



# LPA LIGHTING SYSTEMS

**ROLLING STOCK  
LIGHTING  
AND ELECTRONICS EXPERTS**







# COMPANY PROFILE

# COMPANY PROFILE

## KEY FACTS – LPA LIGHTING SYSTEMS

Registration	LPA Lighting Systems formed in 1982 <i>(Original name: Excil Electronics Limited)</i>
Turnover	£9.8m - 2021
Number of employees	85+
Location	Normanton (UK), where all design and manufacture is performed
Head office & Subsidiaries	LPA Group PLC LPA Lighting Systems Interior Lighting LPA Connection Systems Inter-car jumpers LPA Channel Electric Distributor £20m turnover – 200+ employees
Certifications	IRIS, ISO 14001, ISO 9001 – 2015, Carbon Neutral

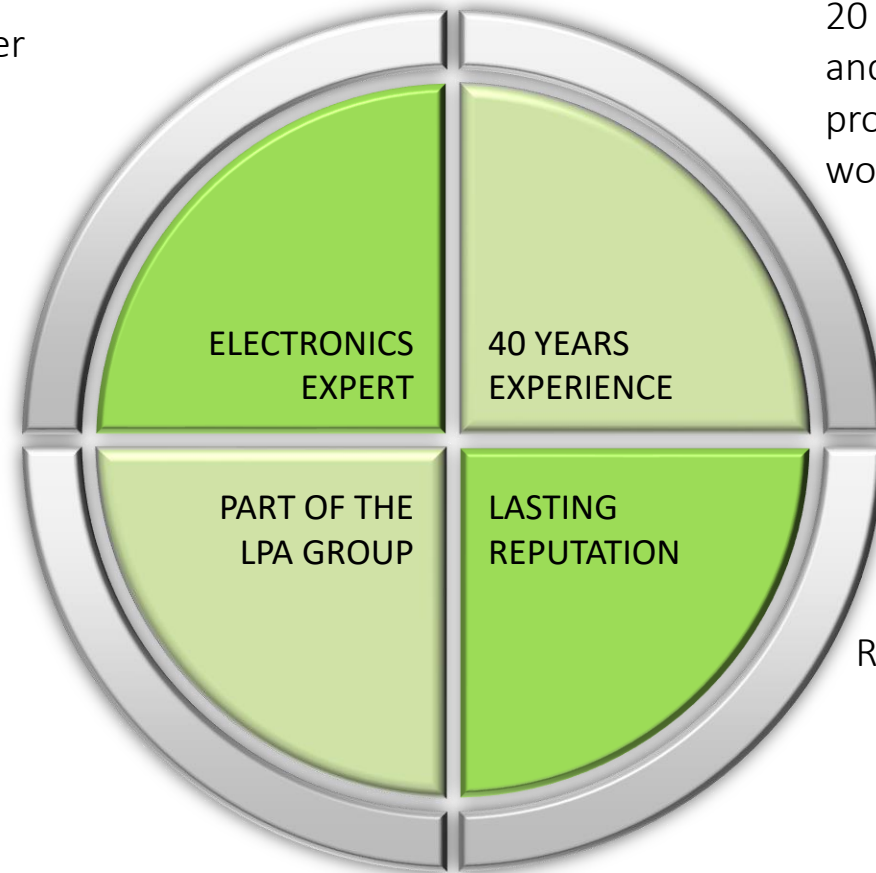


*Long Life Reliability  
does not cost the earth*

# COMPANY PROFILE

## OUR STRENGTHS

Not just a lighting supplier



20 years experience in designing and manufacturing LED lighting products and solutions, 40 years working in rail

Able to use group expertise and manufacturing facilities

Reputation for supplying high quality, reliable and low life cycle cost products and solutions



