

# Product group classification InnoTrans 2020

(from A-Z)

## **Railway Technology**

- 1. Railbound vehicles for public and freight transport ..... 15
- 2. Intermodal transport vehicles ..... 15
- 3. Subassemblies and components ..... 15
- 4. Service for vehicles ..... 16

## **Interiors**

- 5. Interiors ..... 16

## **Railway Infrastructure**

- 6. Infrastructure / Railway Construction ..... 16

## **Public Transport**

- 7. Public Transport / Fixed structures ..... 17
- 8. Transport IT  
Transport management / Data processing /  
Information / Communication ..... 18
- 9. Freight traffic logistics ..... 18
- 10. Services ..... 18

## **Tunnel Construction**

- 11. Tunnel Construction ..... 19

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<b>Railway Technology</b>		
<b>1. Railbound vehicles for public and freight transport</b>	3.2.8 Diagnosing equipment	3.3.2 Exhaust silencer
<b>1.1 Public transport rail cars</b>	3.2.9 Compressed air supply	3.3.3 Axle guard sidebearer liners
1.1.1 Local and regional public transport rail cars	3.2.10 Pressure measuring equipment	3.3.4 Axle guard sidebearer guides
1.1.2 Long distance public transport rail cars	3.2.11 Electromechanical components	3.3.5 Acoustic systems
1.1.3 Motor units and motor coaches	3.2.12 Energy storage	3.3.6 Armature
<b>1.2 Freight cars</b>	3.2.13 Energy supply systems	3.3.7 Exterior parts
1.2.1 Covered wagons	3.2.14 Energy meter	3.3.8 Exterior claddings
1.2.2 Loading units	3.2.15 Earthing contacts	3.3.9 Rail hydraulic systems
1.2.3 Flat wagons	3.2.16 Driver panels	3.3.10 Subassembly supports
1.2.4 Self-discharging wagons	3.2.17 Master controller	3.3.11 Fastening systems
1.2.5 Other standard-type rail cars	3.2.18 Vehicle control system	3.3.12 Lighting systems
1.2.6 Special-purpose rail cars	3.2.19 Field bus components	3.3.13 Ventilation systems
1.2.7 Tank wagons	3.2.20 Floodlight keyboards	3.3.14 Brake linings
<b>1.3 Locomotives</b>	3.2.21 Filling level measuring technology	3.3.15 Brake pads
<b>1.4 Magnetic levitation trains</b>	3.2.22 Handheld lamps	3.3.16 Brake disks
<b>1.5 Narrow-gauge railway vehicles</b>	3.2.23 Inductive Components	3.3.17 Braking systems
<b>1.6 Special-purpose cars</b>	3.2.24 Cables and lines	3.3.18 Front fairings
<b>1.7 Rack railway-train</b>	3.2.25 Cable protection	3.3.19 Gaskets
<b>1.8 Other</b>	3.2.26 Cassettes	3.3.20 Bogies
<b>2. Intermodal transport vehicles</b>	3.2.27 Battery chargers	3.3.21 Bogie pivot centre plates
<b>2.1 Other</b>	3.2.28 Charging rectifiers	3.3.22 Compressed air technology
<b>3. Subassemblies and components</b>	3.2.29 Power switches and switchgear	3.3.23 Thrust collars for tramway bogies
<b>3.1 Driving gear</b>	3.2.30 Circuit boards	3.3.24 Rail tyres
3.1.1 Exhaust gas silencer	3.2.31 Control systems	3.3.25 Passenger counting systems
3.1.2 Driving systems and electronics	3.2.32 Tilting systems	3.3.26 Vehicle cabins
3.1.3 Traction motors	3.2.33 Registration and display systems	3.3.27 Springs / Spring systems
3.1.4 Vehicle lubrication	3.2.34 Series terminals	3.3.28 Radio remote control systems
3.1.5 Generators	3.2.35 Relays	3.3.29 Clevis guides
3.1.6 Transmissions	3.2.36 Switching gear	3.3.30 Casing systems
3.1.7 Hydraulic drive systems for railway vehicles	3.2.37 Switches	3.3.31 Articulations
3.1.8 Motors / Engines	3.2.38 Metal contacts	3.3.32 Rocker bearings
3.1.9 Traction motor ventilation	3.2.39 Switch cabinets and accessories	3.3.33 Joint rod sockets
3.1.10 Traction motor housing	3.2.40 Fuses and accessories	3.3.34 Cardan shafts
3.1.11 Traction motor preheaters	3.2.41 Special-purpose electric machines	3.3.35 Friction bearings
3.1.12 Motor oil refilling systems	3.2.42 Connectors	3.3.36 Cast metal wheels
3.1.13 Pneumatic material	3.2.43 Control components	3.3.37 Integrated subassemblies
3.1.14 Wheelset gear sets	3.2.44 Control cubicles	3.3.38 Air ducts
3.1.15 Lubricating systems	3.2.45 Current collectors	3.3.39 Carbon brushes
3.1.16 System technology	3.2.46 Power generating sets	3.3.40 Carbon strips
<b>3.2 Energy / Electrotechnology</b>	3.2.47 Current transformers	3.3.41 Compressors
3.2.1 Automation technology	3.2.48 Traction current converters & control systems	3.3.42 Capacitors
3.2.2 Battery holders	3.2.49 Transformers	3.3.43 Ball bearings
3.2.3 Batteries	3.2.50 Pantographs	3.3.44 Cooling systems
3.2.4 Battery isolators	3.2.51 Overvoltage safety systems	3.3.45 Couplers
3.2.5 Ventilation / evacuation systems	3.2.52 Inverters	3.3.46 Couplings
3.2.6 Operating and control panels	3.2.53 Interconnection systems	3.3.47 Coupling adaptors
3.2.7 DC / DC converters	3.2.54 Converters	3.3.48 Bearing housings
	3.2.55 Resistances	3.3.49 Profiles for lighting sittings
	<b>3.3 Vehicle components and -systems</b>	3.3.50 Air filter
	3.3.1 Exhaust filtering systems	3.3.51 Tilting technology
		3.3.52 Impact protection modules
		3.3.53 Sections
		3.3.54 Buffer

