**Supplementary figure 9.1:** Measurement zones for the "Measurements" experimental design a) measurements without tracking system (XPme1 and XPme3). The dotted circles indicate the approximate areas in which the measurements are made. b) measurements with a marking grid (XPme2 and XPme4). The dotted circles indicate the micrometer's contact diameter (6.5 mm) centered on its measuring area.

**Supplementary figure 9.2**: Cumulative histogram of inclusion quality comparison for XPco1, XPco2, and XPco3, using three different mixing modes: mechanical mixing with anchor propeller, mechanical mixing with Viscojet propeller, and manual mixing.

**Supplementary figure 9.3**: Stacked histogram comparing the consolidations' quality as a function of the flow velocity. Ex: the resin is poured without blowing by simple gravitational effect; BO1, BO3, and B05: the resin is poured by blowing at three different speeds, respectively, from the weakest to the strongest.

**Supplementary figure 9.4:** Stacked histogram comparing the consolidations' quality as a function of the pouring height for the three experiments XPco1, XPco2, and XPco3.

**Supplementary figure 9.5:** Stacked histogram comparing XPco4 results between consolidations under vacuum or at atmospheric pressure.

**Supplementary figure 9.6:** Stacked histogram showing the results of the vacuum consolidations from XPco4 to XPco7. In the XPco4 experiment, sample #2 had no bubbles and therefore had a zero score.

**Supplementary figure 9.7:** Comparison matrices of XPcu1 (a) and Xpcu2 (b) cutting experiments. The scale is in micrometers. The arrows indicate the cutting direction.

**Supplementary figure 9.8:** Comparison matrix of the XPcu5 cutting experiment. The scale is in micrometers. The arrows indicate the cutting direction.

**Supplementary figure 9.9:** Comparison matrix of the XPcu6 cutting experiment. The scale is in micrometers. The arrows indicate the cutting direction.

**Supplementary figure 9.10:** Comparison matrices of the experiment on the impact of flange diameter (XPcu7). The scales are in micrometers. The arrows indicate the cutting direction.

**Supplementary figure 9.11:** Comparison of thickness variations (values in µm) as a function of the cutting progress for cuts with heights of 20 mm (a), 17 mm (b), 13 mm (c), and 10 mm (d). "Front" identifies the start of the cut.

**Supplementary figure 9.12:** Comparison of thickness variations across all cuts with heights of 20 mm (a), 17 mm (b), 13 mm (c), and 10 mm (d). The scale indicates the thickness of the samples in micrometers. "Front" identifies the start of the cut.

**Supplementary figure 9.13:** Comparison of thickness variations (values in micrometers) as a function of the cutting progress for cuts with lengths of 20 mm (a), 17 mm (b), 13 mm (c), and 10 mm (d). Samples with lengths of 13 and 10 mm have only two measurements due to their small size. "Front" identifies the start of the cut.

**Supplementary figure 9.14**: Matrix comparison of thickness variations across all cuts with lengths of 20 mm (a), 17 mm (b), 13 mm (c), and 10 mm (d). The scale shows the thickness of the samples in micrometers. Each line of the matrices corresponds to one sample. "Front" identifies the beginning of the cut.