*Long Life Reliability  
does not cost the earth*

# LOCATION



**LPA Lighting Systems**  
Normanton

**LPA GROUP HQ**  
**LPA Connection Systems**  
Saffron Walden

**LPA Channel Electric**  
Thatcham



*Long Life Reliability*  
*does not cost the earth*



# COMPANY PROFILE

## LPA LIGHTING SYSTEMS - MARKETS



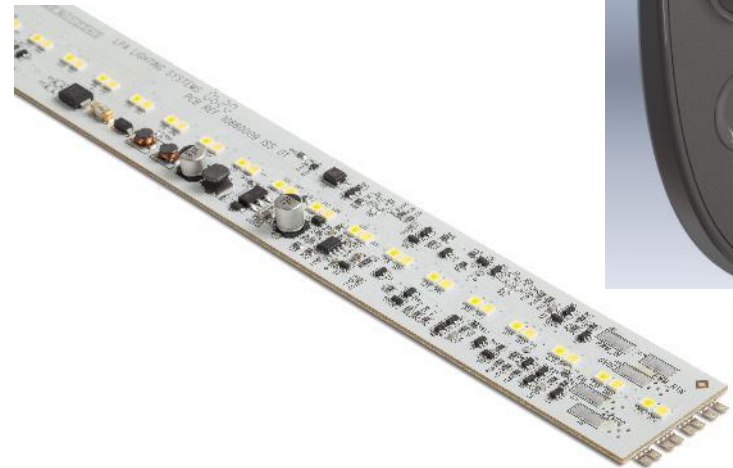
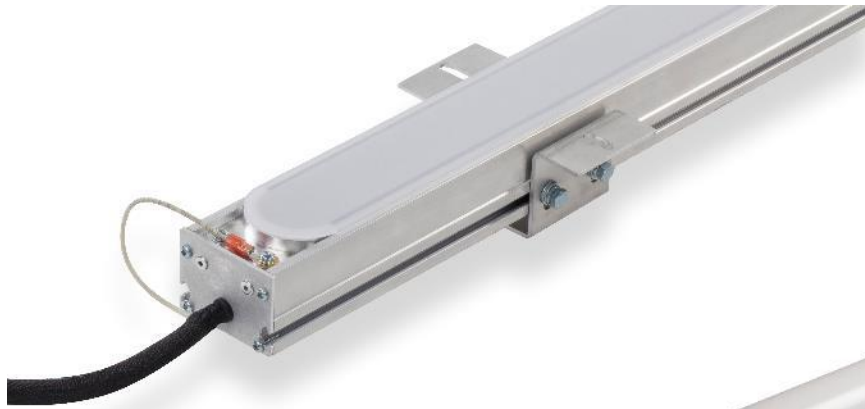
ROLLING STOCK



OIL AND GAS



*Long Life Reliability*  
does not cost the earth



**ROLLING STOCK PRODUCT RANGE**

# INTERIOR LIGHTING

## WIDE AND FLEXIBLE PRODUCT RANGE



### LED TUBE

- Ideal for train retrofit or refurbishment
- Fully railway compliant
- 50% power saving
- 24Vdc, 36Vdc, 72Vdc, 110Vdc, 230Vac



### LED MODULES

- Standard or bespoke design
- On board or remote drive electronics
- 350,000 Hours MTBF
- 24Vdc, 36Vdc, 72Vdc, 110Vdc, 230Vac



### LED GEAR TRAYS

- LED modules mounted on an aluminum plate
- Fully tested
- Plug and play



### LED LUMINAIRES

- Complete luminaire including metal work and diffuser assembly
- Up to IP65
- Plug and play
- Direct / Indirect lighting



Long Life Reliability  
does not cost the earth



# ADD-ON PRODUCTS

## WIDE AND FLEXIBLE PRODUCT RANGE



DOOR STATUS  
LIGHT

- Interior & exterior
- Green, red, amber
- Interfaces with vehicle / door input signal
- 24Vdc, 72Vdc, 110Vdc, 230Vac



SMART LIGHTING

- Dimming scenario
- Condition monitoring
- Ambient lighting control
- Colour temperature control



DOWN LIGHTS

- Wide range of shapes and optics
- Built-in or remote drive electronics
- 24Vdc, 72Vdc, 110Vdc, 230Vac