3.3.55 Radar technology  
 3.3.56 Wheelsets  
 3.3.57 Wheelset pumps  
 3.3.58 Friction pads for railway vehicles  
 3.3.59 Rescue tools  
 3.3.60 Sooty particle filters  
 3.3.61 Rail brakes  
 3.3.62 Hoses  
 3.3.63 Locks and fittings  
 3.3.64 Welded assemblies, underfloor-components  
 3.3.65 Vibration absorbers  
 3.3.66 Sensors  
 3.3.67 Self-locking nuts  
 3.3.68 Special sections for rail car construction  
 3.3.69 Wheel flange lubrication systems  
 3.3.70 Shock absorbers  
 3.3.71 Flexible shunt assemblies  
 3.3.72 Testing systems  
 3.3.73 Thermocouples  
 3.3.74 Gangway installations  
 3.3.75 Valves  
 3.3.76 Connection systems  
 3.3.77 Wiring systems  
 3.3.78 Glazing systems  
 3.3.79 Locking technology and systems  
 3.3.80 Haunch, air ducts and flow sections  
 3.3.81 Car bodies  
 3.3.82 Antifriction bearings  
 3.3.83 Resistance thermometers  
 3.3.84 Push / Pull devices  
 3.3.85 Coupler carriers  
**3.4 Materials**  
 3.4.1 Bent components in aluminium / steel  
 3.4.2 Insulating materials  
 3.4.3 Sealing materials  
 3.4.4 Flat products  
 3.4.5 Rubber articles  
 3.4.6 Rubber-metal connections  
 3.4.7 Cast parts  
 3.4.8 Insulation materials  
 3.4.9 Adhesives  
 3.4.10 Structural foams  
 3.4.11 Plastics  
 3.4.12 Coating  
 3.4.13 Sound insulation materials  
 3.4.14 Melamine resin foam  
 3.4.15 Upholstery materials  
 3.4.16 Foams  
 3.4.17 Lubricants  
 3.4.18 Protective films  
 3.4.19 Special light-weight insulating materials  
 3.4.20 Steel products  
 3.4.21 Composite materials  
 3.4.22 Water varnish

