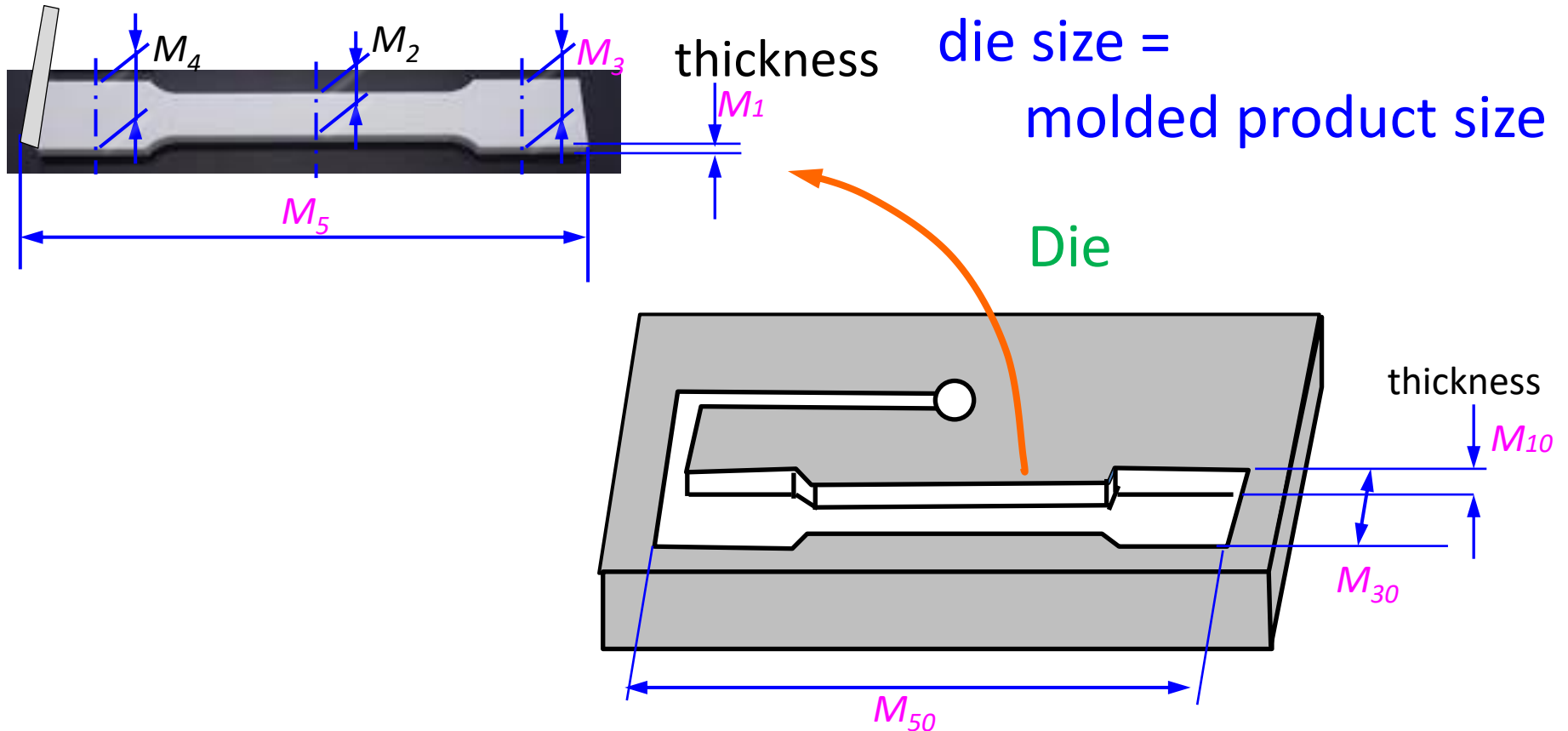# Setting of molding conditions for dumbbell-shaped molded products

