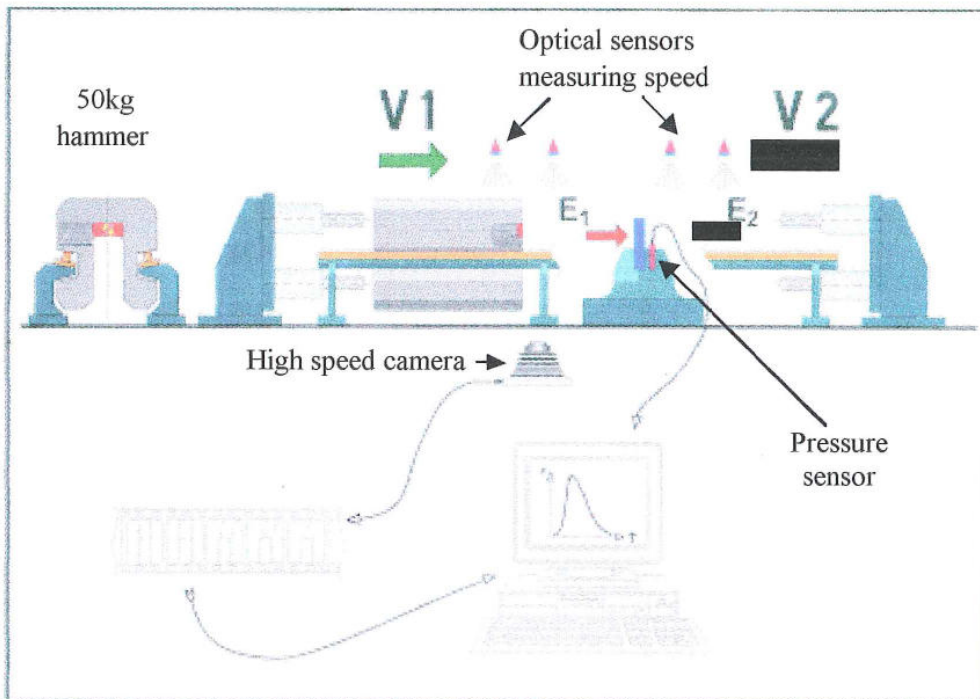


PRINCIPE DE LA MACHINE DE MESURE INDUSTRIELLE K_{1C}

The aim of the project is to develop a new method for the measurement of K_{1C} that will allow the measurement of this very important parameter by SMEs on a day-to-day basis. This technique will be based on an innovative device developed during the project. The principle of the device is presented on the following scheme:



The functioning of the device:

A mass is thrown on the sample, with a controlled speed. This speed will be controlled thanks to 2 electrical engines and could vary between 2 and 6 m/s.

Two optical sensors, before and after the impact, enable to know exactly the initial and final speed.

An optical ultra-rapid camera records information about the propagation of the crack versus time.

The attachment unit has a pressure sensor, which records the fluctuation of the material resistance.

All the data are sent to a personal computer and analysed.

MACHINE D'ESSAI PROTOTYPE DE MESURE DU K1C



EXEMPLE DE RESULTATS OBTENUS GRACE A LA MACHINE D'ESSAI DE MESURE DU K1C :
PROJET DE NORME EUROPEENNE POUR LA STRUCTURE D'EMPLOI DE L'ACIER H13

Caractérisation état structural d'emploi

Microscopie Optique

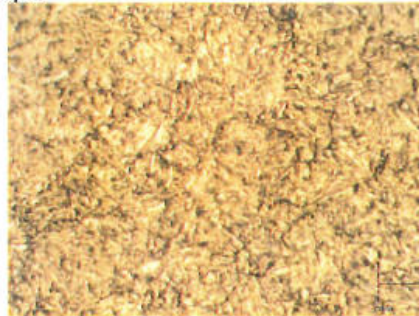
Micrographie MEB

Structure bonne

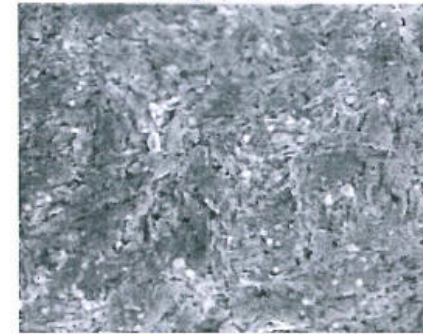
KV > 18 J
 $K_{1C} > 50 \text{ MPa.m}^{1/2}$



G = 50



G = 1000

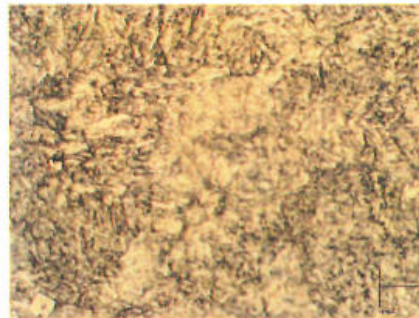


Structure acceptable

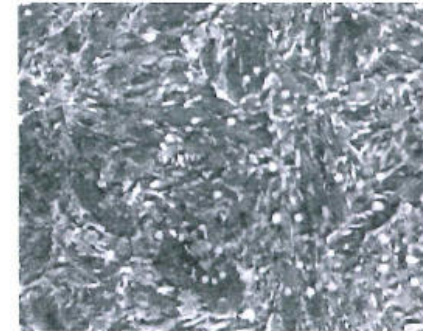
KV = 15 J min.
 $K_{1C} = 44 \text{ MPa.m}^{1/2}$



G = 50



G = 1000

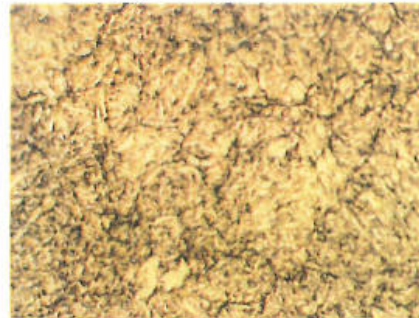


Structure inacceptable

KV < 15 J
 $K_{1C} < 40 \text{ MPa.m}^{1/2}$



G = 50



G = 1000

