

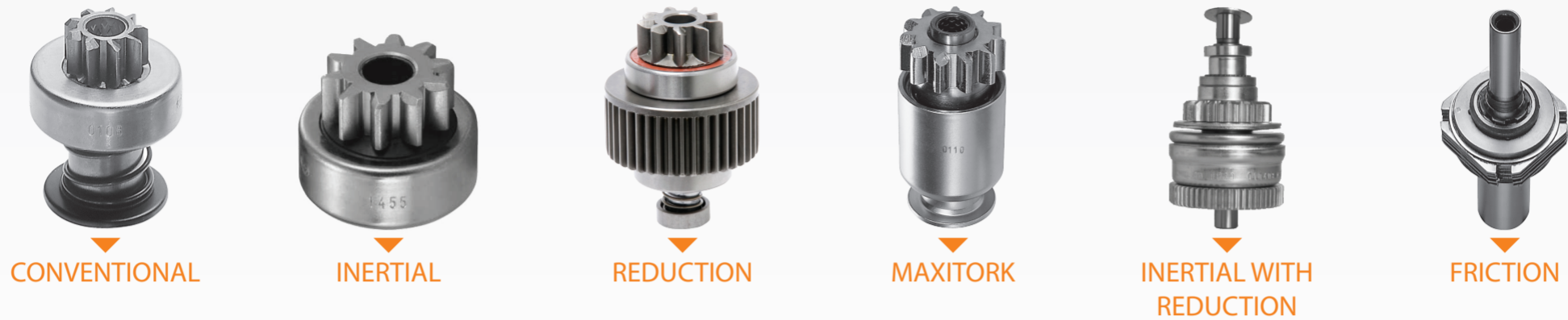


## ZEN TECHNICAL TIP #21

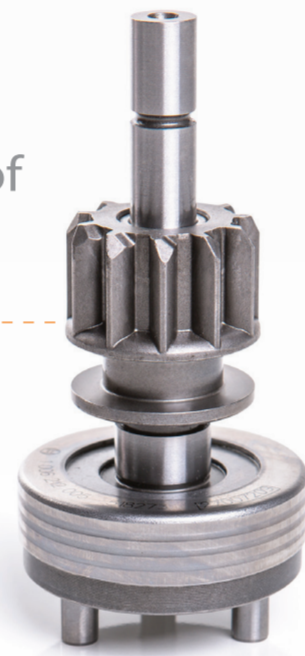
### NEW GENERATION OF STARTER DRIVES: WITH INTEGRATED PLANETARY GEAR



Not so long ago there were basically 6 types of starter drives in the market, as seen below:



But now, new cars are coming in with a different starter drive, which dismisses the use of the planetary gear, the name of this model is **STARTER DRIVE WITH INTEGRATED PLANETARY.**



#### WHAT IS DIFFERENT ABOUT IT?

There is an elimination of the shell of the conventional starter drive. Its function replaces the planetary, which carries out the free wheel function as well. Thus the pinion is directly assembled over the planetary.



#### WHY THE CHANGE?

This type of product follows the automotive market trend of having smaller combustion engines. This movement makes the manufacturers of parts (starter motors and their components) produce more compact products.

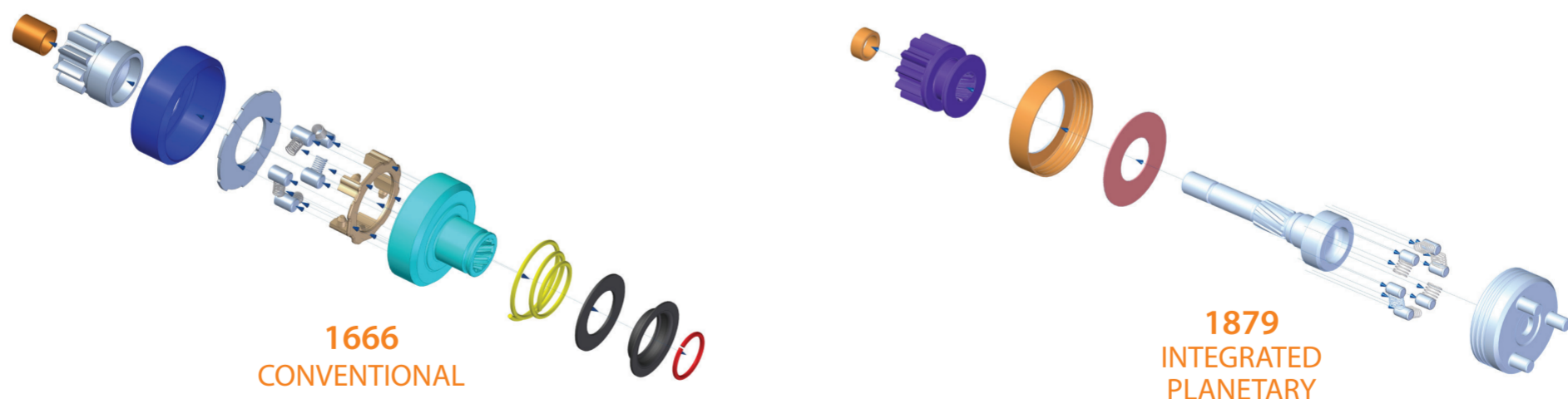


#### WHAT IS THE ADVANTAGE?

Smaller starter motors are lighter, implying in:

- ▶ **Lower electricity consumption;**
- ▶ **Lower fuel consumption.**

#### CONVENTIONAL X WITH INTEGRATED PLANETARY COMPARISON:



ZEN has two models of starter drive with integrated planetary gear: 1879 and 1875. Check their applications in our catalog.