3.4.23 Materials for lightweight and sandwich construction  
**3.5 Other**  
**4. Service for vehicles**  
**4.1 Maintenance**  
 4.1.1 Exhaust systems  
 4.1.2 Re-railing equipment and systems  
 4.1.3 Sand filling systems  
 4.1.4 Bogie testing plants  
 4.1.5 Corner force measuring equipment  
 4.1.6 Disposal systems  
 4.1.7 Replacement parts  
 4.1.8 Lifting devices for tracked vehicles  
 4.1.9 Inspection devices and systems  
 4.1.10 Maintenance systems  
 4.1.11 Varnishing devices  
 4.1.12 Measuring equipment and systems  
 4.1.13 Wheel force measurement systems  
 4.1.14 Wheelset treatment  
 4.1.15 Wheelset diagnostic systems  
 4.1.16 Category of maintenance  
 4.1.17 Foils / films  
 4.1.18 Testing devices and systems  
 4.1.19 Maintenance machines  
 4.1.20 Workshop equipment  
**4.2 Cleaning**  
 4.2.1 Vehicle washing systems  
 4.2.2 Surface treatment  
 4.2.3 Cleaning equipment / technology  
 4.2.4 Special cleaning services  
 4.2.5 Waste-water-treatment  
**4.3 Refurbishment**  
 4.3.1 Expertises  
 4.3.2 Restoration  
 4.3.3 Damage repair and management  
**4.4 Services**  
 4.4.1 Railway application testing  
 4.4.2 Design  
 4.4.3 Commissioning  
 4.4.4 Engineering services  
 4.4.5 Maintenance management systems  
 4.4.6 Marking  
 4.4.7 Systems analysis  
 4.4.8 Transport of railway vehicles  
 4.4.9 Workshop services  
**4.5 Other**

## Interiors

**5. Interiors**  
**5.1 Vehicle equipment**  
 5.1.1 Handicapped accessible equipment  
 5.1.2 Floor coverings  
 5.1.3 Window systems

5.1.4 Driver consoles  
 5.1.5 Luggage racks  
 5.1.6 Stay bars  
 5.1.7 Hand-held lamps  
 5.1.8 Interior furnishings  
 5.1.9 Lamps  
 5.1.10 Upholstery systems  
 5.1.11 Roller blind systems  
 5.1.12 Seats and seating systems  
 5.1.13 Sanitary equipment  
 5.1.14 Sanitary cubicles  
 5.1.15 Textiles  
**5.2 Finishings / Information / Air conditioning / Security**  
 5.2.1 Anti-pinch systems  
 5.2.2 Fire protection isolation  
 5.2.3 Flooring systems  
 5.2.4 Fans for railway components  
 5.2.5 Heating systems  
 5.2.6 Information- and advertising systems  
 5.2.7 Interior design systems  
 5.2.8 Interior lining  
 5.2.9 Installation equipment  
 5.2.10 Cabin air ventilation / -climatisation  
 5.2.11 Air-conditioning systems  
 5.2.12 Emergency systems  
 5.2.13 Sanitary systems  
 5.2.14 Door furniture  
 5.2.15 Door opener push buttons  
 5.2.16 Door controls  
 5.2.17 Door systems  
 5.2.18 Surveillance systems  
 5.2.19 Detrainment systems  
**5.3 Travel Catering & Comfort Services**  
 5.3.1 Station catering  
 5.3.2 Accessories / Amenities  
 5.3.3 Catering service provider  
 5.3.4 Beverages  
 5.3.5 Hygiene  
 5.3.6 Kitchen equipment  
 5.3.7 Refrigeration and counter systems  
 5.3.8 Food  
 5.3.9 Trolleys  
 5.3.10 Service equipment  
 5.3.11 Food dispensing  
 5.3.12 Food / Beverage vending machines