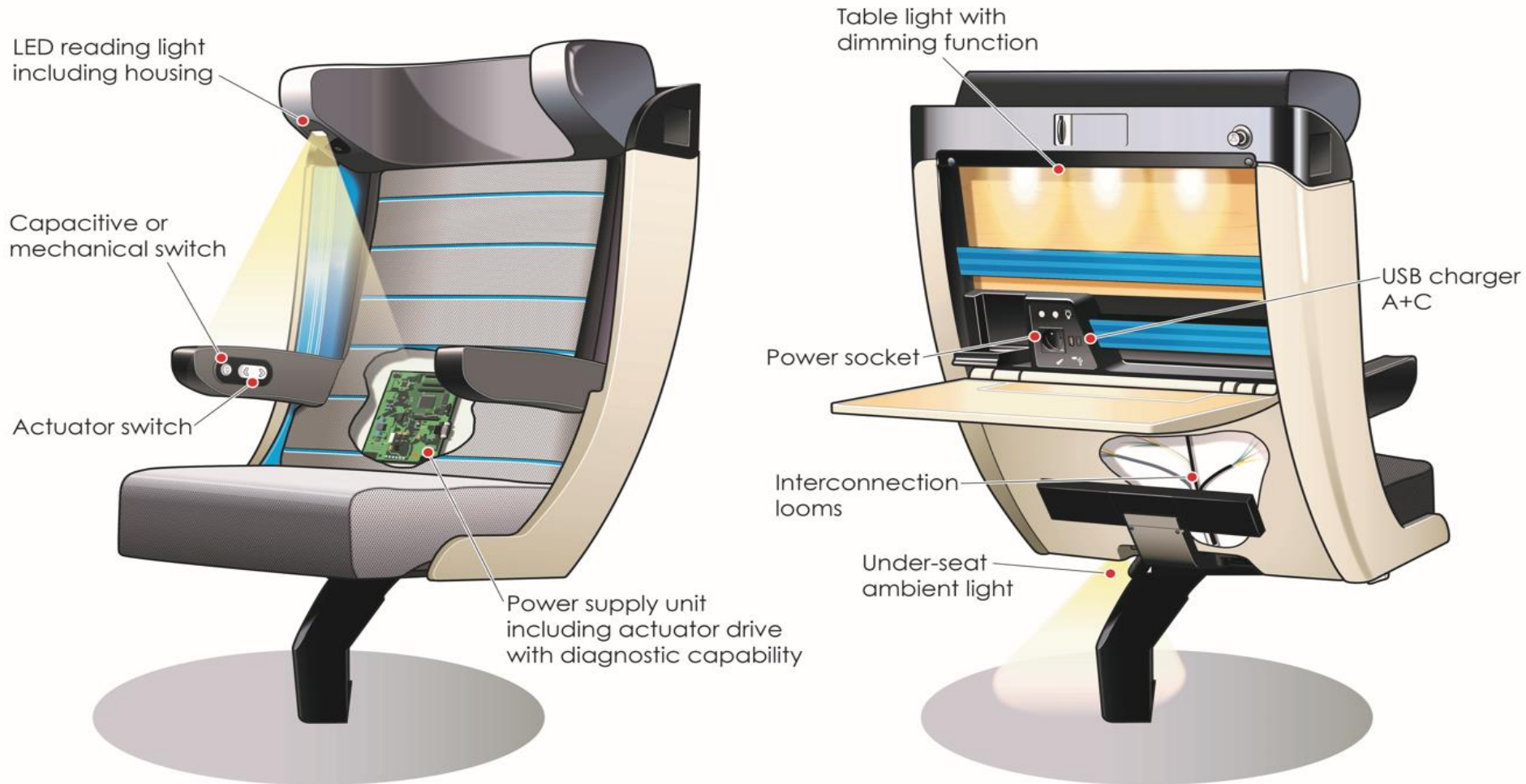
STEP LIGHTS

- Standard or bespoke design
- Built-in or remote drive electronics
- 24Vdc, 72Vdc, 110Vdc, 230Vac



