

## Five Waves Status Report

Introduced in 2002, the *Five Waves* strategy continues to provide the basis for how the company views the overall market development. Benefitting from Covid recovery, full-year series production increased by 24%, from 2.5 million Engine Equivalents in 2020 to 3.1 million Engine Equivalents in 2021. However, the series production remained 6% below the full-year pre-Covid volume of 3.3 million Engine Equivalents set in 2019. The production status for each of the Five Waves, based on the full-year production rate of 3.1 million Engine Equivalents, is summarised in the following table:

<b>Wave 1</b> V-Diesel Passenger Vehicle Engines in Europe	<b>Annualised year-end production:</b> 150,000 Engine Equivalents (7,500 tonnes) <b>Production Summary:</b> 5% of total volume; 15% growth in 2021 <b>SinterCast-CGI Components:</b> Cylinder blocks ranging from 2.7 to 4.4 litres <b>Overview:</b> Volume to decrease during 2020's due to emissions legislation
<b>Wave 2</b> Commercial Vehicle Engines Worldwide	<b>Annualised year-end production:</b> 1,300,000 Engine Equivalents (65,000 tonnes) <b>Production Summary:</b> 42% of total volume; 48% growth in 2021 <b>SinterCast-CGI Components:</b> Cylinder blocks and cylinder heads ranging from 3.9 to 16.4 litres <b>Overview:</b> Prolonged growth opportunity as legislation motivates increased use of CGI
<b>Wave 3</b> In-Line Passenger Vehicle Diesel Engines	<b>Annualised year-end production:</b> 550,000 Engine Equivalents (27,500 tonnes) <b>Production Summary:</b> 18% of total volume; 20% growth in 2021 <b>SinterCast-CGI Components:</b> Cummins 6.7 litre for Ram Super Duty pick ups <b>Overview:</b> Positive long-term outlook for Super Duty diesel sales
<b>Wave 4</b> V-Diesel Passenger Vehicle Engines Beyond Europe	<b>Annualised year-end production:</b> 650,000 Engine Equivalents (32,500 tonnes) <b>Production Summary:</b> 20% of total volume; 10% growth in 2021 <b>SinterCast-CGI Components:</b> Cylinder blocks ranging from 3.0 to 6.7 litres <b>Overview:</b> Positive long-term outlook for Super Duty diesel sales
<b>Wave 5</b> Passenger Vehicle Petrol Engines Worldwide	<b>Annualised year-end production:</b> 300,000 Engine Equivalents (15,000 tonnes) <b>Production Summary:</b> 10% of total volume; 3% growth in 2021 <b>SinterCast-CGI Components:</b> Cylinder blocks ranging from 2.7 to 3.0 litres <b>Overview:</b> Growth with new vehicle applications and improved semiconductor supply

## Other Growth Opportunities

Automotive - Other than Passenger Vehicle Cylinder Blocks	<b>Full-year production:</b> 30,000 Engine Equivalents (1,500 tonnes) <b>Production Summary:</b> 1% of total volume; 43% growth in 2021, on low comparables <b>SinterCast-CGI Components:</b> Bedplates and exhaust components <b>Overview:</b> Volume to decrease during 2020's due to emissions legislation
Industrial Power	<b>Full-year production:</b> 100,000 Engine Equivalents (6,000 tonnes) <b>Production Summary:</b> 4% of total volume; 26% growth in 2021 <b>Series production for:</b> Allen Diesels, Cameron Compression, Caterpillar, Cummins, Deutz, Doosan, Federal Mogul, General Electric, Jenbacher, MAN, MTU, STX Engine and Waukesha <b>SinterCast-CGI Components:</b> Agriculture, marine, locomotive, off-road and stationary power <b>Overview:</b> Growth as off-road demands increase and new products are launched



*With castings ranging from 2.7 kg to 9,000 kg, SinterCast has established series production references in each of the Five Waves that were first introduced in 2002.*