Objective function : Molding dimension is the intended dimension
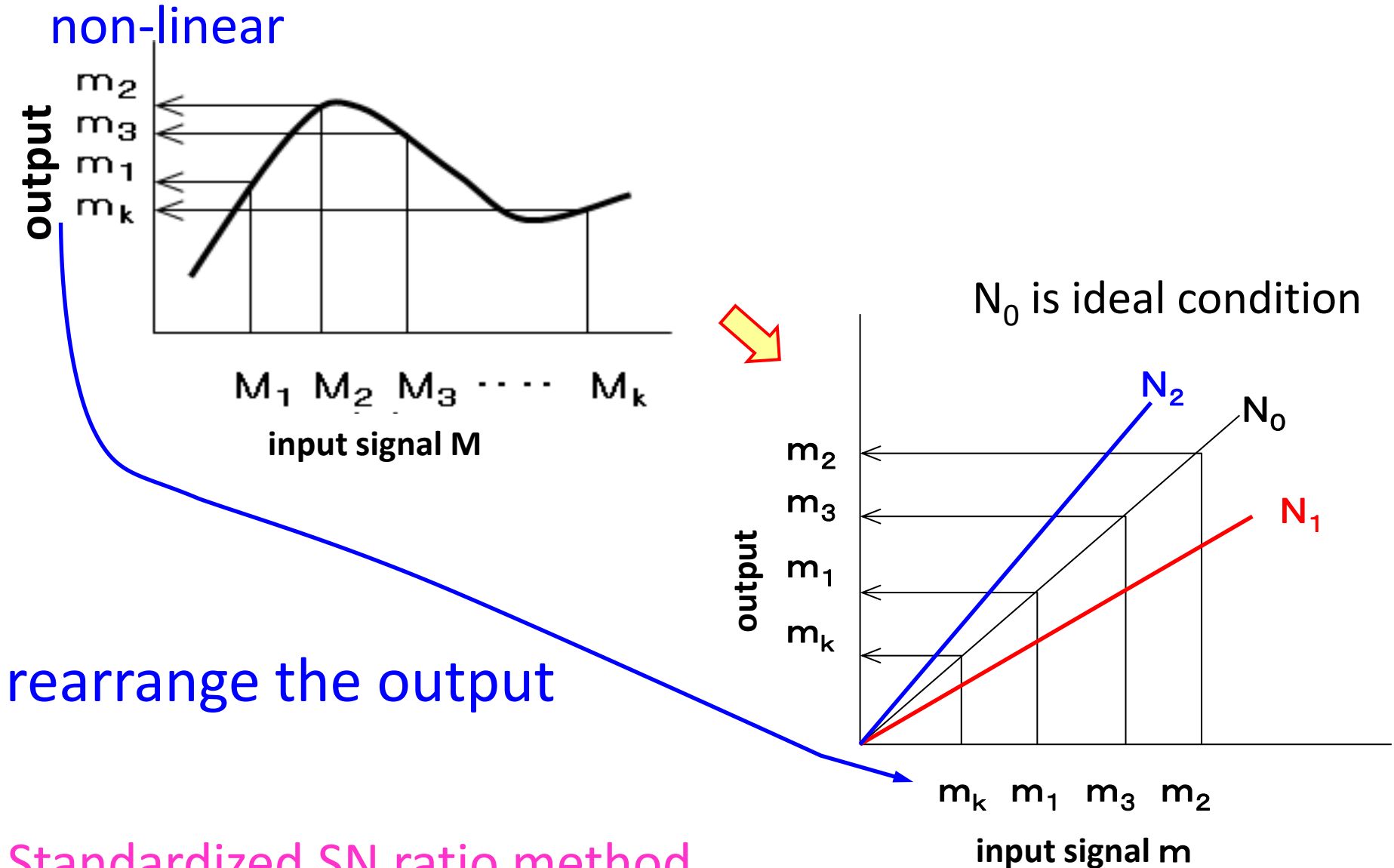
Generic function : Molding dimension is proportional to mold dimension (transferability)
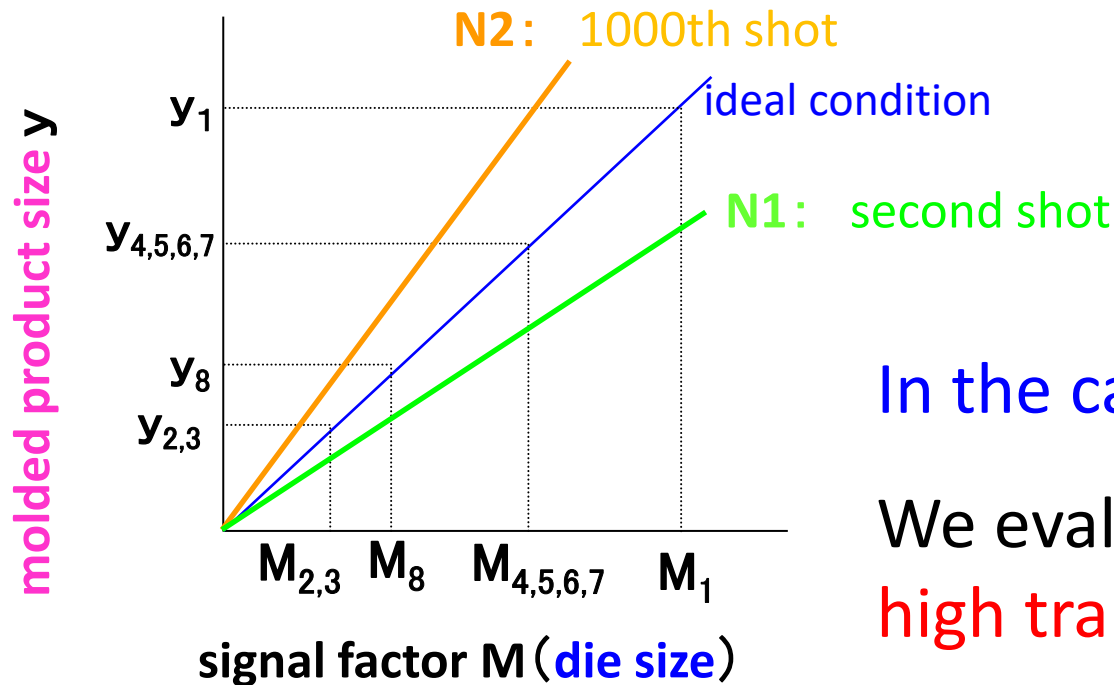
Molded product

