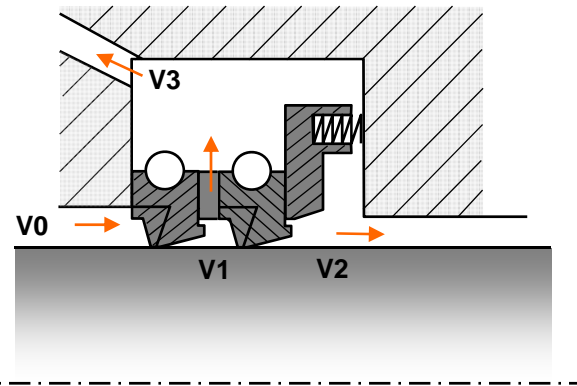


# UPDATE: OFD Low Leakage Oil Wipers For Reciprocating Compressors



# Traditional Oil Wiper “SCRAPER”

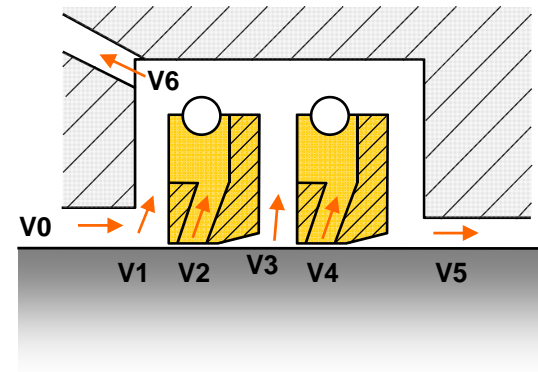


- *metallic scraping edge*
  - metal to metal contact
  - conformity to the rod
- *usually radial cut (rarely tangent cut)*

