IO4 - Dual sustainability - within Transport and logistic in VET

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Sector-specific challenges and students' solutions:

1. **Zadkine: Green transition through digital transition**

Challenge: Can software help make Transport and Logistics more sustainable, and how?
Solution: The students recommend implementing a Transport Management System (TMS). This will help the company contribute to sustainability in several ways:

1. Efficiency in route planning
2. Fuel efficiency
3. Load optimization
4. Reduction of Empty Kilometers
5. Reduction of Paper Usage
6. Real-time monitoring and reporting

Overall, TMS systems contribute to sustainability by optimizing transportation processes, whether they are by land, air, or sea, leading to reduced fuel consumption, reduced emissions, and a more efficient use of resources. Reducing the environmental impact of transportation operations is essential to meeting sustainability goals and environmental standards.

2. **YSAO: Emerging problems and mega trends from the logistic sector's viewpoint**

Challenge: Demographic change in Finland is causing decreasing labour force, presenting the Transport and Logistics sector with a recruitment challenge. This can slow down the sector's green transition. How can this problem be dealt with?

Solution: The students recommend the sector to transition to driverless, remote controlled excavators and vehicles that use green fuels. Further, schools and companies should train VET-students and skilled workers in operating these vehicles. This transition will create an innovative learning and working culture and improve work safety, which is turn can attract more students and manpower to the sector. Presentation: https://www.youtube.com/watch?v=JsF4jONHtPE

3. **Xabec:**

Challenge: What efficient and sustainable alternatives for heating domestic water can be implemented by the plumbing and heating sector, considering that the current use of boilers requires fossil fuels.

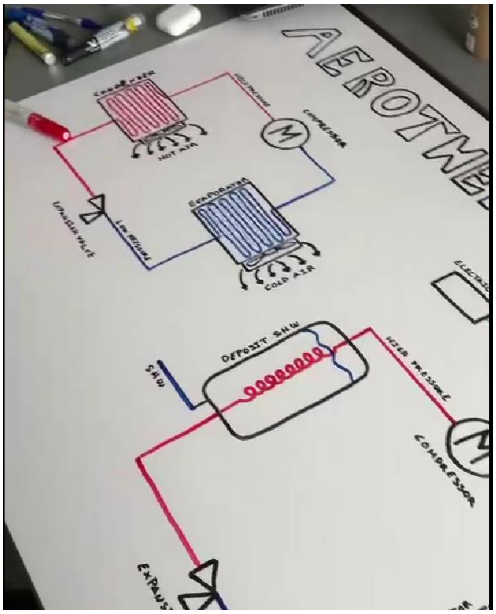
Solution: The students' investigation results point at 'Aerotermia', a versatile aerothermal energy system that provides both air conditioning

and heating, along with the ability to generate sanitary hot water, all through a single unit and installation.

Advantages compared to the use of boilers:

1. Higher energy efficiency.
2. Capability to provide both cooling and heating for various spaces.
3. Use of electrical energy instead of fossil fuels.
4. Option to power the system with photovoltaic solar panels, potentially achieving a 100% renewable energy source.

   Even though the main use is for domestic installations, ‘Aerotermia’ can be also implemented in the industrial context where warm domestic water is used, for example in factories with changing rooms and showers.



4. TEC: Sustainable materials vs long-term sustainability

Challenge: Pallets are used all over the world, indoors and outdoors under different weather conditions. What is the future solution for more sustainable pallets?

Solution: At first sight wood may look like the most sustainable material for pallets. However, wooden pallets need to be impregnated. Furthermore, as weather is getting more humid in many parts of the world due to climate change, wooden pallets cannot be reused to the same degree. The students concluded that under these conditions plastic in fact is a more sustainable solution, as pallets made of recycled plastic can be reused again and again, and when the pallets eventually break, the plastic can be recycled again.