## Railway Infrastructure

**6. Infrastructure / Railway Construction**  
**6.1 Construction work**  
 6.1.1 Electrical power systems  
 6.1.2 Overhead contact line  
 6.1.3 Building construction  
 6.1.4 Civil engineering and construction

6.1.5	Maintenance	6.4.5	Air conditioning equipment	6.5.56	Wayside Train Monitoring Systems
6.1.6	Control and signalling technology	<b>6.5</b>	<b><u>Technical equipment / Building materials</u></b>	6.5.57	Train preheating equipment
6.1.7	Superstructures	6.5.1	Axle counters	6.5.58	Tongue rolls for switches
6.1.8	Permanent way welding technology	6.5.2	Construction site lighting	<b>6.6</b>	<b><u>Signalling and control systems</u></b>
6.1.9	Specialised civil engineering work	6.5.3	Friction buffer stops	6.6.1	Level crossing systems
6.1.10	Telecommunications	6.5.4	Bridge girders	6.6.2	Acoustics
6.1.11	Civil and underground engineering	6.5.5	Third rail	6.6.3	Operating control engineering
6.1.12	Tunnel and bridge construction	6.5.6	End-of-track buffers	6.6.4	Earth terminals for track construction
<b>6.2</b>	<b><u>Planning and monitoring of construction works</u></b>	6.5.7	Electric points (switch) heater	6.6.5	Remote control equipment
6.2.1	Tendering and tender evaluation	6.5.8	Protection against vibrations	6.6.6	Cable ducts
6.2.2	Site exploration / materials testing	6.5.9	Catenaries	6.6.7	Control systems
6.2.3	Work logistics	6.5.10	Power line masts	6.6.8	Communications technology
6.2.4	Supervision of works	6.5.11	Panel track laying	6.6.9	Switchgears in earth systems
6.2.5	Planning and control	6.5.12	Surface stabilisation systems	6.6.10	Signalling systems
6.2.6	Planning of superstructure, underground, and civil engineering works	6.5.13	Wheel flat detector	6.6.11	Warning systems for tracklaying sites
6.2.7	Planning of signalling and control systems	6.5.14	Handrails	<b>6.7</b>	<b><u>Overhead line equipment</u></b>
6.2.8	Planning of electric power supply	6.5.15	Geotextiles	6.7.1	Wires and cables
6.2.9	Planning review	6.5.16	Steel grating	6.7.2	Engineering consultant
6.2.10	Project planning	6.5.17	Concrete track and points sleepers	6.7.3	Installation
6.2.11	Survey	6.5.18	Siding track facilities	6.7.4	Maintenance
<b>6.3</b>	<b><u>Railway track machinery, equipment and tools</u></b>	6.5.19	Car retarder	6.7.5	Insulators and section insulators
6.3.1	Excavators	6.5.20	Re-ballasting of tracks	6.7.6	Clamps and cast parts
6.3.2	Ballast cleaning machines	6.5.21	Track bed systems	6.7.7	Tensioning devices
6.3.3	Overhead line vehicles	6.5.22	Track circuits	6.7.8	Suspension wire components
6.3.4	Equipment	6.5.23	Track systems	6.7.9	Overhead line measuring systems
6.3.5	Track cars	6.5.24	Hot box detection system	6.7.10	Overhead installations
6.3.6	Track recording cars	6.5.25	Insulation for railway catenary	6.7.11	Overhead line tests
6.3.7	Track laying and track construction machines	6.5.26	Insulating joints	6.7.12	Steady arms and suspensions
6.3.8	Heavy machinery and tower cranes	6.5.27	Isolated fastenings	6.7.13	Tools
6.3.9	Light machines	6.5.28	Cable channels	<b>6.8</b>	<b><u>Other services</u></b>
6.3.10	Measuring equipment and -systems	6.5.29	Long material equipment for road transport of rails	6.8.1	Health and safety
6.3.11	Rail milling machines	6.5.30	Long rails	6.8.2	Protection of construction sites
6.3.12	Rail-carrying train	6.5.31	Mass-Spring-Systems	6.8.3	Site monitoring
6.3.13	Grinding machines	6.5.32	Plotting paper	6.8.4	Electromagnetic compatibility
6.3.14	Grinding tools	6.5.33	Measuring equipment	6.8.5	Platform covering
6.3.15	Ballast regulating machines	6.5.34	Buffer stops	6.8.6	Inspection of tracks and points (switches)
6.3.16	Safety tools	6.5.35	Marshalling equipment	6.8.7	Recycling of building materials
6.3.17	Ballast tamping machines	6.5.36	Noise deadening	6.8.8	Machine repair
6.3.18	Track maintenance vehicles	6.5.37	Track switchgear	6.8.9	Safety during hazardous cargo transport
6.3.19	Track warning systems for machinery	6.5.38	Rails	6.8.10	Ecological surveys
6.3.20	Switch inspection systems	6.5.39	Rail guards / cow-catchers	6.8.11	Survey
6.3.21	Wagons for turnout transport	6.5.40	Rail fastening equipment	<b>6.9</b>	<b><u>Other</u></b>
6.3.22	Road-rail vehicles	6.5.41	Rail lubrication systems	<b>Public Transport</b>	
<b>6.4</b>	<b><u>Station buildings</u></b>	6.5.42	Rail link units	<b>7.</b>	<b><u>Public Transport / Fixed structures</u></b>
6.4.1	Platforms	6.5.43	Lubricants	<b>7.1</b>	<b><u>Streetbound vehicles for local and regional public transport</u></b>
6.4.2	Platform edges	6.5.44	Ballast	<b>7.2</b>	<b><u>Station and stop premises</u></b>
6.4.3	Platform systems	6.5.45	Railroad ties (sleepers)	7.2.1	Dispatch facilities
6.4.4	Guide systems for blind	6.5.46	Vibration damping	7.2.2	Lifts
		6.5.47	Safety engineering	7.2.3	Station furnishings
		6.5.48	Special products for transport route construction	7.2.4	Station / telephone box doors
		6.5.49	Electric power supply	7.2.5	Platform lighting
		6.5.50	Protection systems	7.2.6	Station dividing walls / doors
		6.5.51	Wearing- and sliding plastics, insulation plastics		
		6.5.52	Points (switches) and crossings		
		6.5.53	Points (switch) mechanisms		
		6.5.54	Points (switch) heaters		
		6.5.55	Points (switch) lubricating equipment		

