

FUNDAMENTAL MANUFACTURING PROCESSES

Turning & The Lathe

SCENE 1.

TU76A, CGS: Cutting Tool Factors
white text, centered on background
FMP01B, motion background

SCENE 2.

TU77A, **FTD012**, **11:29:45:00-11:30:00:00**
turning operation with long, stringy
chips
TU77B, **SME2661**, **02:15:01:00-02:15:18:00**
turning operation with good chip flow
TU77C, **FMP002**, **02:15:21:00-02:15:47:00**
long chip being created and removed

NARRATION (VO) :

THE TURNING OPERATION AND CUTTING TOOL
ITSELF INFLUENCES THE PRODUCTION OF CHIPS,
WHICH CAN BE LONG AND DIFFICULT TO HANDLE.
THUS IT IS IMPORTANT TO SELECT TOOLS THAT
BREAK CHIPS BEFORE THEY GET TOO LONG.
SMALL CHIPS ARE EASILY CONTROLLED AND
COLLECTED. LONG STRINGY CHIPS CAN SNARL
AND CAUSE WORKPIECE DAMAGE, AMONG OTHER
PROBLEMS.

SCENE 3.

TU78A, **FTD004**, **04:26:16:00-04:26:34:00**
lathe facing operation
TU78B, **FTD012**, **11:17:45:00-11:18:03:00**
zoom out, chipbreaking turning operation

NARRATION (VO) :

THE CHOICE OF CUTTING TOOL IS ALSO
INFLUENCED BY THE TOUGHER, HARDER ALLOY
WORKPIECES THAT ARE BEING TURNED. COMMON
ALLOYS AND STEELS WITH HARDNESS OF UP TO
45 ROCKWELL 'C' CAN BE TURNED WITH
STANDARD CARBIDE OR COATED-CARBIDE CUTTING
TOOLS.

SCENE 4.

TU79A, **SME2661**, **02:23:47:00-02:24:27:00**
cbn machining alloy steels
TU79B, CGS: Ceramics
Polycrystalline Diamond/PCD
Cubic Boron Nitride/CBN
TU79C, **FTD022**, **02:18:44:00-02:18:57:00**
pcd insert being used to turn hard

NARRATION (VO) :

HOWEVER, HARDENED STEEL, STAINLESS STEEL,
AND NICKEL SUPERALLOYS MAY REQUIRE
ALTERNATIVE CUTTING TOOL INSERT MATERIALS,

material

TU79D, SME2662, 03:04:51:00-03:05:13:00
machining with round cbn insert

SUCH AS CERAMICS, POLY-CRYSTALLINE
DIAMOND, OR 'PCD', OR CUBIC BORON NITRIDE,
OR 'CBN'. TURNING WITH A CUTTING EDGE MADE
FROM ONE OF THESE MATERIALS CAN ELIMINATE
THE NEED FOR GRINDING OR OTHER SECONDARY
OPERATIONS. ALTHOUGH THEY CAN BE
EXPENSIVE, THESE CUTTING TOOLS ALSO LAST
LONGER AND CUT METAL FASTER, COMPENSATING
FOR THEIR COST.

SCENE 5.

TU80A, SME2673, 07:17:14:00-07:17:24:00
55 degree toolholder
TU80B, SME2673, 07:15:14:00-07:15:24:00
triangle toolholder
TU80C, SME2673, 07:16:00:00-07:16:08:00
round tool holder
TU80D, SME2673, 07:17:43:00-07:17:53:00
trigon toolholder
TU80E, SME2673, 07:18:13:00-07:18:37:00
35 degree toolholder
TU80F, SME2537, 01:06:52:00-01:07:03:00
55 degree insert contouring

NARRATION (VO) :

THE GEOMETRY, OR SHAPE, OF THE CUTTING
TOOL ALSO PLAYS A ROLE IN DETERMINING
CUTTING SPEEDS AND SURFACE FINISH, WITH
'WIPER' AND MULTI-CORNER GEOMETRIES
BECOMING POPULAR FOR DIFFICULT TURNING
SITUATIONS.

SCENE 6.

TU81A, SME2650, 01:04:30:00-01:04:48:00
coolant used on lathe
TU81B, SME2650, 01:09:20:00-01:09:50:00
cast iron turning
TU81C, SME2660, 01:25:03:00-01:25:22:00
cast iron turning

NARRATION (VO) :

MANY TURNING OPERATIONS ARE SUPPORTED BY
THE USE OF CUTTING FLUID, WHICH COOLS THE
WORK AND CUTTING TOOL, FLUSHES AWAY CHIPS,
AND LUBRICATES THE POINT WHERE TOOL AND
CHIP MEET. HOWEVER, THE TURNING OF CAST
IRON AND OTHER HARD MATERIALS IS TYPICALLY
PERFORMED 'DRY,' WITHOUT CUTTING FLUID.

--- FADE TO BLACK ---