

TECALEX: Most experienced manufacturer with more than 50 compact front loading presses in the world.

Before designing the first extrusion press in the beginning of the 80's TECALEX carried out intensive market studies in order to detect, what should be the right design for an extrusion press. The main features were to build a compact press with short dead cycle times. Two main characteristics were chosen:

- Tandem-Cylinder-Design (patented) and
- Front-loading press.



Fig. 1) 2.800 Tm extrusion press

The tandem cylinder consists of 2 cylinders on 1 axis with different diameters. This allows high speed of the press during the dead cycle, acting only the small cylinder. Both cylinders work during extrusion.

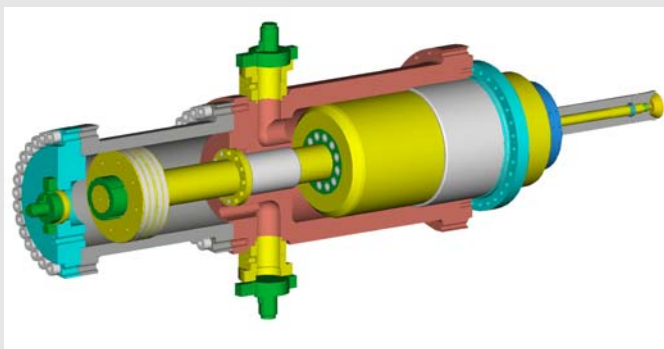
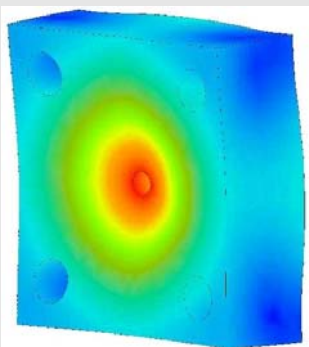


Fig. 2) Tandem cylinder (Stem to the right)



The cylinder diameter is smaller which reduces the distance of the tie rods. The bending of the front plate will be reduced. In addition, the alignment of the stem is more precise than that of conventional design.

Fig. 3) FEM Study front plate

FRONT LOADING PRINCIPLE

The front-loading of the billet is another important feature. Fig. 4 shows the principle of front loading (lower drawing) against conventional loading (upper drawing).

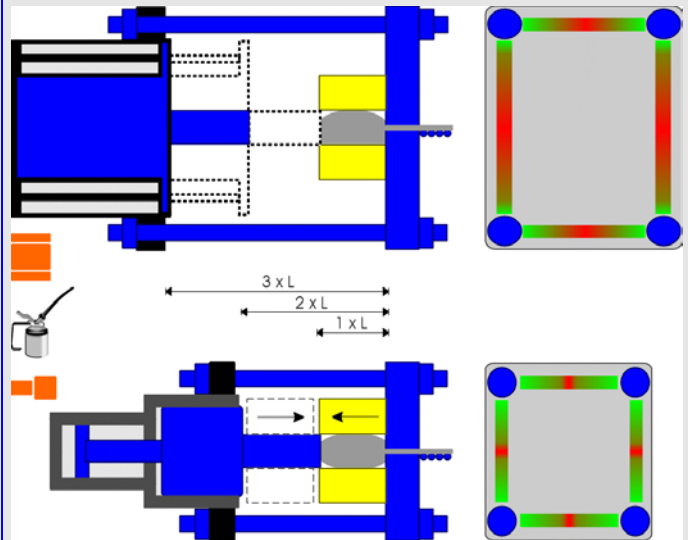


Fig. 4) Loading principles back loading (upper) and front loading (lower position)

The advantages of front loading are very important:

- Symmetrical upsetting of the billet minimizes trapped air and radial stress and allows an uniform flow of aluminium during extrusion.
- 50 % less cylinder stroke.
- Less column length.
- Reduced bending of the front plate.
- Less structural stress, thus increasing the life of major press parts.
- Optimized dead cycle time.
- Less energy consumption and less oil volume in cylinders.

