
Section 5

DEVELOPING TECHNOLOGIES

With the exception of a new fossil fuel locomotive, not relevant to this study but discussed later nevertheless, we can not foresee entirely new vehicle technologies under development, nor do we believe it prudent for the PCJPB to consider any radical new ideas.

However we do see systems and components technologies developing at a rather rapid pace. For instance, development power semi-conductors of the IGBT type is allowing engineers to design much more efficient and reliable electrical systems and controls. Maintenance of these systems is also greatly improved due to the simplicity of the components and the unit-exchange approach undertaken.

We are now beginning to see the implementation of these technologies in U.S. locomotives, such as the re-manufactured AEM-7s. While more common in Europe and Japan, within a year we will have the opportunity of evaluating their performance in the U.S. railroad environment.

To be sure, however, there are still some uncertainties regarding the performance of the IGBT technology in high horsepower equipment, and some feel that it has not advanced enough yet for this application. For this reason, we will likely see more applications in passenger rail cars than in locomotives in the near future.

New lightweight materials, such as composites for carbody skins and interiors will allow the designers to develop better products, while reducing costs and weight and improving maintainability.

New microprocessor controls for HVAC, toilet and door systems, among others, provide more efficiencies and reliability.

New monitoring and diagnostic systems and communications with the maintenance facilities will result in more efficient planning of work, inventories and will reduce equipment down time.

Fiber optic trainlines will help in improving reliability of power and communications and will enhance equipment maintainability.

In the area of passenger amenities and comfort, improved and more reliable all encompassing communications systems will help to make the journey more safe and enjoyable, thereby attracting more customers.

These and other developments should be seriously evaluated and considered by the PCJPB at the time of preparing Specifications for locomotives and/or cars. The ultimate objective is obviously to improve safety, passenger comfort and overall economic performance.

With regard to the new fossil fuel locomotive mentioned above, this is a development sponsored by FRA and cost shared by the manufacturer, Bombardier. The purpose is to develop a lightweight, high performance locomotive that can provide services of up to 125 mph on non-electrified territories. An additional component of this development program is to install a flywheel device to store energy and help during acceleration and overall fuel consumption. However, the weight of this component and the impact on the tracks will negate the overall performance of the locomotive. The prototype unit is about to start testing.