Long Life Reliability  
does not cost the earth

# SEAT ELECTRONICS & LIGHTING KITS







**LED LIGHTING FOR REFURBISHMENT**



# Fluorescent tube upcoming ban

---

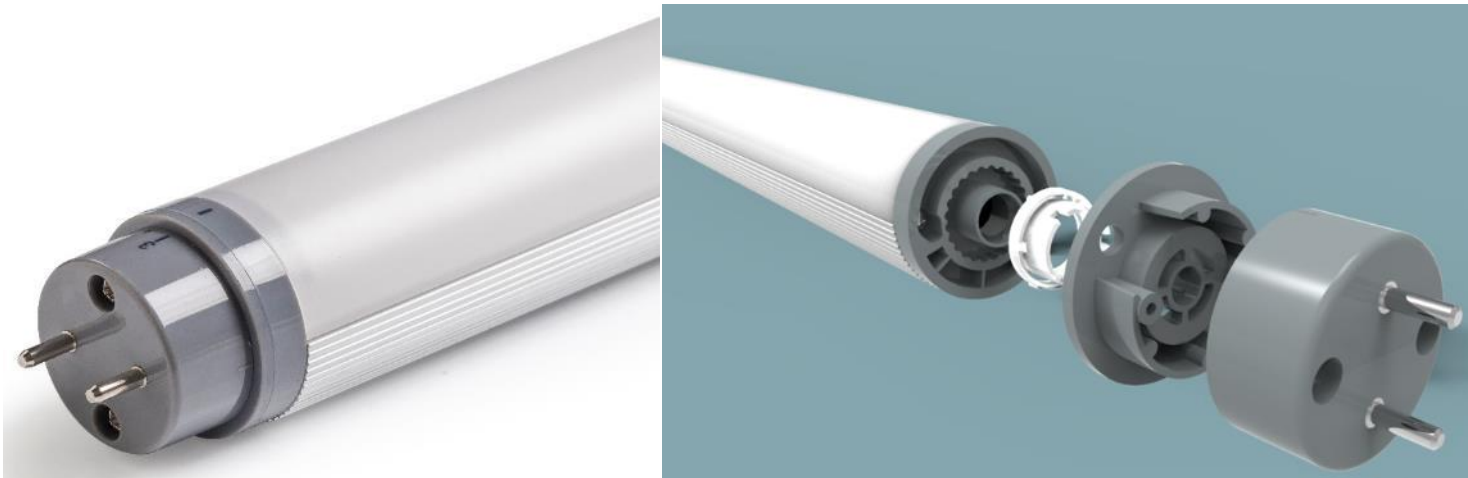
- T8 fluorescent tubes will be banned from September 2023 in the EU
- Fluorescent tubes will quickly become harder to source and more expensive as stocks deplete
- Now is a good opportunity to assess fleets requirements and conduct trials



# LED Tube overview

---

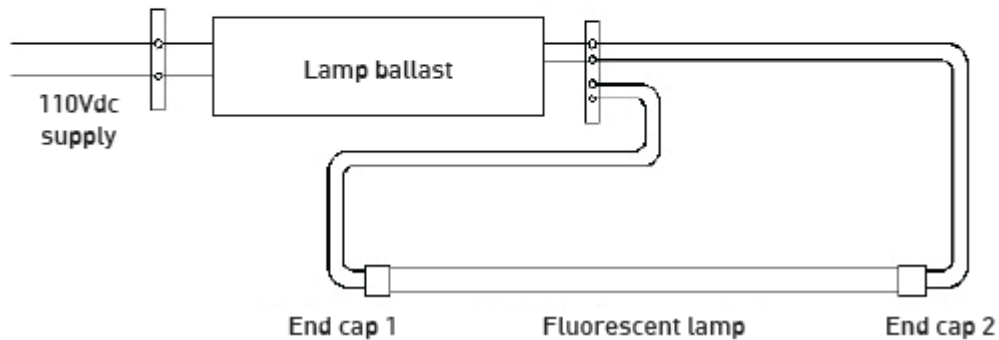
- Drop in replacement LED tube
- High reliability LED and driver (110,000 hrs MTBF)
- Built-in drive electronics
- Perfectly diffused light
- 2 x adjustable end caps / Indexed rotation  $\pm 90^\circ$
- 100,000 hours to L70
- 50% + power saving