7.2.7	Counters	7.8.3	Protective clothing	8.11.4	Traffic control systems
7.2.8	Passenger counting systems	7.8.4	Textiles	<b>8.12</b>	<b><u>Other</u></b>
7.2.9	Time-table and info-showcases	<b>7.9</b>	<b><u>Other</u></b>	<b>9.</b>	<b><u>Freight traffic logistics</u></b>
7.2.10	Bicycle parking facilities	<b>8.</b>	<b><u>Transport IT</u></b>	<b>9.1</b>	<b><u>Fleet management systems</u></b>
7.2.11	Moving pavements		<b><u>Transport management / Data processing / Information / Communication</u></b>	<b>9.2</b>	<b><u>Hazardous cargo transports</u></b>
7.2.12	Escalators			<b>9.3</b>	<b><u>Identification systems</u></b>
7.2.13	Stop furnishings	<b>8.1</b>	<b><u>E-Business</u></b>	<b>9.4</b>	<b><u>Combined transport</u></b>
7.2.14	Process control systems	<b>8.2</b>	<b><u>Information technology / quality assurance systems</u></b>	<b>9.5</b>	<b><u>RFID tracking</u></b>
7.2.15	Furnishing for control stations			<b>9.6</b>	<b><u>Shipment tracking systems</u></b>
7.2.16	Poster showcases	8.2.1	Testing and analysis systems	<b>9.7</b>	<b><u>Loading / Unloading systems and organisation</u></b>
7.2.17	Luggage locker facilities	8.2.2	Real-time statistics	<b>9.8</b>	<b><u>Interchangeable containers, changing systems</u></b>
7.2.18	Customer service	8.2.3	Journey analysis systems	<b>9.9</b>	<b><u>Swap bodies, systems</u></b>
7.2.19	System integrators	8.2.4	Geo information systems	<b>9.10</b>	<b><u>Other</u></b>
7.2.20	Roofing systems	8.2.5	Efficiency control	<b>10.</b>	<b><u>Services</u></b>
7.2.21	Clock systems	<b>8.3</b>	<b><u>Components for information technology</u></b>	<b>10.1</b>	<b><u>Institutions / Media / Transport companies</u></b>
7.2.22	Shelters			10.1.1	Authorities
7.2.23	Path control systems	8.3.1	Sensors	10.1.2	Industrial parks
7.2.24	Advertisement systems	<b>8.4</b>	<b><u>Communication systems</u></b>	10.1.3	Freight traffic companies
7.2.25	Weather protection	8.4.1	Digital radio systems	10.1.4	Freight traffic centres
<b>7.3</b>	<b><u>Passenger information systems</u></b>	8.4.2	Interphone systems	10.1.5	Passenger transport companies
7.3.1	Display-cases	8.4.3	Internet systems	10.1.6	Technology and incubation units
7.3.2	GPS-controlled time displays	8.4.4	Mounting systems for train radio equipment	10.1.7	Associations
7.3.3	Infotainment systems	8.4.5	Train radio systems	10.1.8	Organisations
7.3.4	Interactive Voice Response Systems (IVR)	<b>8.5</b>	<b><u>Management systems</u></b>	10.1.9	Joint transport authorities
7.3.5	LED displays	8.5.1	Plant management systems	10.1.10	Publishing houses
7.3.6	Plasma displays	8.5.2	Depot management	10.1.11	Business development
7.3.7	Coach controllers	8.5.3	Facility management	10.1.12	Science, research and development
