

High-Speed Havoc

- To warm up and get folks involved, we're going to do a guessing game!
- For each image, guess the Model/Manufacturer and the Country, bonus points for the exact railroad and exact model
 - Use the text chat to make tracking points easier. 1 guess each!





CRH (China) CRH5 和谐号



PKP Intercity (Poland) ED250

Alstom Ferroviaria New Pendolinos!





SJ (Sweden) Regina



CRH (China) CRH1A





NS (Netherlands) ICE 3 Siemens Class 406



Renfe (Spain) Siemens Velaro E



CRH (China) CRH3C 和谐号 / Siemens Velaro CN

European HSR in China

Modern Realities of Global High-Speed Rail



European HSR in China - 和谐号

- Remember the Great Recession?
 - Many rollingstock producers were struggling, as economic downturn caused a halt on much of global procurement
 - China's Ministry of Rail saw a great opportunity to shore up international rollingstock producers in the short term while strengthening its own rail infrastructure in the long term. Concurrently, the cost of renovating the nation's rail network to include HSR was as low as it might ever be. To them, a win all around.
- CRH's goal with the 和谐号 program was the eventual creation of indigenous HSR vehicles through information and technology sharing agreements; The translated name of the program is an apt: Harmony
 - The 和谐 trainsets are several different models, each with foreign roots and localization design input and often local systems
 - Of the 5 和谐 series, 3 are European in origin and will be covered today



- Originally developed as Bombardier Regina derivatives in Sweden; delivered mid 2006 (CRH1A) with the second (B) batch in 2007
 - Bs were double length (16 car) sets with newer computers for 250kph
- Design later transitioned and gave birth to Bombardier Zefiro family
 - The original Zefiro 250 was the new CRH1E in 2007; in 2012 the stainless steel A&B construction with Zefiro traits became the CRH1A-A, and a new Zefiro 250-NG became the next generation CRH1E-NG in 2015
 - The 1E is the world's first HSR 16 car sleeper trainset (10M6T)

CRH I - full Circle

- The Bombardier–CRH joint designs return to Sweden!
 - Modifications developed in the CRH1A & B models were integrated into the Västtrafik X80, manufactured by Bombardier–Sifang (Qingdao) and final fit in Hennigsdorf
 - The original Zefiro 250 CRH1E sets have also been retooled and readapted for SJ's new SJ Zefiro Express
- Mittelpunkt: Zefiro 300
 - Bombardier–Alstom now offers a new derivative between the 250 and 380, which should look very familiar by now; a joint-production version with Ansaldo–Breda is now the Frecciarossa 1000, with Iryo in Spain also buying several Zefiro 300s



Västtrafik X80



CRH CRH1E



SJ Zefiro Express

Zefiro 250



Zefiro 300, acquired by Trenitalia as Frecciarossa 1000



- The one most of you have been waiting for! Siemens Velaro (ICE 3)
 - Initially the anticipated golden child of the CRH program
 - Original 3As & 3Cs assigned to the busy and mountainous Chengdu Region, with 3Cs serving in the most densely populated urban area in China, the Guangzhou Region
- Only 2 complete trainsets were manufactured in Germany, the lowest foreign production of any Harmony set
 - Despite this, a large 100 piece initial contract, the highest of any Harmony
 - Siemens was adamant it would not give up any core technology, but still got a 750M Euro injection, which helped Siemens Transportation through the recession, and may have prevented Siemens AG from further cuts to the already slashed subsidiary.



CRH5- “New” Pendolinos

- Ordered in 2004 contemporaneously with the original CRH1A and CRH2 orders
 - One of the first HSR systems in China; it was also the most numerous of any initial CRH batch
- Based on the Alstom New Pendolinos (600+), Alstom’s second-rate offering
 - Alstom was unwilling to give CRH and China’s Sifang Power their newer AGV trainsets after then-President Mellier’s experiences working with South Korea’s developing HSR industry
 - Newer versions have been developed entirely separately from Alstom, with the newest version introduced in 2019
 - It is the only CRH trainset to not receive a 380 series modernization as of 2024, as well as the only Alpine trainset, with similar cold-weather-proofing to Swedish and Finnish standards.

CRH380-Modernizations

- The 380s are modernization efforts, designed to reach a possible max speed of 380kph, but all are rated to 350kph
- CRH380D – Introduced April 14, 2014
 - Closest Cooperation with initial benefactor; has been incorporated into Bombardier's own lineup
- CRH380B&C + CRH3C – 2008(3C), 2011(BL), 2012(BG), 2013(CL), 2014(B)
 - Originally, CRH anticipated their 380kph dream to be fulfilled by Germany's ICE derived CRH3, but following tense relations with Germany, CRH elected to also bring the Japanese-based CRH2 up to CRH380A spec in 2011.



Alstom-Bombardier Zefiro 380; CRH380D





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