



U.S. Department
of Transportation

**National Highway
Traffic Safety
Administration**

ODI RESUME

Investigation: PE 14-011
Date Opened: 04/15/2014
Investigator: Evan Frings
Approver: Frank Borris
Subject: Bosch EV charging coupler overheating

Date Closed: 11/21/2014
Reviewer: Scott Yon

MANUFACTURER & PRODUCT INFORMATION

Manufacturer: Robert Bosch LLC
Products: Bosch Power Xpress 240V charger
Population: 400 (Estimated)
Problem Description: Charging cord coupler to vehicle may overheat, burn, and melt housing.

FAILURE REPORT SUMMARY

	ODI	Manufacturer	Total
Complaints:	2	17	19
Crashes/Fires:	0	0	0
Injury Incidents:	1	0	1
Number of Injuries:	1	0	1
Fatality Incidents:	0	0	0

ACTION / SUMMARY INFORMATION

Action: Close this Preliminary Evaluation.

Summary:

The Office of Defects Investigation (ODI) has received a total of 2 allegations of an overheated charging coupler on a Bosch Power Xpress 240V electric vehicle charger. According to the owners, the vehicles began to emit smoke after charging at home for over an hour and the charger coupler to the vehicle was hot to the touch. The overheating condition caused damage to the vehicle and charger, and in some cases, rendering both inoperable. One owner received a mild burn to his finger when attempting to detach the charger from the vehicle.

The Bosch Power Xpress 240V charger is designed to recharge the battery of any electric vehicle using the standard, UL approved, Society of Automotive Engineers (SAE) J1772 charging coupler. The Bosch charger is hard wired at 240V into a home or business in a stationary installation and is capable of charging a vehicle at a rate of 16 to 32 amps. Testing conducted by Bosch indicates that the overheating condition in the coupler is caused by high electrical resistance in the metal charging pins encased within the J1772 coupler. The high resistance is the result of multiple factors including corrosion, wear on charging pins, charging pin plating materials, charging pin crimp connections and environmental conditions. All reported failures have occurred on vehicles charging at 30 amps with no indicated failures on chargers being operated at less than 30 amps. Throughout the production run of Power Xpress chargers, Bosch has used 3 different coupler designs with 2 different suppliers. However, there is no clear indication that one design is more failure prone than another. There have been no reported fires as a result of this issue. The coupler outer shell is made from a UL tested high temperature resistant material and all reported overheating events have been contained within the coupler.

Bosch collects and maintains charger user records which indicate that out of over 6000 chargers sold, approximately 400 customers use the charger at 30 amps, and those are the only chargers susceptible to the overheating condition. To address this issue, Bosch will conduct a customer satisfaction campaign on all Power Xpress chargers sold. Bosch has redesigned the coupler to include a temperature sensing feature that will cut power to the charger if an overheating condition is detected, a technology at least one OEM has incorporated into the vehicle side receptacle.

Bosch will provide and install, free of charge, the redesigned coupler with new cables on the approximately 400 customers who currently use the chargers at 30 amps. Bosch will notify the remaining customers and provide a label to be affixed on the charger advising that if the charger is to be used at 30 amps in the future, a cable and coupler upgrade is recommended. In addition, those customers can request the new coupler and cables free of charge for six months after program launch, however, the customer will be responsible for having the cord installed. Bosch will begin notifying affected customers in December 2014.

A safety-related defect trend has not been identified at this time and further use of agency resources does not appear to be warranted. Accordingly, this investigation is closed. The closing of this investigation does not constitute a finding by NHTSA that no safety-related defect exists. The agency will monitor the issue and reserves the right to take future action if warranted by the circumstances.

The ODI reports cited above can be reviewed at www-odi.nhtsa.dot.gov/owners/SearchSafetyIssues under the following identification (ODI) numbers: 10537862 and 10586711.