7.3.8	Seat reservation systems	8.5.4	Infrastructure management systems	10.1.13	Railway infrastructure companies
7.3.9	System controllers	8.5.5	Lean production	<b>10.2</b>	<b><u>Services in the transport industry</u></b>
7.3.10	TFT flat panel displays	<b>8.6</b>	<b><u>Operation - Rail systems</u></b>	10.2.1	Health and safety
7.3.11	TFT-LCD displays	<b>8.7</b>	<b><u>Location and navigation systems</u></b>	10.2.2	Recruitment agency
<b>7.4</b>	<b><u>Ticket management</u></b>	<b>8.8</b>	<b><u>Planning systems</u></b>	10.2.3	Services shop floor level
7.4.1	Settlement systems	8.8.1	Time-table planning	10.2.4	Documentation
7.4.2	Board computer	8.8.2	Vehicle deployment	10.2.5	Passenger survey
7.4.3	Chip cards	8.8.3	Optimisation	10.2.6	Financial services
7.4.4	Revenue management	8.8.4	Personnel- and service planning	10.2.7	Education and training
7.4.5	Electronic payment systems	8.8.5	Resource planning (personnel, wagons, locomotives)	10.2.8	Risk protection
7.4.6	Ticket defacing	8.8.6	Roster planning	10.2.9	Trade
7.4.7	Ticket issuing	<b>8.9</b>	<b><u>Safety and control engineering</u></b>	10.2.10	Engineering services
7.4.8	Mobile ticketing	8.9.1	Cyber security	10.2.11	Leasing
7.4.9	RFID media	8.9.2	Passenger alarm systems	10.2.12	Marketing
7.4.10	Rate management	8.9.3	Computer-assisted operations control system	10.2.13	Testing services
7.4.11	Access systems	8.9.4	Video surveillance systems (CCTV)	10.2.14	Recycling
<b>7.5</b>	<b><u>Parking area management</u></b>	<b>8.10</b>	<b><u>Software / Software development</u></b>	10.2.15	Expert services
7.5.1	Parking permits	8.10.1	Computer-based training programme	10.2.16	Insurances
<b>7.6</b>	<b><u>Cleaning / Waste Disposal</u></b>	8.10.2	E-Procurement	10.2.17	Certification
7.6.1	Services	8.10.3	Analyses and calculations relating to the dynamics of vehicle movement	<b>10.3</b>	<b><u>Analysis / Consulting / Development / Planning</u></b>
7.6.2	Cleaning and waste disposal equipment	8.10.4	Software for project management	10.3.1	Execution planning
7.6.3	Washing and toilet facilities	<b>8.11</b>	<b><u>Traffic Management</u></b>	10.3.2	Consultancy
<b>7.7</b>	<b><u>Safety and control</u></b>	8.11.1	Traffic data determination	10.3.3	Design
7.7.1	Security	8.11.2	Traffic information systems	10.3.4	Engineering
7.7.2	Fire detection systems	8.11.3	Traffic engineering	10.3.5	Complete solution for planning and design
7.7.3	Fire protection systems			10.3.6	Noise and vibration reduction
7.7.4	Fire extinguishing systems			10.3.7	Studies, conceptual and system
7.7.5	Supervising services				
7.7.6	Safety engineering				
7.7.7	Monitoring systems				
<b>7.8</b>	<b><u>Clothing / Workwear</u></b>				
7.8.1	Headgear				
7.8.2	Shoes				