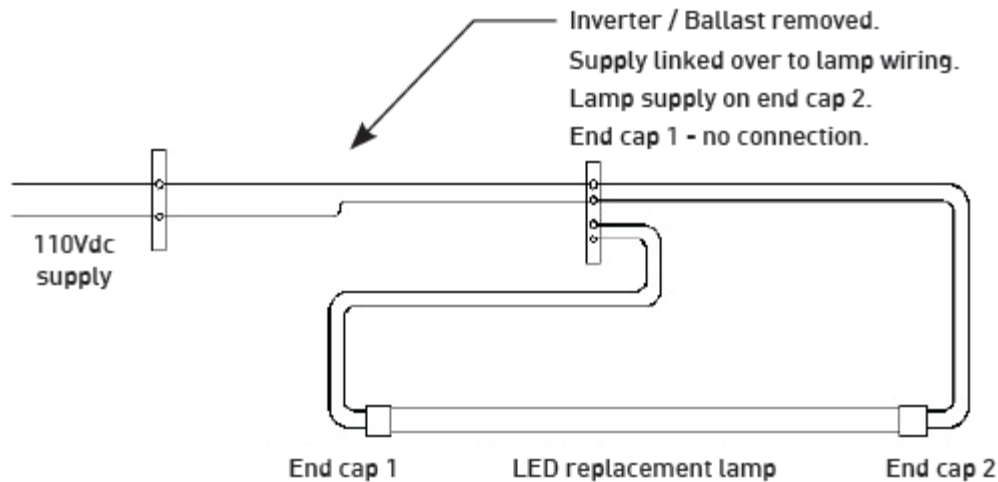
*Long Life Reliability  
does not cost the earth*

# Ease of Installation

## ORIGINAL LAMP CONNECTION



## LED REPLACEMENT LAMP INSTALLATION GUIDE



Long Life Reliability  
does not cost the earth



# Product range

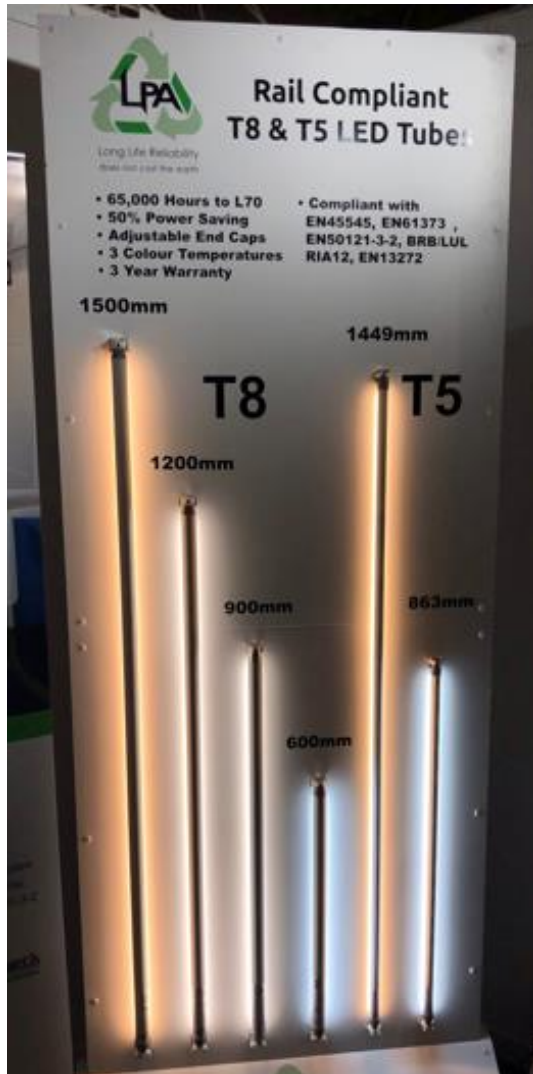
---

- T8, T5, 2G11 and 2D Lamps
- 24VDC, 110VDC, 230VAC
- Bespoke versions available for mid/large volume



