



# INNOVATIVE DRIVE SOLUTIONS



TechMotion AutomationTechnology(Suzhou)Co.,Ltd.

Address: No.55 DongFu Road,SIP,Suzhou,  
Jiangsu,215124 P.R.China

Tel: 0512-6591 0867

Fax: 0512-6591 0847

E-Mail: [sales@tech-motion.net](mailto:sales@tech-motion.net)

Web: [www.tech-motion.net](http://www.tech-motion.net)



**ylkro®**

**EVOLVERE®**

## ABOUT US



### More than 30 years of experience

ASSAG is a leading enterprise for drive systems and world market leader in face gear technology. The company was established in 1979 and specializes in designing customer specific drive solutions with over 30 years of success.

ASSAG is known for its innovative solutions in the field of face gear differential drives, high precision gears and is pioneer in face gear technology with several patents to its credit. We supply to market segments such as automotive, medical, industrial, machine tools, robotics and aerospace with focus on market demands and special applications.

ASSAG is a subsidiary of AVTEC Ltd., one of the largest independent manufacturers of powertrains & precision engineered products which is part of C. K. Birla Group, India. This enables ASSAG to offer its customers end to end solutions with advanced technology, world class quality and on time delivery at a competitive price.



### Competence

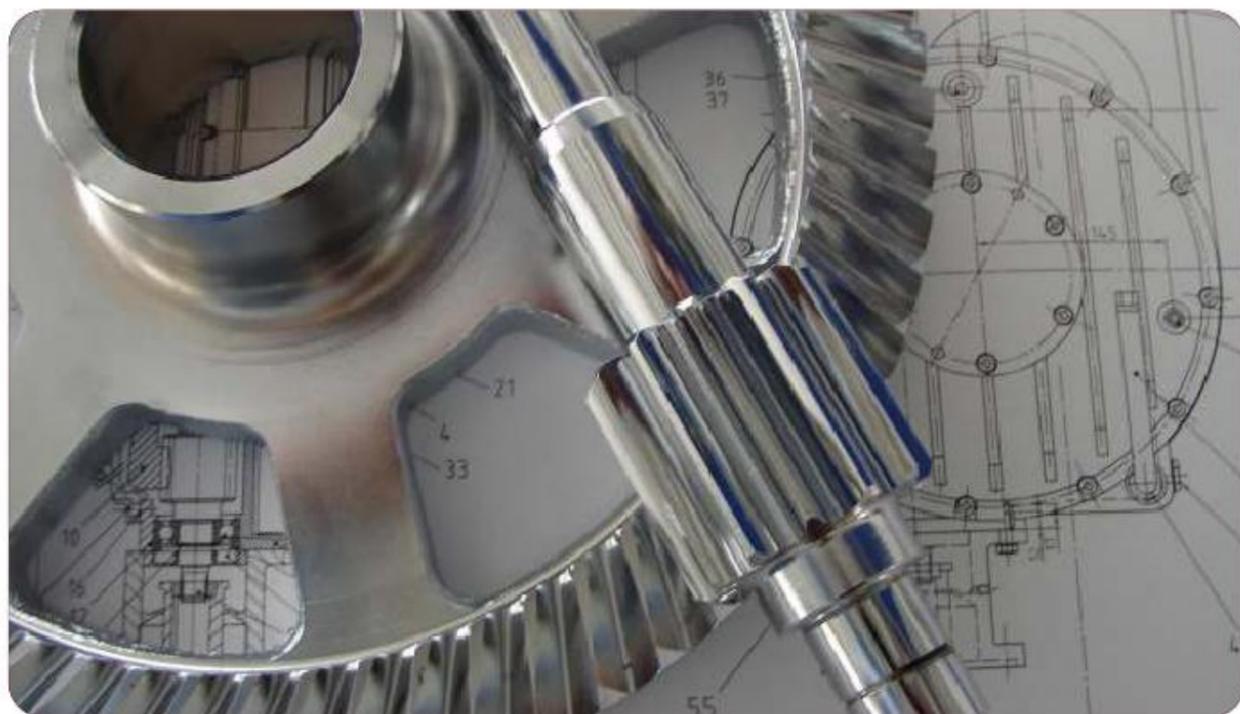
An experienced R&D team supported by a strong project manager group is the key to success of ASSAG.