- planning
- 10.3.8 Project planning
- 10.3.9 Simulation / Calculation of power networks
- 10.3.10 Systemanalysis / -development
- 10.4 Realisation / Project-Management**
- 10.4.1 Electric project management
- 10.4.2 Contract and claims-, project and construction management
- 10.5 Other**

## Tunnel Construction

### 11. Tunnel Construction

#### 11.1 Construction machines, -parts and components

- 11.1.1 Equipment for removing excavated material
- 11.1.2 Power plant
- 11.1.3 Rock-crushing equipment
- 11.1.4 Building site equipment
- 11.1.5 Drilling platforms, supports and accessories
- 11.1.6 Hammer drill
- 11.1.7 Drilling steels and rock drilling bits
- 11.1.8 Drilling derricks
- 11.1.9 Moisture separators
- 11.1.10 Conveyor belt and -systems
- 11.1.11 Geotechnical instruments
- 11.1.12 Track transport and carrying devices
- 11.1.13 Pick wheels
- 11.1.14 Hydraulic excavators & breakers
- 11.1.15 Injection devices and accessories
- 11.1.16 Injection packer and accessories
- 11.1.17 Injection hose systems
- 11.1.18 Cables and accessories
- 11.1.19 Compressors and pneumatical tools
- 11.1.20 Cranes / Lifting equipment
- 11.1.21 Machines and systems for track construction
- 11.1.22 Microtunnelling and trenchless headings
- 11.1.23 Piling equipment / systems
- 11.1.24 Pumps
- 11.1.25 Shaft boring devices
- 11.1.26 Lining and scaffolding
- 11.1.27 Excavating machines for slurry trenches
- 11.1.28 Probe / diamond core cutters
- 11.1.29 Rail-head equipment / drilling jibs
- 11.1.30 Transport- and feed systems
- 11.1.31 Tunnel boring machines
- 11.1.32 Full face TBMs
- 11.1.33 Grouting, pouring and injection machines
- 11.1.34 Heading shields
- 11.1.35 Capstans
- 11.1.36 Crushing machines