Long Life Reliability  
does not cost the earth

# Colour Temperature choice



- 3 Standard colour temperatures
  - Warm white (3000K)
  - Natural white (4000K)
  - Cool white (6000K)



Long Life Reliability  
does not cost the earth

# Power Savings

Tube Length	LED tube Power (inc. driver efficacy)	Equivalent T8 Power including ballast efficacy	Percentage saving
600mm LED tube	10W	18W (22.5)	55%
900mm LED tube	15W	30W (36)	59%
1200mm LED tube	20W	36W (43.2)	53.7%
1500mm LED tube	23W	58W (69.6)	67%
1800mm LED tube	30W	70W (84)	64%

- Doubles emergency lighting operating time



Long Life Reliability  
does not cost the earth



# Safety & Rail standards compliance

---

- DC input voltage reversal (non destructive)
- Input transient protection
- Under voltage protection
- Built in multiple LED circuit redundancy
- Protected against power supply interruptions (EN50155 ClassS2 and C2)
- No mercury content, environmentally friendly
- Compliant to all EN rail standards



*Long Life Reliability  
does not cost the earth*

# Fully Rail Compliant

---

## MEETS OR EXCEEDS THE RAIL STANDARDS

- **EN 45545**
  - (Fire protection on railway vehicles)
- **EN61373**
  - (Railway applications. Rolling stock equipment. Shock and vibration tests)
- **EN13272**
  - (Lighting equipment luminous intensity for rolling stock)
- **EN50121-3-2**
  - (Railway applications. Electromagnetic compatibility. Rolling stock. Apparatus)
- **EN50155**
  - (Railway applications. Rolling stock. Electronic equipment)
- **EN61347-2-13 with EN61347-1**
  - (Supplied control gear for LED modules)
- **EN62031 with EN62471**
  - (Photobiological safety of lamps and lamp systems)
- **BRB/LUL RIA12**
  - (Protection of traction electronic equipment from transients in d.c. control systems)
- **BRB/LUL RIA13**
  - General specification for electrical equipment used on traction and rolling stock)
- **(RoHS Restriction of Hazardous Substances**



*Long Life Reliability  
does not cost the earth*

# In Summary

---

- Fits existing lighting configurations / Easy to install
- Reduced power consumption
- Increased reliability
- Doubles emergency lighting operating time
- Fully rail compliant
- Future-proofing of rolling stock



*Long Life Reliability  
does not cost the earth*

# When is LED tube replacement the right choice

## FIT FOR PURPOSE SOLUTION

- When trainset End of Life (EoL) does not warrant fully engineered solution
- As an interim solution prior to NewBuild classes coming on line
- When engineering resources are unavailable
- When quick turnaround time is required
- When budgets do not allow for an engineered solution



*Long Life Reliability  
does not cost the earth*



**NEW ROLLING STOCKS REFERENCES**



# SIEMENS



- Siemens Vienna
- 2022-2025
- 94 X 9 cars train sets
- Complete Interior Lighting system + door status lights



- Siemens Vienna
- 2021 – 2023
- 163 cars
- Complete Interior Lighting System



Long Life Reliability  
does not cost the earth

# SIEMENS



RIYADH METRO

- Siemens Vienna
- 2017-2020
- 238 cars
- LED modules and vestibule luminaire, Smart Lighting



MUNICH METRO

- Siemens Vienna
- 2012-2024
- 510 cars
- Ceiling lighting + door status lights



# SIEMENS



WARSAW / SOFIA METRO

- Siemens Vienna / Newag
- 2012-2014 – 2017-2018
- 210 + 60 cars
- LED modules



VELARO EUROSTAR

- Siemens Krefeld
- 2014-2015
- 160 cars
- LED reading lights, ambient lights, USB chargers