As a member of the Swiss Machinery Association (Swissmem), the Swiss Association for Standardization (SNV), the German Industrial Associations FVA (Drive Technology Research Association) and VDMA (Machine and Plant Association), ASSAG actively contributes to the developments in the field of drive technology.

ASSAG is also a founding member of the "swissclenattech Association" and committed to sustainable, ecological drive solutions, optimized to customer needs.



## PRODUCT LINE FACE GEARS

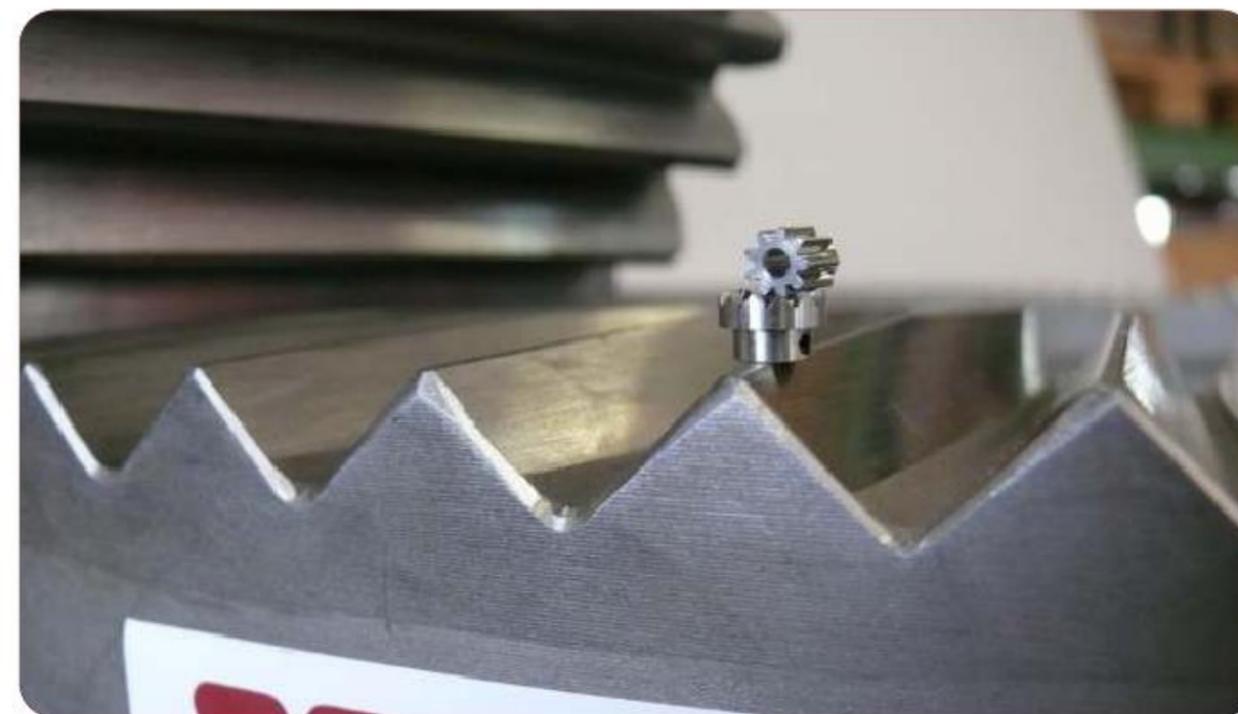
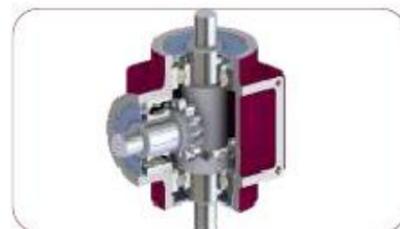


### Cylkro® Face Gear Technology

Cylkro® face gears offer unlimited transmission solutions. Its features enable easy assembly, space savings and free combination for multiple outputs and differentials. ASSAG as a pioneer in the face gear technology holds a number of important patents for design and production of the face gear technology.