Fig. 5) illustrates the difference between front loading (lower drawing) against conventional loading (upper drawing) concerning the billet position within the container.

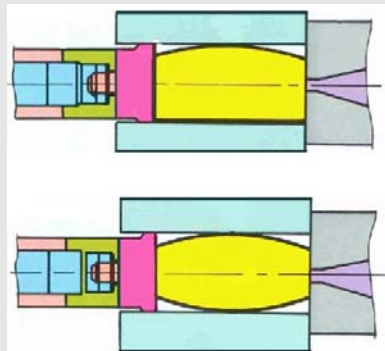


Fig. 5) Billet position in back loading (upper) and frontloading (lower position)

- The front loaded billet is in the press centre line, thus no perpendicular stresses.
- Less friction occurs between container and billet.
- Billet deformation is symmetric, no press bending or die uplift.

In the 80's, many press manufacturers did not want to build front loading presses. The main problem was the 2-piece billet problem, to clamp a 2-piece billet between stem and die. The billet risked falling down, during loading.

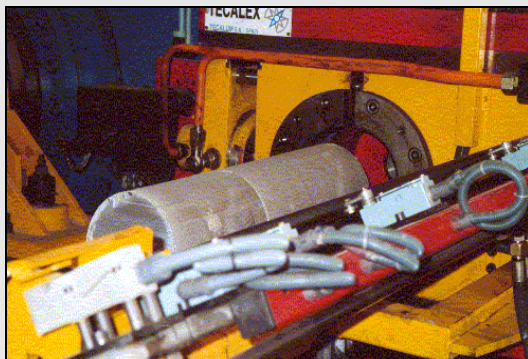


Fig. 6) 2 pieces in the press feeder

Two important developments were necessary to make frontloading safe and flexible:

A hot-shear with an optimised cut had to be developed, guaranteeing the best possible junction of the 2-piece billet gap.



Fig. 7) TECALEX High-precision Hot-Shear

Another important design feature is the telescopic loading shell on the press feeder, allowing fully automatic feeding of 2 piece billets. The following figures show the principle of the movable shell.

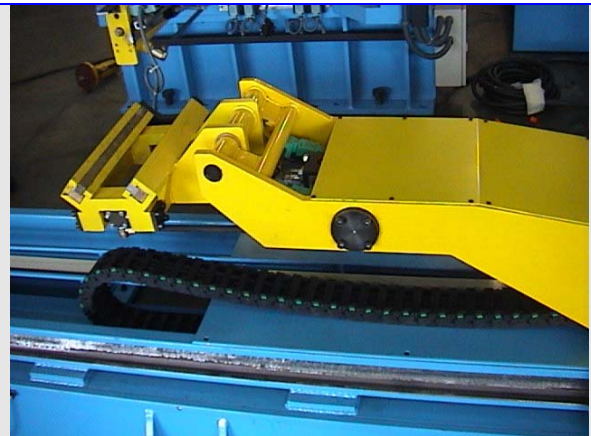


Fig. 8) Press feeder with movable shell

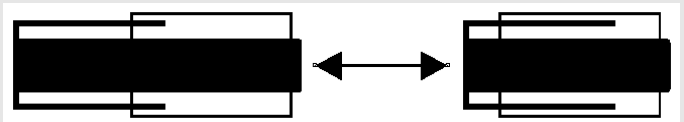


Fig. 9) Principle of movable shell

Before receiving the billet from the hot-shear, the shell is opened to the maximum length. Afterwards, during the lubrication process, the length of the shell is adapted exactly to the billet length.

Both design features, tandem and front loading, were consequently applied and improved from 1984 onwards in presses from 1.000 to 2.800 MT.

In the past 20 years, TECALEX has installed more than 50 short-stroke presses with front-loading design and tandem-cylinder, leading to a press of much customer satisfaction.

In addition to the above mentioned extrusion press, TECALEX produces all kind of up- and downstream extrusion equipment, adapted perfectly to the customers requirements and any existing plant layout.



For further information or for any enquiries regarding a specific layout for your extrusion plant, please contact:

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We look forward to your call.