DBBS. Technology *Advancing Building Energy Innovation*

ZERO-MIXING KEY TECHNOLOGICAL CHANGES

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*The **SPLIT BUFFER TANK [SBT]** and the **ZERO - MIXING** concept it embraces is an HVAC design and operational approach with a different systemic perspective. Its application looks into the heart of existing HVAC systems and provides technical solutions to an unchecked number of deficiencies which greatly impair thermal operation of heat plants, chiller systems, building hydronic and terminal equipment. Key technological changes favoring higher HVAC-system efficient operation include:*

- ❑ **Water Mixing Elimination [impairing system efficient operation]** from building heating primary and secondary system loops (or primary-only system), Domestic Hot Water (DHW) or chilled water production.

- ❑ Improved **Continuous Boiler Max Output Operation** at the highest Steady State Efficiency Test (SSET) conditions, with Entering Water Temperature = 26.7°C/80°F and Leaving Water Temperature = 82°C/180°F, independent of outdoor weather or DHW imposing conditions.

- ❑ **System Thermal-mass Addition [Thermal Battery] for improved temperature control and high Delta-T loops operability,** with more stable boiler runs and longer standby periods, eliminating inefficient cycling operation [suitable also for primary-only HVAC systems retrofits].

- ❑ **Primary/secondary System Loops Seamless Hydraulic Coupling /Decoupling**, allowing independent boiler heat-loading from building heat-distribution with no mixing or low/high water adverse loop diversion (also applicable to chilled water production).

- ❑ **Reduced Operational Flow Rates [about 50%],** allowing downsizing on overall equipment [pumps, VFDs, piping, valves/control-valves and instrumentation] of new facilities.