gaps do not cover themselves

- *are not side loaded*

huge oil flow through drainage  
oil pumping across oil wiper

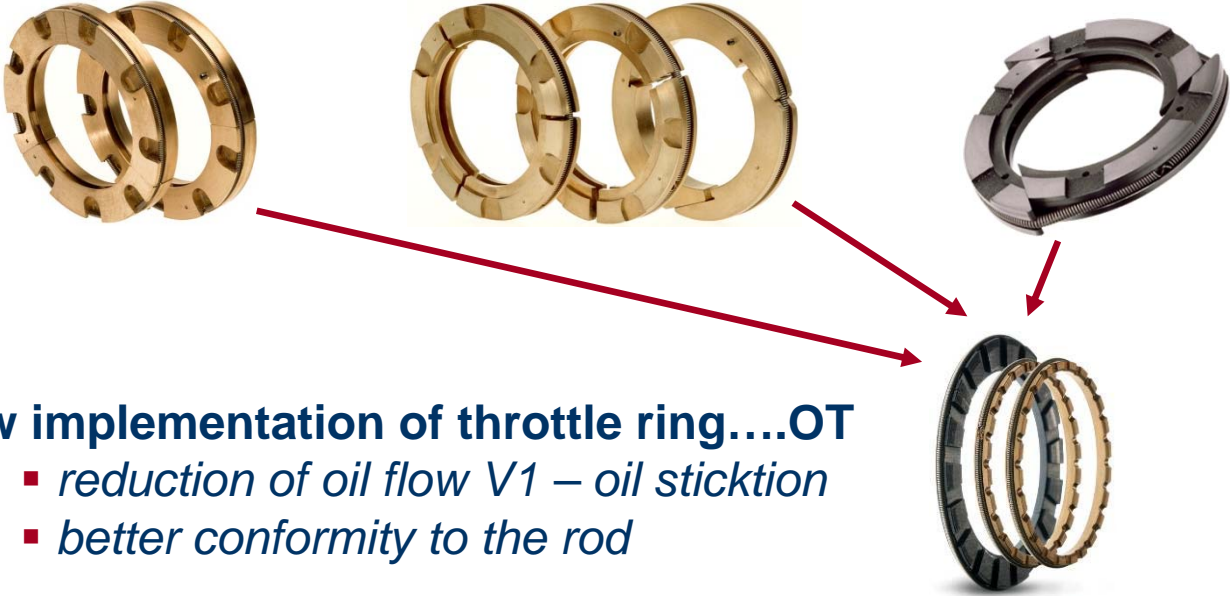


$$V_0 = V_6 + V_5$$

$$V_6 = V_1 + V_2 + V_3 + V_4$$

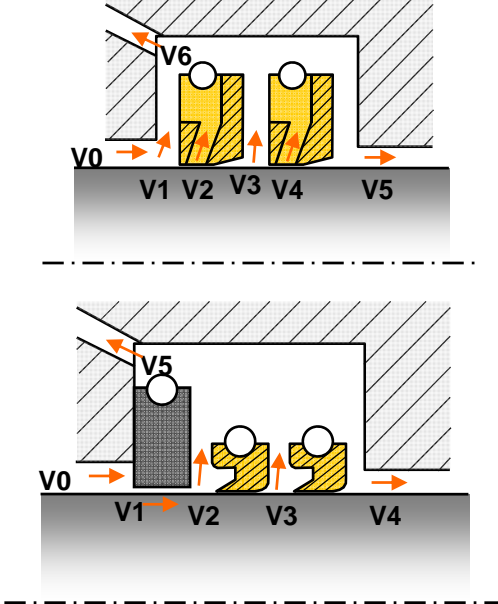


# Wiper history & development

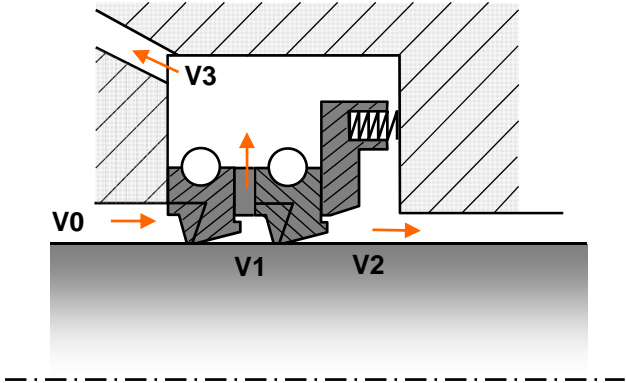


**new implementation of throttle ring...OT**

- reduction of oil flow V1 – oil sticktion
- better conformity to the rod



