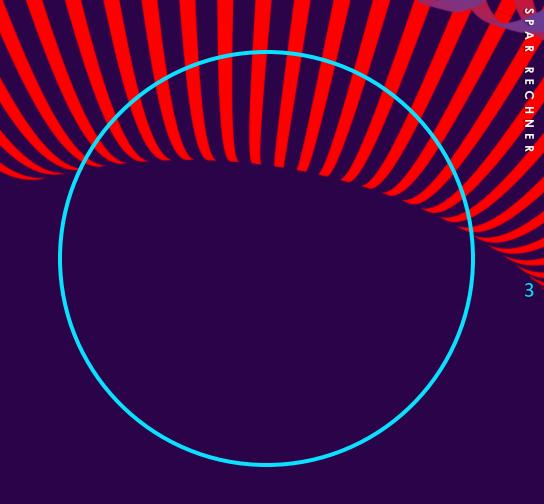
Rebuilt the backend using FastAPI + PostgreSQL

#### Added:

- An Admin dashboard
- Secures user registration/approval
- CO<sub>2</sub> item database (editable)
- Swagger API and UI views
- Made it scalable and shareable between locations

# **DEVELOPMENT PROCESS**

- Planning: Defined what features the original system lacked
- **Design:** Set up database models, authentication flow, admin views
- Implementation: Built API endpoints, templates, and email system
- **Testing:** Used pytest and Swagger to validate functionality
- **Deployment-Ready:** Dockerized the app for team or production use



- •Fully working CO₂ tracking backend
- •Live admin UI: easy to add/edit clothing items
- •Local event teams can use and manage their own calculator
- •Tangible impact: encourages reuse, quantifies environmental benefit
- •Ready to be deployed across multiple YoungCaritas chapters
- •Connects with the frontend I built to display the items from the database.

## CONCLUSIONS & FUTURE WORK

• App works well and solves the key problems from the original system.

### **Future Improvements:**

- •Add statistics/dashboard for total saved CO<sub>2</sub>
- •Add multi-language support (e.g. English/German)
- •Allow users to suggest items to admins
- •Host on cloud (e.g., Render, Heroku)
- •Real-world use: Can be handed over to YoungCaritas to use across events

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