A face gear transmission is an angular transmission, in which the axis angle can be chosen freely in the range of 0° to 135°. The cylindrical pinion can be moved freely in the axial direction over the face gear teeth, without backlash or not affecting the contact pattern.

Owing to the fact that there are no axial forces on the pinion axis, simple and cost effective bearings can be used. The axial freedom of the pinion also considerably reduces the assembly time since the adjustment of a 'Face gear set' is much easier than that of a 'traditional Bevel gear set'. Additionally, the drive is unaffected by temperature variations or impact forces. ASSAG has considerable know how in the manufacturing of face gears and has developed special calculation programs in design to effect this.

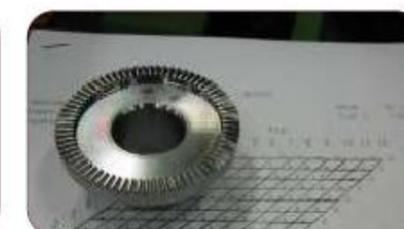


### Advantages of Face Gears

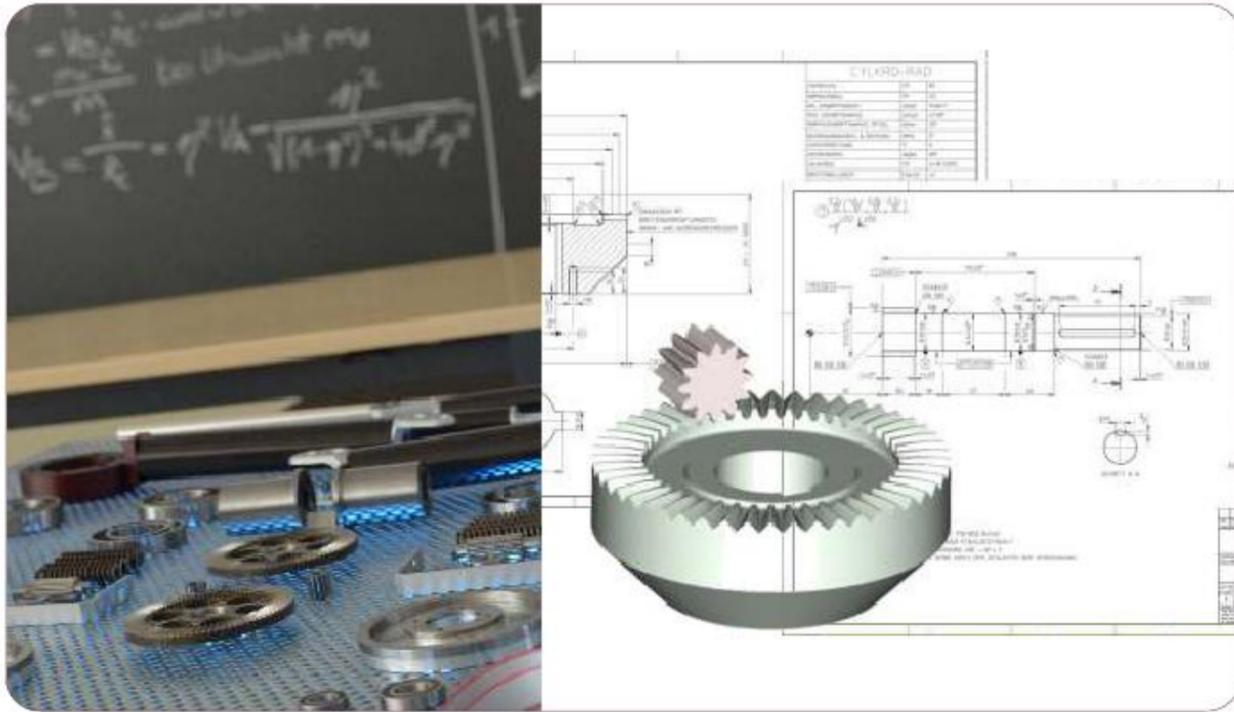
- free choice of axis angle (0° - 135°)
- axial freedom of the pinion
- high angular accuracy
- gear ratios up to 20 : 1 in a single stage
- high efficiency at least 95-97%
- low moment of inertia
- unaffected by temperature variations
- no axial forces on the pinion shaft when combined with spur teeth
- possibility of multiple output shafts