**Next generation....**



**Controlled oil film dynamics**

**vs.**

**sharp scraping edges!**

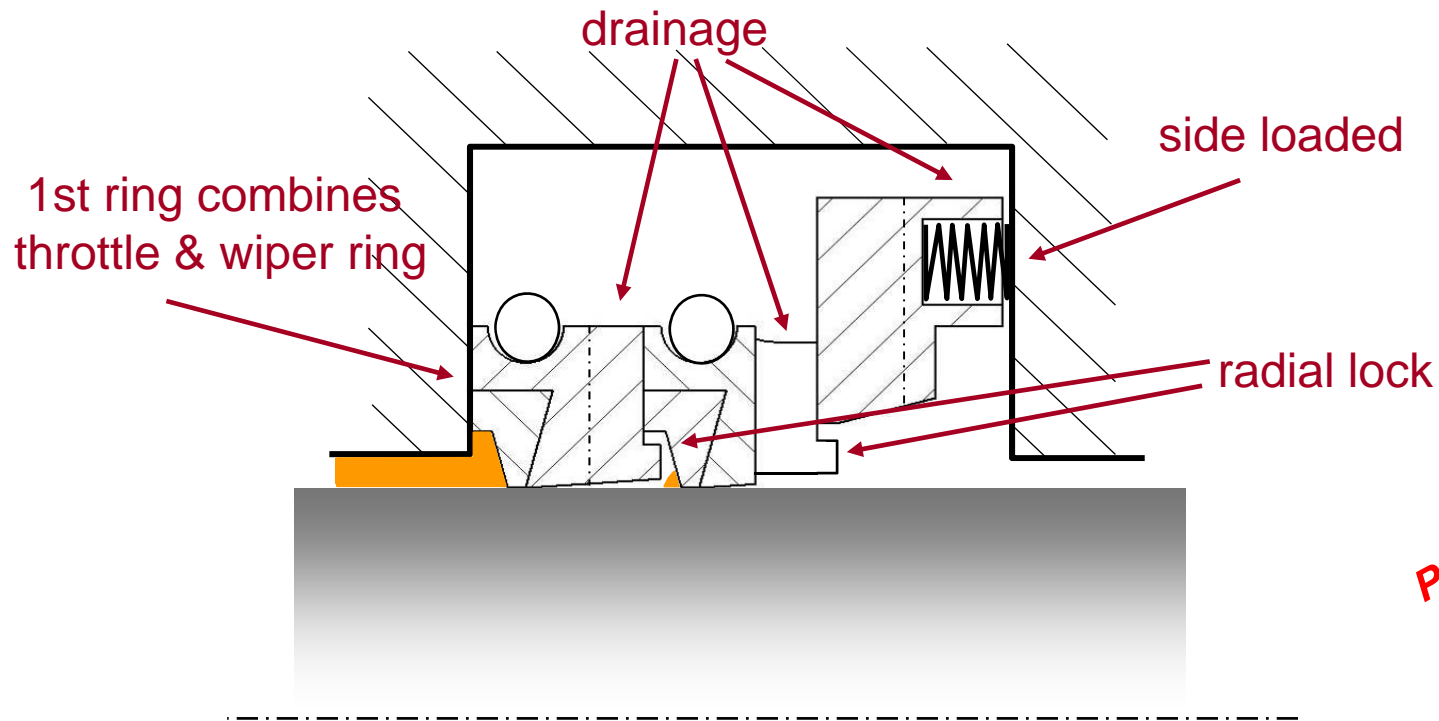


# OFD wiper

- **side loaded** (no shuttling)
- **single cut** (or two piece)
- **radial lock** (rings will not drop into container)
- **non-metallic** (conformity, no scratching)
- **with hydraulic edge for better sealing!!!**



Package

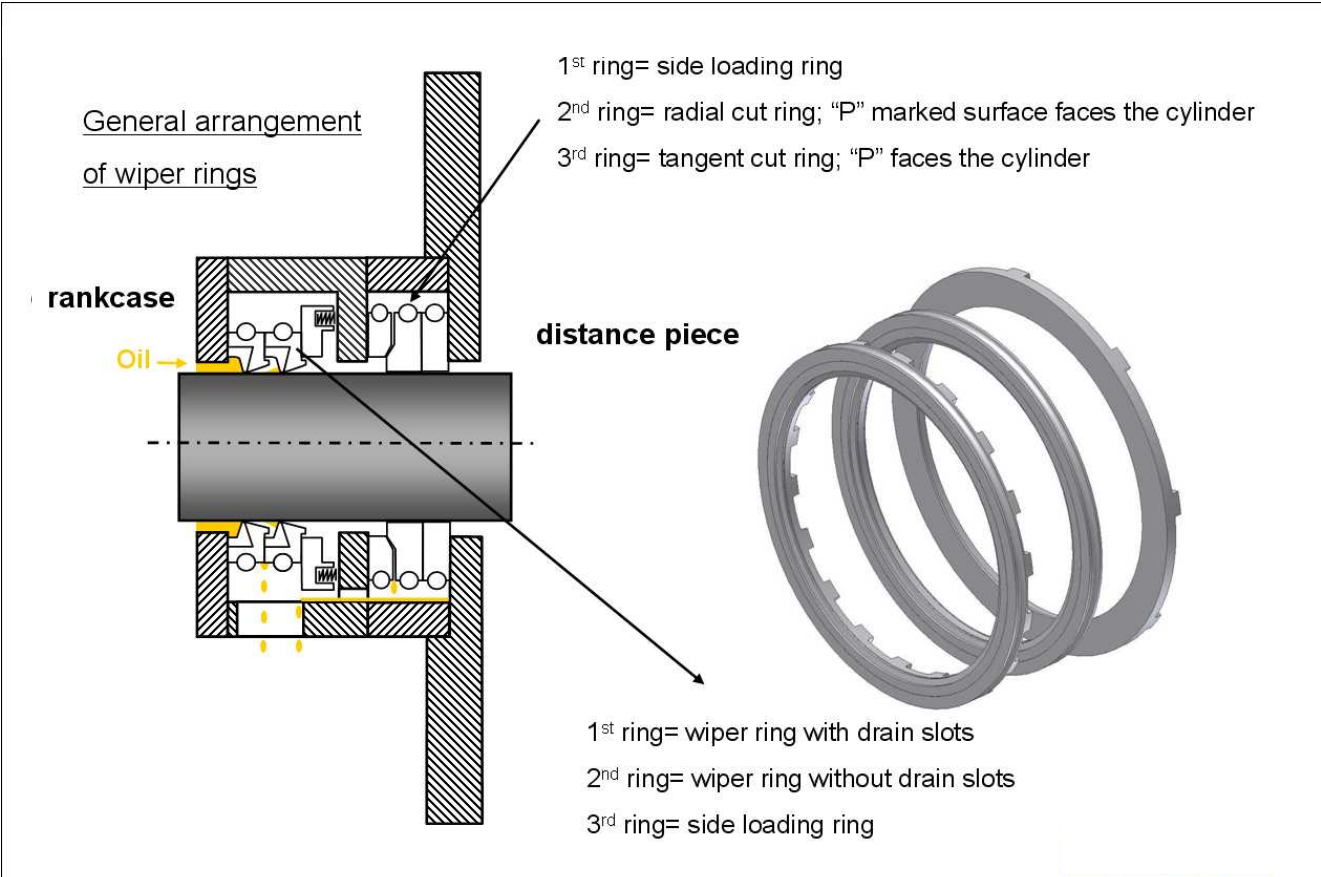


Patent pending!



