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CEMA STANDARD NO. 575-2013

Bulk Material Belt Conveyor Impact Bed/Cradle

Selection and Dimensions

CONVEYOR EQUIPMENT MANUFACTURERS ASSOCIATION

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CONVEYOR EQUIPMENT MANUFACTURERS ASSOCIATION (CEMA)

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List of Changes and Explanations

1. Pg. 1 – Definitions : Changed N (length of impact zone) to L_n to maintain consistency with the belt book

2. Pg. 1, 8 – Definitions : Changed T_e(IB) to $\Delta T_{IB,}$ T_{em}(IB) to ΔT_{IB} to maintain consistency with universal method in belt book.

3. Pg. 1, 8 – Changed f (coefficient if friction value – dimensionless) to C_b to maintain consistency with the belt book.

4. Pg. 1, 8 – Removed T_e(TI), T_{em}(TI) from power loss calculations. Calculating the effects of the small amount of idlers removed and replaced with impact beds can be very time consuming under the universal method as detailed in belt book. Equations for ΔT_{isn} (change in tension from idler seal friction), ΔT_{iwn} (Change in tension from idler load friction), ΔTi_{mn} (tension loss from idler misalignment), and ΔT_{mzn} (tension change due to bulk material moving between idlers) would need to be added. Removing the tension effects of the small amount of idlers results in a power loss calculation typically 10% to 15% higher than when the idlers are accounted for. This difference errs on the side of caution and greatly simplifies the calculations.

5. Pg. 8 – Changed table 2 to match belt book (table 6.67) coefficient of friction values for various materials.

6. Pg. 1, 8 – Added R_b (friction modifying factor) to power loss calculation to maintain consistency with the belt book.

7. Adjusted calculations to maintain 2 significant digits.

8. Updated table of contents

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Foreword

Impact Beds/Cradles are used to reduce premature idler failure and reduce belt damage in the load zone of bulk material handling conveyor systems. This standard has been established to provide a uniform method of rating and dimensioning among the various manufacturers of conveyor belt Impact Beds/Cradles.

This standard assures the users of conveyor Impact Beds/Cradles that an Impact Bed/Cradle is dimensionally compatible with conveyor idlers manufactured to the CEMA Standard No. 502, most current revision. The 575 standard establishes impact energy ratings to assure the end user the Impact Bed/Cradle is structurally suitable for the application. This standard does not restrict the manufacturer, who has complete freedom to design all parts of the Impact Bed/Cradle according to its best engineering judgment based upon the information supplied by the end-user.

There are three classes of Impact Beds/Cradles rated according to the weight and height of fall of the bulk material and conveyor idler class. Manufacturers voluntarily specify into which class their particular designs fall.

It is hoped this standard will assist the end user in receiving an Impact Bed/Cradle, which is structurally suitable for the specified conditions and reduce the misapplication of Impact Beds / Cradles.

The capacity of the conveyor belt to withstand impact varies according to belt construction. Contact the belt supplier for information regarding the ability of a specific conveyor belt to withstand impact.

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