Cylkro face gears  
Enquiry form



## CUSTOMER SPECIFIC DRIVE SOLUTIONS

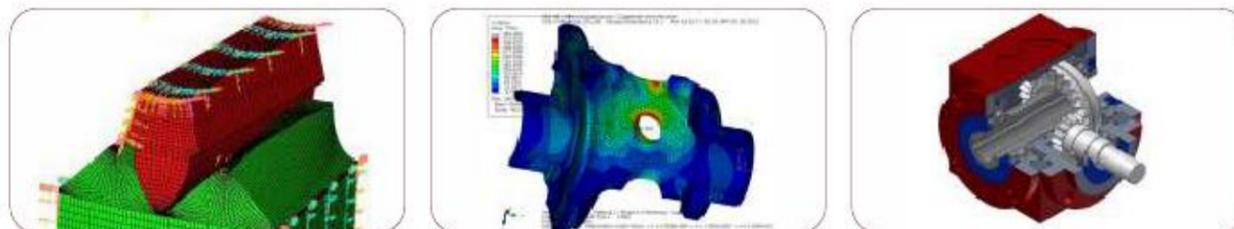


### Evolvere<sup>®</sup> - More than the standard

'Evolvere' is a proven concept for design and the key to success of ASSAG. 'Evolvere' in Latin stands for 'to evolve' with the Quality guarantee of Swiss technology. Our engineers will support you in evaluating the best solution, considering cost effective components for easier assembly and maintenance free in the long run.

Our engineers construct transmissions of all types for different applications in industries and design animated 3D-models. The engineering process is in accordance to ISO 9001:2008 quality standards.

Many years of experience and substantial know how in face gear technology is used to customers benefit. The calculation of face gear transmissions involves algorithms for the optimization of strength and noise behavior. For this we use customized software applications developed by us that include FEM-analysis and other advanced computer simulations.



## DRIVE COMPONENTS

ASSAG delivers also components for gears and drive gears such as:

### Precision Gear Sets

Worm gears



High precision drives



Planetary



### Gearboxes

Large industrial drives



Stepped gears



Geared motors



### Other Drive Components

Couplings



Ball bearings



Shafts



## FROM ART TO PART



### Complete Drive Solution

With strong construction and assembly teams in Düringen, Switzerland, ASSAG is designing and assembling highest quality gears. A continuous improvement on specialized knowledge in transmission technology allows adding value to every customer.

Highly skilled technicians in the assembly line build complete drives of highest standard with a precision of one micron.



## QUALITY AT ITS BEST



### Swiss Quality

The process at ASSAG and our interaction with customers are guided by the principles of the internal management system and a modern ERP system including complete traceability. This guarantees transparency, efficiency and the security of stable relationships with suppliers and customers established over many years. Our quality engineers use modern measuring machines to measure all transmissions, especially the gears. Test benches are available for permanent testing. Detailed measuring reports are being generated for the parts manufactured & also in final assembly.



**ISO 9001:2008**



## FACILITIES



### ASSAG Switzerland & Netherlands

ASSAG is a complete solution provider from Engineering concept to the final part.

#### ASSAG Switzerland

At the headquarters in Düringen, Switzerland, the R&D of face gear technology and the engineering teams are located. Specific calculation tools, up to date software and competent people offer customer specific solutions in a short time. It also encompasses assembly teams for gears varying diameters, prototype building, testing and validation.

#### ASSAG Netherlands sales office

The ASSAG branch in Hengelo, Netherlands, is our representation in the European Union.



### CGP - A production facility of ASSAG

'Cylkro' Gear Production B.V. (CGP), in Hengelo, Netherlands, is a 100% subsidiary of ASSAG equipped with sophisticated manufacturing facility for Face gears.

With modern machinery and comprehensive measurement systems, CGP can provide high quality face gears with shorter delivery times.

The production of parts for automotive, medical and aeronautical industry requires highest quality at competitive prices. The CGP technicians are experienced and well trained to deliver high quality meeting the customer specifications.



## FIELDS OF APPLICATION

### Machine Tools

High precision gears, multi output, angular transmission and overriding drives are the core competencies that ASSAG provides. Suppliers of the world class machine tools join us to develop the newest generation of their products to meet the market demand.



