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Sideboom Kit
For
Hydraulic Excavators



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Background



Pipelaying has always been a very special job, and Pipeline Contractors are very specialized and unique, with specific expertise and savoir-faire.

Manufacturers of Pipeline equipment have followed the requirements set forth by Operators and Contractors, designing and developing products which are fully dedicated to the Pipeline application, as well as providing traditional earthmoving machines for all those operations that involve right-of-way preparation and maintenance, trenching and back-filling.

On Pipeline jobsite, we normally see Pipelayers – machines which are derived from the traditional track-type bulldozer and designed to meet the specific requirement of laying the pipe inside the trench with high speed and efficiency, and in a safe and comfortable manner.



But the machine most commonly found on on-shore cross-country Pipeline projects is by far the tracked Excavator. These machines have the primary task of digging the trench, in the fastest and most economical way. With the advent of hydraulics in the late sixties, Excavators have further extended their range of application and can now perform economically in the hardest applications, while providing the reliability that Contractors seek even in the most remote locations, all over the world.



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Problem & Opportunity



As oil and gas consumption increases, Pipeline construction and maintenance has become one of the driving industries in the world's economy.

Operators and Contractors are today more demanding and focused on improving their efficiency and increasing safety and respect for the environment in their operations.

The search for efficiency in particular is calling for tremendous efforts to reduce operational costs, hence a better utilization of assets.

My idea has always been to create something innovative that could bring progress and changes to improve the working conditions and productivity of our sector. That is the background behind the idea of using the Excavator to create a new type of machine, that could at the same time reduce the costs for the Contractors and increase their efficiency in some specific portions of their operations.



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The Concept



When used in confined areas or on tie-ins, or when mobility of equipment is a requirement and job-sites present features such as electric power lines or bridges, the use of the traditional Pipelayer becomes awkward and unpractical.

The product which I have designed combines the features of transportability typical of an Excavator with the lifting performance required of a Pipelayer.

In addition, it offers a quiet, comfortable and safe environment for the operator, with great visibility on the working area

And finally, it provides Contractors with the possibility of using an Excavator in two different applications, as a trenching machine and as a Pipalayer, hence enhancing their utilization of machines.

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The Solution



1. A main structure is installed in place of the original boom, using the same pins. This structure supports the two hydraulic winches that drive the boom and the block of the hoisting hook.



2. The structure also supports a pipelayer-type Sideboom. The original hydraulic system is maintained, with only slight modifications. This way, the operator can use the Sideboom functions with the original joy sticks of the machine.



3. In the working position, the upper structure is rotated by 90 degrees and the Kit structure sits directly on the undercarriage, hence transferring the loads directly into the ground.



4. In the transport position, the upper structure is aligned with the undercarriage and the Sideboom Kit can be lowered for loading the machine onto a truck.



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Additional Features

Replacing the original boom and stick of the excavator with our Sideboom Kit only requires about 8 hours of work by two technicians, with the aid of hoisting equipment.



The operator enjoys a modern, comfortable, ergonomic and quiet working environment.

In addition, his visibility on the working area is outstanding. Hence, he is also safer and more productive.



The fact that the machine can be shipped without having to dismantle the boom and counterweights, as for traditional Pipelayers, is an important advantage that, in addition to saving time, makes it possible to achieve considerable savings on the costs of labor and equipment such as truck cranes. These advantages are particularly important in the "tie-in" stage when, especially on European worksites, it is necessary to load the pipe layers several times a day.



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Summary of Benefits

Summing up, the advantages of this machine are as follows:

- higher utilization of equipment, as the Excavator can be used both in trenching and in Pipelaying
- savings on initial investment
- reliability of the machine
- comfort and safety for the operator
- modern, environmental friendly and EC compliant machines
- ease of transportation
- savings in transportation time and costs (less assembly/disassembly) = more productivity





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Status



We have developed a few prototype units of the Sideboom Kits, and are cooperating with a leading manufacturer of earthmoving equipment in the development and validation of this new and innovative concept.

Prototypes have been working for over one year in several job-sites in various countries, and have received very positive comments by users and contractors.

We plan to bring this product to the market in the near future, to meet the expectations of our customers who are looking for ways to reduce the cost and increase the efficiency of their Pipeline operations.

Note: The product we have developed and described in this paper is covered by international Patents. The content of this presentation is strictly confidential and reserved for the BP-IPLOCA 2005 Award.



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