# STADLER



JENA TRAMWAY

- Stadler Valencia
- 2022-2023
- 24 tramways
- Complete indirect LED luminaires and door status lights



AUGSBURG TRAMWAY

- Stadler Valencia
- 2019-2020
- 15 tramways
- Complete LED luminaires / Door status lights & Smart lighting





# STADLER



ERFURT TRAMWAY

- Stadler Valencia
- 2019-2020
- 14 tramways
- Complete LED luminaires with smart lighting and door status light



LUGANO & BASEL TRAMWAY

- Stadler Valencia
- 2019-2020
- 18 + 9 tramways
- Complete LED luminaires / Door status lights



Long Life Reliability  
does not cost the earth

# STADLER



GLASGOW METRO

- Stadler Altenrhein
- 2018-2020
- 68 cars
- LED modules for ceiling and door status light



MERSEYRAIL METRO

- Stadler Altenrhein
- 2019-2021
- 208 cars
- Complete LED luminaires

# HITACHI



## WEST COAST PARTNERSHIP

- Newton Aycliffe
- 2021-2022
- 135 cars
- LED luminaires, step lights, down lights



## EAST MIDLAND RAIL

- Newton Aycliffe
- 2022-2024
- 165 cars
- LED luminaires, step lights, down lights



# HITACHI



IEP – INTERCITY EXPRESS

- Hitachi Kasado / Newton Aycliffe
- 2015-2020
- 850 cars
- LED luminaires, step lights, down lights



ABELLIO SCOTRAIL

- Hitachi Kasado / Newton Aycliffe
- 2016-2018
- 234 cars
- LED luminaires, step lights, reading lights, down lights





# REFURBISHMENT REFERENCES

# REFERENCES

## LED TUBES REFURBISHMENTS



OSLO METRO

- 2020-2022
- 300 Cars
- 9,000 LED tubes – T8



REGINA STOCKHOLM

- 2021-2023
- 250 cars
- 5,500 LED tubes



*Long Life Reliability  
does not cost the earth*

# REFERENCES

## LED TUBES REFURBISHMENTS



SBST SINGAPORE - NEL

- 2019
- 300 Cars
- 4,800 LED tubes – T8



SBST SINGAPORE - DTL

- 2022-2023
- 350 cars
- 8,400 LED tubes



*Long Life Reliability  
does not cost the earth*



# REFERENCES

## LED TUBES REFURBISHMENTS



SYDNEY MILLENIUM

- 2020-2021
- 6,320 LED tubes



ELECTROSTAR UK

- Bombardier Electrostar
- 2019-2025
- 45,000 LED tubes in T8, 2G11 and 2D



*Long Life Reliability  
does not cost the earth*



# REFERENCES

## LED TUBES REFURBISHMENTS



CLASS 222 - UK

- Alstom CI 222
- 2022
- 2,000 LED 2G7 tubes



TALENT 3 – OBB AUSTRIA

- Bombardier / OBB
- 2018-2022
- 7,000 LED tubes





**AT SEAT ELECTRONICS REFERENCES**

# REFERENCES



- 2020-2022
- 280 cars
- 10,000 Reading lights, USB chargers, interconnection looms, ambient lights



- 2021-2025
- 450 cars
- 30,000 reading lights, secretary lights, USB chargers, actuators drive, interconnection looms, ambient lights, power sockets, switches

# REFERENCES



PP - REGIOLIS

- 2012-2022
- 600 cars
- 50,000 reading lights



3UFC – TGV OCEANE

- 2016-2021
- 400 cars + 150 cars +100 cars
- 40,000 Reading lights, USB chargers, ambient lights



# REFERENCES

## READING LIGHTS & USB CHARGERS



AML D

- Compin Seats
- 2022-2024
- 224 cars
- 12,000 kits of Reading lights, USB chargers & ambient light, table lights + actuator drive electronics



PP

- KTK Seats
- 2012-2023
- 600 cars
- 40,000 reading lights





# LPA LIGHTING SYSTEMS

Thank you for your attention



LPA  
HOUSE

