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# CATEGORIZATION OF FOREIGN SPEED CONTROL SYSTEMS

The literature reviewed to date has revealed three basic speed control systems in use in foreign classification yards. The three types are:

1. Clasp retarders using target-shooting logic.* (France)

   - The yard layout and logic are similar to U.S. practice. The main retarder is located at the group retarder position. Tangent point retarders are used on all class tracks. The retarders are commonly either electropneumatic or weight-responsive hydraulic.

2. Hybrid System of conventional retarders and a "car-mover" on the class tracks. (Germany, Switzerland and Japan)

   - Conventional group and tangent point retarders are used similar to the French system except that the tangent point retarder slows all cars to the feed speed of the car-mover, which is usually the nominal coupling speed.

   - The types of car mover include a reciprocating cable (German), a cable trolley (Swiss) and a linear induction motor powered trolley (Japanese). Each system catches a car as it enters the class tracks and moves it along, at a constant speed, until it couples. The positive control eliminates overspeed coupling and uncoupled cars.

   - The Swiss literature indicates that a steep slope on the class tracks in combination with a Dowty or ASEA "continuous" control system could replace the car-movers. No such system has been built however.

3. Quasi-continuous control of car speed. (Britain)

   - The system controls the speed of a car over its entire run; conventional systems only provide spot control. Hydraulic energy-absorbing units mounted at short intervals along the rail extract energy from each car that passes at a speed above a

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* Target-shooting logic involves slowing each car in the retarder to a target let-out speed. This speed is based on the measured rolling behavior of the car, the required headway and the distance the car must roll to couple.

pre-set speed. Thus, the car's speed theoretically remains at the pre-set speed during its run. Catch-ups and overspeed couplings are eliminated. Booster units are available that will accelerate a slow car up to the pre-set speed. The most common type is the British Dowty System. The Swedish ASEA company manufactures a screw type unit of similar principle.

- This system concept eliminates the need for complex control logic, sensing and feed-back systems. The necessary control logic is built into the system during its design.

A table of foreign systems, organized according to countries is given below. The principal source references are listed, also by country, at the end of this note.

FOREIGN RETARDER SYSTEMS

| WHERE USED | TYPES | MANUFACTURERS | CLAIMS |
|---|---|---|---|
| GERMANY (D.B.)<br>Seelze, Mannheim, Duisburg-Wedau, and Maschen Yards | HYDRAULIC CLASP (M,G,T) | THYSSEN-WUPPERT | Both clasp and rubber-rail types are used. |
| | RUBBER (T) | THYSSEN | |
| | CAR MOVER (T) :<br>Reciprocating Cable | HAUHINCO | Eliminated overspeed couplings. |
| SWITZERLAND (SBB)<br>Basle-Muttenz Yard | HYDRAULIC CLASP (M-G) | THYSSEN-WUPPERT | |
| | ELECTRODYNAMIC (T) | SIEMENS | Cheap and easy to maintain (necessary because of many units) |
| | CAR MOVER (T):<br>Cable-trolley | ASEA/HABEGGER | |
| | or SCREW RETARDER (T) | ASEA | Chosen over Dowty because they can be lowered from track. Removes more energy than Dowty. |
| FRANCE (SNCF)<br>Sotteville Yard | CLASP (M & T) | WABCO-WESTINGHOUSE/ SAXBY (Weight-Responsive) | Follows U.S. practice. Target shooting logic. |
| BRITAIN | QUASI-CONTINUOUS HYDRAULIC | DOWTY | No external controls, no computer system, self-contained. |
| JAPAN (JNR) | | | |
| Koriyama Yard | ELECTRO-PNEUMATIC CLASP (M & G) | | Follows U.S. practice |
| Toyama Yard | ELECTRODYNAMIC (M-G) | | |
| | CAR MOVER (T): LIM (L4) TROLLEY | | Test bed (two tracks). Cheaper to build and maintain than Dowty or cable system. |
| Shiohama Yard | PNEUMATIC CLASP (M-G & T) | | Yard developed from Toyama experience. |
| | CAR MOVER (T): LIM (L4) TROLLEY | | |

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