

## Conductive Automatic Charging Recommended Practice nears completion

**S**AE's Medium and Heavy-Duty Vehicle Conductive Charging Task Force committee has been working to develop a Recommended Practice (RP) for heavy-duty conductive automatic charging, and the document is now close to the publication stage. SAE J3105, which is slated for publication in first quarter 2019, covers the physical, electrical, functional, testing, and performance requirements for conductive DC power transfer primarily to electrified transit vehicles.

"The document is for buses or heavy-duty vehicles in general," Mark Kosowski, SAE J3105 Committee Chairperson and long-time SAE member, told *Automotive Engineering*.

For the past two years, the task force has been meeting twice monthly via WebEx as well as in person, with the next one scheduled for July in Troy, Mich. "The group has worked to define conductive power transfer methods for the RP," Kosowski said. The methods include the infrastructure electrical contact and vehicle connection interfaces, the electrical characteristics of the DC supply and the communication system.

J3105 also covers the functional and dimensional requirements for the vehicle connection and supply equipment interfaces.

Kosowski recently shared information about the forthcoming new RP in a presentation at the APTA (American Public Transit Association) 2018 Bus & Paratransit Conference last month. The technical, educational program is held for bus and paratransit system employees and managers, board members, contractors, suppliers, manufacturers and consultants.

"J3105 will ensure that each connection type is safe and interoperable among manufacturers," said Kosowski, who is Technical Executive for the **Electric Power Research Institute (EPRI)**.

The RP will be produced as a family of documents connected



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by a main document. J3105, the main document, will contain the significant common parts of the system (about 90%), which include the electrical interface, power flow (voltage and currents), communications, safety and systems.

The four subdocuments of the RP—J-3105-1, J3105-2, J3105-3, and J3105-4—will detail the different connections and the unique parts, including connection locations and alignment. All connections will use the common requirements established in the overall document J3105.

- J3105-1 Infrastructure-Mounted Pantograph (Cross rail), figure 1;
- J3105-2 Infrastructure-Mounted Blade (Blade), figure 2;
- J3105-3 Vehicle-Mounted Pantograph (Bus-up), figure 3;
- J3105-4 Enclosed Pin and Socket, figure 4.

When an infrastructure is selected, then all vehicles independent of the manufacturer will be able to use the system.

Many individuals have been involved in the standard development work with approximately 20-25 experts in regular attendance at meetings.

Participants involved include major bus manufacturers (**GILLIG**, **New Flyer**, **Nova Bus**, **Opbrid**, **Proterra**), charger manufacturers (**ABB**, **Heliox**, **Siemens**, **Toshiba**), pantograph and connector manufacturers (**Furrer+Frey**, **SCHUNK**, **Stäubli**, **STEMMANN**), utili-

ties (**EPRI**, **Sacramento Municipal Utility District (SMUD)**, **Southern California Edison**), transit fleets (**APTA**, **Chicago Transit Authority**, **King County Metro**, **Los Angeles County Metropolitan Transportation Authority**, **NY City Transit**) and other interested parties (**ANL**, **CalStart**, **CEC**, and **CTE**).

For more information on J3105, contact Mark Kosowski at [mkosowski@epri.com](mailto:mkosowski@epri.com). ■



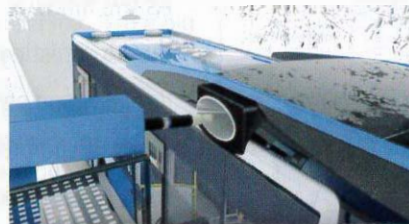
**Fig. 1 - J3105-1 Infrastructure-Mounted Pantograph (Cross Rail).**



**Fig. 2 - J3105-2 Infrastructure-Mounted Blade (Blade).**



**Fig. 3 - J3105-3 Vehicle-Mounted Pantograph (Bus-up).**



**Fig. 4 - J3105-4 Enclosed Pin and Socket.**