- 11.1.37 Access equipment
- 11.2 Finishing**
- 11.2.1 Support devices / support arches / steel supports / lattice girders
- 11.2.2 Compensating plate
- 11.2.3 Building industry
- 11.2.4 Fastening systems
- 11.2.5 Lighting systems
- 11.2.6 Concrete vibrators
- 11.2.7 Ground freezing
- 11.2.8 Ground stabilization
- 11.2.9 Improvement of land
- 11.2.10 Electrification
- 11.2.11 Electrotechnology
- 11.2.12 Dedusting systems
- 11.2.13 Drainage and pump systems
- 11.2.14 Rock bolts / anchors
- 11.2.15 Gas-extraction equipment / systems
- 11.2.16 Impregnate / Sealing of facing
- 11.2.17 Air conditioning / ventilation
- 11.2.18 Air conduction systems
- 11.2.19 Air cleaning / waste-air disposal
- 11.2.20 Technical engineering and terotechnology
- 11.2.21 Relining
- 11.2.22 Pipes and pipe connections
- 11.2.23 Shaft sinking
- 11.2.24 Shaft linings
- 11.2.25 Slurry walls, shields and trenches
- 11.2.26 Drill-and-blast tunnelling
- 11.2.27 Tunnel supports
- 11.2.28 Power systems
- 11.2.29 Tunnel coatings
- 11.2.30 Tunnel membranes, water stops
- 11.2.31 Planking
- 11.2.32 Reinforcement and tensioning device
- 11.3 Building and other materials**
- 11.3.1 Concrete
- 11.3.2 Bitumen
- 11.3.3 Injection products
- 11.3.4 Gypsum
- 11.3.5 Lime
- 11.3.6 Gravel
- 11.3.7 Mortar
- 11.3.8 Sand
- 11.3.9 Foam and polymeres
- 11.3.10 Ballast
- 11.3.11 Explosives
- 11.3.12 Shotcrete / Concrete additives
- 11.3.13 Clay
- 11.3.14 Grouting materials
- 11.3.15 Cement and additives
- 11.4 Maintenance**
- 11.4.1 Preservation, decontamination, backfitting
- 11.4.2 Hydraulic service equipment
- 11.4.3 Lubricants
- 11.4.4 Tunnel maintenance
- 11.5 Safety features**

- 11.5.1 Safety at work
- 11.5.2 Site safety
- 11.5.3 Fire protection
- 11.5.4 Protection against dangers
- 11.5.5 Controlsystems
- 11.5.6 Measurement / Examination / Control and test equipment
- 11.5.7 Personal safety
- 11.5.8 Safety equipment / -systems
- 11.5.9 Monitoring- / Warning- / Alarmsystems
- 11.6 Communication**
- 11.6.1 Radio systems
- 11.6.2 Interphone systems
- 11.6.3 Internet systems
- 11.6.4 Underground communications
- 11.6.5 Managementsystems
- 11.6.6 Software
- 11.6.7 Telecommunication
- 11.6.8 Video systems
- 11.7 Services / Consulting**
- 11.7.1 Calls for tenders / drafting and awarding contracts
- 11.7.2 Construction-site logistics
- 11.7.3 Authorities
- 11.7.4 Consultancy
- 11.7.5 Operational, environmental and safety equipment / systems
- 11.7.6 Documentation
- 11.7.7 Trade publications
- 11.7.8 Financing / Insurance
- 11.7.9 Geology
- 11.7.10 Geotechnical services
- 11.7.11 Engineering services
- 11.7.12 Expert services
- 11.7.13 Monitoring harmful substances
- 11.7.14 System analysis, -development
- 11.7.15 Technology centre
- 11.7.16 Associations, organisations
- 11.7.17 Publishers
- 11.7.18 Measurement
- 11.7.19 Contract and claims-, project and construction management
- 11.7.20 Science, research & development
- 11.7.21 Certification
- 11.8 Clothing / Workwear**
- 11.8.1 Geo textiles
- 11.8.2 Headgear
- 11.8.3 Protective clothing
- 11.8.4 Shoes
- 11.9 Other**