# OFD Wiper

- arrangement example:



**Typical leakage reduction about 1/2 - 2 gallons/day less oil !**

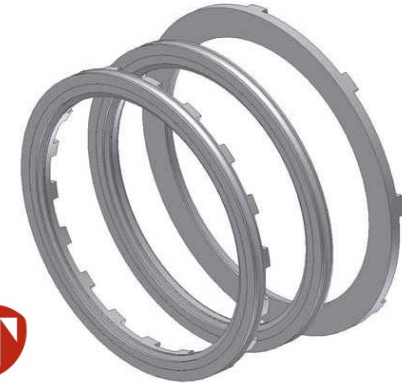


# OFD Oil Wiper

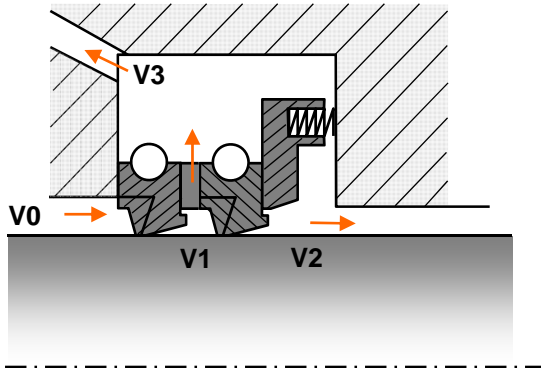
- *Customer tests running well*

- In test labs
- Trouble sites
- Field tests

**BORSIG**



THOMASSEN  
COMPRESSION  
SYSTEMS



**FORNOVOGAS®**  
WE MOVE ENERGY



**DRESSER-RAND**

*Needed Blotting Paper to measure leakage at more than one site*

**HOERBIGER**



# Field Experience

**Customer:** N.N.  
**Location:** Victoria, TX USA  
**Process:** Natural Gas well injection  
**Compressor:** GE H302/A352  
**Stages / Cylinders:** 3/3  
**Pressures:** 150 – 350 – 950 psig  
**Rod diameter:** 1.125" /1.375"  
**rpm / Stroke / Speed :** 1200 ; 3.0" ; 600 ft/min  
**Lubrication:** full lube



**Packing information:**  
**1 X GPPB + 4 X BCD/BKUP + 1 X TT + OFD (H302)**  
**1 X GPPB/BKUP + 3 X BCD + 1 X TT + OFD (A352-1<sup>st</sup> stg)**  
**1 X GPPB/BKUP + 4 X BCD/BKUP + 1 X TT + OFD( 2<sup>nd</sup> stg)**

**General information:** *These units are used for injecting gas into the wells to extract oil out of shale formations at the Eagle Ford Shale. The gas is heavy in condensate which leads to short packing and valve life.*

  
**HOERBIGER**

# Field Experience

<b>Customer:</b>	<i>Dresser Rand / N.N.</i>
<b>Location:</b>	<i>Tinsley Station, Mississippi</i>
<b>Process:</b>	<i>CO<sub>2</sub> Injection</i>
<b>Compressor:</b>	<i>DR HOS6</i>
<b>Stages / Cylinders:</b>	<i>2 / 6</i>
<b>Rod diameter:</b>	<i>2.5" (63.5 mm)</i>
<b>rpm / Stroke / Speed :</b>	<i>900 ; 6.0" ; 900 ft/min</i>
<b>Lubrication:</b>	<i>Full lube</i>
<b>Packing information:</b>	<i>1X OFD wiper + 1X TT pair</i>
<b>General information:</b>	<i>Customer wanted to test latest wiper design to see if they can reduce the oil consumption on these units</i>
<b>Results:</b>	<i>Customer is happy with the performance of the wipers and reports reduced oil consumption on these units</i>



*A DR HHE unit has been working in Canada for 18 months on OFDs,  
no noticeable leakage*







# HOERBIGER

*because performance counts*

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