



2D 150-68 screw pump - new design bearing housings

Industry: Oil + Gas - industrial
Region: Europe
Territory: France
Category: Re-engineering

ClydeUnion Pumps Aftermarket Technical Services team has experience across a range of services on critical rotating and reciprocating equipment to improve operational safety, reliability and efficiency. The re-engineering of the 2D 150-68 screw pump for the oil and gas market is one of our success stories documented in our library of case studies. These case studies highlight the requirement from the customer, how we achieved the goal and the process we followed to deliver the improvements.

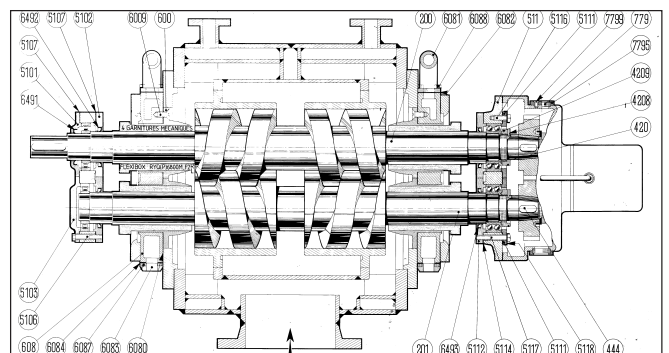
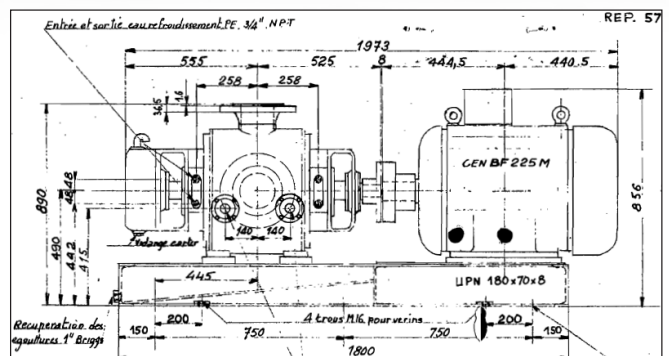
Image left: Cutting tool for machining of parts

Situation

The end user placed a partial order for its bitumen process 2D 150-68 screw pump. The purpose of this order was to perform a pump overhaul, especially focused on the replacement of bearing housings and heating boxes. It emerged that these parts had been damaged over the years and re-machined several times by the end user to allow correct alignment of the shafts.

Challenge

Guinard Pumps were the original pump set packager of this equipment in 1981, however, were not the designer of the screw pump itself. For this part order, ClydeUnion Pumps contacted the original designer to supply bearing housings and heating boxes. In the first instance, a proposal was submitted to and approved by ClydeUnion Pumps. However the original supplier of the 2D 150-68 screw pump discovered later that they were unable to manufacture the cast parts, because the patterns had been destroyed.



Solution

ClydeUnion Pumps, an SPX Brand, proposed to create new mechanically welded bearing housings and heating boxes based on measurements carried out on site and on drawings provided by the designer of screw pumps to ClydeUnion Pumps. The choice of mechanically welded parts was made to avoid an influence on price due to creation of new patterns but mainly to allow the delivery of parts to the end user within the contractual date.

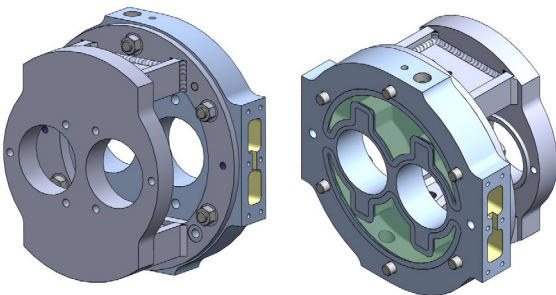
The re-design of these parts also allowed ClydeUnion Pumps to take into account the requirements formulated by the end user maintenance team to improve the alignment of bearing housings on the pump casing. Indeed the surfaces on the pump casing were also deteriorated and did not allow correct shaft alignment.

The following work was undertaken and completed by ClydeUnion Pumps:

- Meeting with maintenance team and measurement on-site
- Re-design of mechanically welded bearing housings and stuffing boxes
- Manufacturing procedures created with CAM (Computer Aided Manufacturing)

Operational improvements

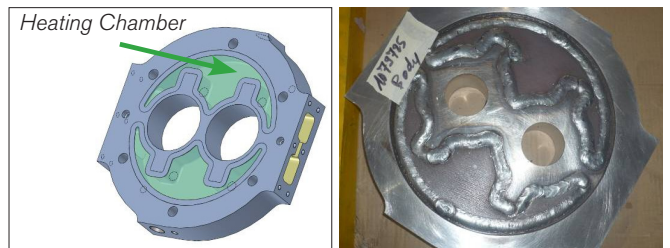
- Improved screw alignment
- Improved mechanical seal accessibility
- Reduced parts delivery time for other screw pumps to upgrade (1 identical pump in spare + 2 pumps without heating boxes)



- Purchase of specific cutting tools for machining of parts



- Welding of covers for heating chambers



- Hydrostatic test of heating boxes
- Assembly of bearing housings with heating boxes to realise final machining of bores

Financial illustration

- **Investment cost of parts supplied**
 - 2 bearing housings + 2 cooling boxes for DE and NDE side \approx 19,000 Euros
- **Savings**
 - Cost due to production losses in case of failure of spare pump (spare pump to be overhauled too due to its advanced deterioration condition)
 - Cost linked to replacement by new pumps 70,000 Euros
 - Savings due to mechanically welded parts design choice (no patterns costs, decrease of delivery time)

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