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## TOSA, Geneva's innovative electric bus

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Chair of the Board, transports publics genevois

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# Transports publics genevois - Facts and figures

- Wholly owned by canton of Geneva
- 1885 employees (1200 drivers, 10% women)
- 550,000 passengers/day (more than entire Geneva population)
- 215 million passengers/year (450 million/year in CFF trains in all of Switzerland)
- 28 million kilometers covered/year (about 77,000 km/day or twice around earth)
- 58 lines covering over 400 km
- 436 véhicules (trams, trolleybuses, buses)
- Operates 7 days/week, 23 hrs/day



# TOSA

## Characteristics

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Articulated high-capacity electric bus.

Automatic charging structure.

Flash-charging (20 sec) at  
certain stops.

Longer charging (4-5 minutes)  
at each end of line.

Full charging overnight.



# TOSA

## Advantages – Reduction of three types of pollution

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- **Air:** 1000 tonnes of CO2/year less compared to a diesel bus
- **Noise:** Much quieter than diesel
- **Visual:** No overhead lines



# TOSA

## Exemplary public-private partnership

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### Partners

- Transports publics genevois (tpg)
- Office de Promotion des Industries et des Technologies (OPI)
- Services Industriels de Genève (SIG)
- ABB Sécheron (ABB)

# TOSA

## Chronology

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- 2011 Idea launched
- 2013 Prototype produced by Hess, tested in Geneva
- 2014 Federal Energy Office and Canton of Geneva joined project
- 2017 Dec. Bus launched, withdrawn for further testing
- 2018 March Bus launched again after most bugs resolved
- 2018 End May Twelve buses to be in operation

TOSA

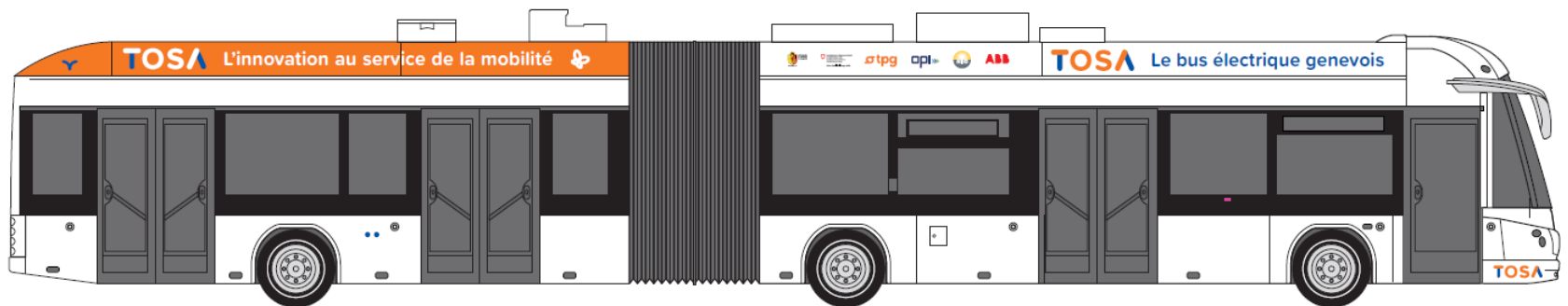
Representatives of partners





## Questions

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# Annex: Line 23

## Line 23



**18.75** m  
bus length

**12** buses



**133**  
passengers  
per bus

**1** Bus every

**10** min

## Technology



**12** out of **50**  
stops flash-charging  
stations



**600** kW **20** sec  
flash charging

## Route details



More than  
**10,000**  
passengers a day  
travel on the route



**>600,000** km  
per year

## Benefits



**1,000** t  
reduction of emissions  
per year for

**600,000** km



**10** decibels  
noise level reduction

Half the noise pollution  
generated by conventional  
diesel buses.