In present study, conventional ring and compact spinning systems were modified with the air nozzle placement below the drafting system of the spinning frames. The modification of conventional ring spinning system was called as Jetring while the combination of an air nozzle and a compact spinning system was named as Compact-Jet. Actually, in literature, there is not this kind of renowned system and thus Compact-Jet spinning system is a new application in the spinning field. When the properties of ring, Jetring, compact and Compact-jet yarns were compared, it was determined that modified spinning systems attribute to an effective reduction in number of long hair length groups and insignificant changes in twist and tensile properties. The reduction in s3 yarn hairiness values reaches up to 40% in Jetring spinning system. However, Compact-jet spinning system improves the hairiness of conventional ring spun yarns over 50%. Relatively higher reduction in yarn hairiness is possible with proper changes on nozzle geometry and air pressure level. Nevertheless, in comparison to Jetring spinning system, Compact-jet spinning system is very effective on yarn properties, particularly yarn hairiness. Even, the system increases the yarn tenacity slightly.