### Automotive

Our face gear technology is used increasingly for differentials in automotive. Two face gears, which are directly mounted between the driving pinions, can have a different number of teeth resulting in asymmetrical force, without the need for electronic control.

Another example for automotive applications is the starter gear, where the pinion is axially pushed into the face gear at the moment of starting the engine.

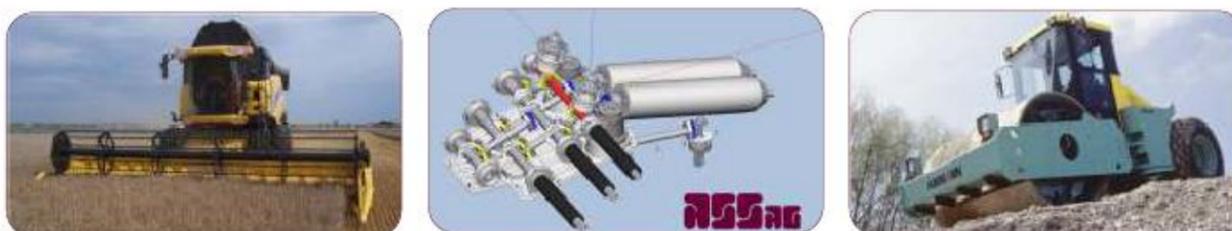
Many other gear applications for car engines and interiors have been realized.



### Off-Highway

The face gear technology has a big potential in off highway vehicles. For example in corn headers, the rotational speed of the gear box can be adapted to all types of harvesting conditions. This is realized slowly by exchanging one face gear for another face gear with a different number of teeth, while maintaining the same pinion.

Off highway applications also include gears for tractors, compactors and hybrid drive for wheel loaders.



### Transport

Aircrafts, monorails and public transports contain ASSAG technology as differentials, angular transmissions and special gear solutions. Such an example is the thrust reverser for planes. ASSAG has also delivered drive trains for monorail systems world over.



### Energy

Many industrial and automotive applications require the simultaneous activation of multiple drive elements, which enable driving parallel work flows using a single motor only. The assembly and adjustment of such multiple drives is easier to achieve using face gears. Examples of face gear multi drives in the field of renewable energy are the fine adjustment of wind turbine blades, tidal power generator, or to facilitate the changes in direction of the elements in solar panels.



### Medtech

ASSAG is a skilled specialist in drive systems for sophisticated medical equipment. Precision drive systems, treatment devices, surgical robots and rehabilitation aids rank alongside titanium crown wheels for surgical tools and implants in its produce range.



## NETWORK & REFERENCES



<b>AMMANN</b>	 Audi		
<b>Fässler</b>	 Mercedes-Benz	<b>oerlikon</b> saurer	<b>REISHAUER</b> Gear Grinding Technology
<b>RUAG</b> Aerospace Defence Technology		<b>STORZ MEDICAL</b>	
<b>VARIAN</b> medical systems	 WILLEMEN-MACODEL YOUR ADVANCED MACHINING SOLUTIONS	 <b>ROSE</b> CYCLE YOUR WAY	
<b>LIEBHERR</b>	<b>ABB</b>	<b>DIESEKO GROUP</b>	<b>GERINGHOFF</b> Punch Press Center

## ASSAG - A SUBSIDIARY OF AVTEC



### AVTEC

ASSAG is a subsidiary of AVTEC Ltd., one of the largest manufacturers of power train & precision engineered products in India. It is part of the multibillion dollar C. K. Birla Group, a conglomerate that has diversified business ventures in cement, auto components, automotive, paper, cement, ITeS, consumer electrical and heavy engineering equipments.

Spearheading technological innovation since its inception, AVTEC offers competency across the entire value chain of design & manufacturing of engines, transmissions, components for passenger cars, light & medium commercial vehicles in automotive and construction equipment, mining equipment, material handling, oil field, railway, wind mill application and in off highway segments.

Having world class engine technology in place, AVTEC utilizes its technical expertise to manufacture Gas & Diesel Gensets for domestic and industrial application.

AVTEC's three eco friendly, state of the art manufacturing facilities in India are equipped with high-tech machines and manned by highly experienced personnel.

