

Prestressing Technology by Means of Stripwinding

The concept of prestressing is widely used in the industry and for many different applications. The general idea is to bring a certain component into a compressive state. Prestressing of the dies in precision metal forging applications, high-pressure synthesis of industrial diamonds/CBN, high-pressure experiments, powder compaction of high-strength components, etc. are examples of application fields, where optimal prestressing of the die would be essential for the overall performance of the tool system. The die would crack, plastify or wear out prematurely if not sufficiently prestressed.

Original idea

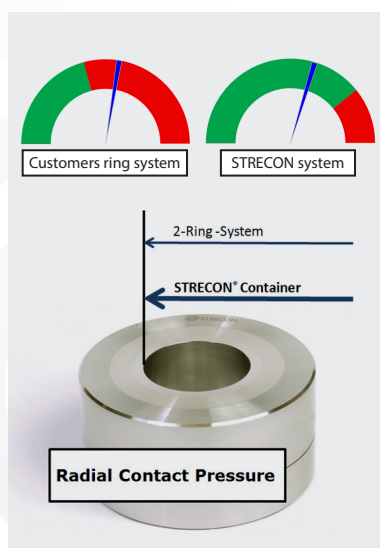
The original idea of the STRECON container was to develop the world safest prestressing system for a cold forging die. Stripwinding was selected as the best technology as only a few inner layers of the coiled strip section of the container would crack in case of severe overloading. For normal compression ring systems, such overloading could result in a sudden and explosive crack of the ring system itself – and of high danger for the toolmaker or the machine operator.

Superior strength

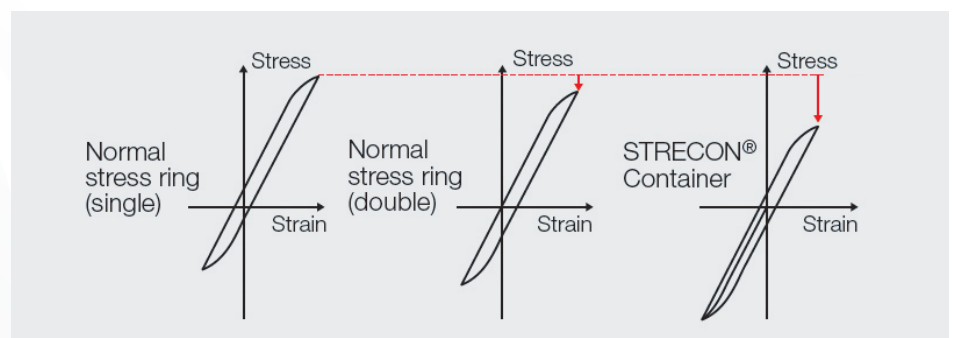
In industry today, the STRECON container is mostly recognized for its superior strength compared to normal compression rings. This strength feature originates from the combination of the optimal stress distribution of the strip material during the winding process, and the material grade and high hardness of the inner core carrying the coiled strip material. Typically, the STRECON container is twice as strong as a normal compression ring.

Fully Elastic Container System

The inner core ring carrying the coiled strip material is being compressed to minus (-) 2000 MPa during the winding process. When the core is made of tungsten carbide, the carbide ring is compressed to minus (-) 2500 MPa. Consequently, the loadability of the STRECON container is very high, and it will remain fully elastic even at maximum forging load. In parallel, the STRECON container can provide optimal prestressing of the die, which normally would go beyond the capability of a normal compression ring system. In fact, the STRECON container can typically provide 50-100% higher prestressing of the die compared to a normal compression ring.



A "Strength Meter" comparing the loadability of a normal compressing ring with the STRECON container system



The STRECON container allows for higher prestressing of the forging die than normal compression rings