Q. What is ideal?

die size =
 molded product size

M_4 M_2 M_3

thickness
M_1

M_5

Die

thickness
M_{10}

M_{30}

M_{50}

Q. How should we do if the output is non-linear or transferable with respect to the input signal?

non-linear

input signal M

N_0 is ideal condition

rearrange the output

Standardized SN ratio method

input signal m

Transferability　　Input=die size、Output=molded product size

die

M_5　M_6　M_8　M_7　M_3　M_4　M_2　M_1

product

y_5　y_6　y_8　y_7　y_3　y_4　y_2　y_1

molded product size y

N2： 1000th shot

ideal condition

N1： second shot

y_1

$y_{4,5,6,7}$

y_8

$y_{2,3}$

$M_{2,3}$　M_8　$M_{4,5,6,7}$　M_1

signal factor M（die size）
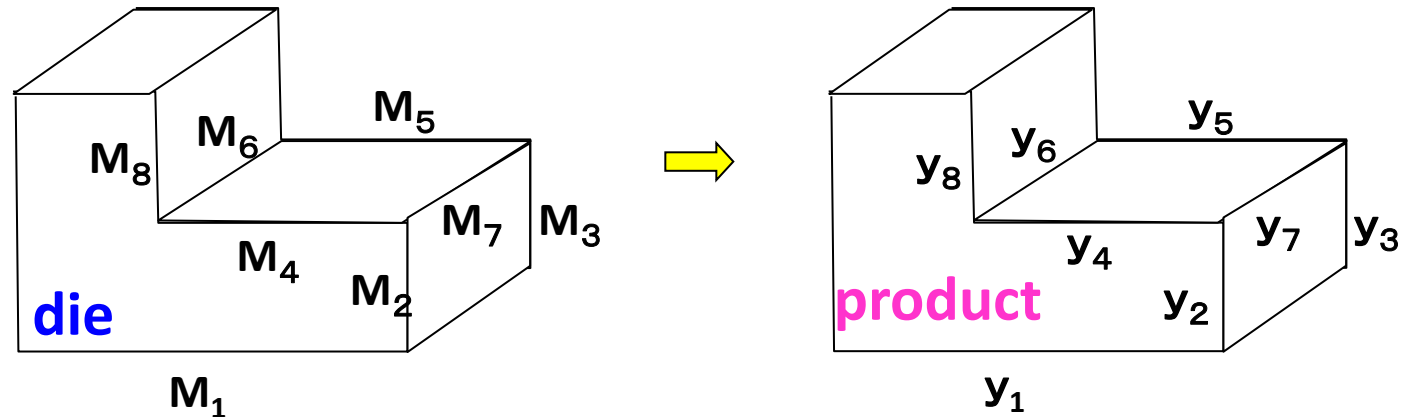
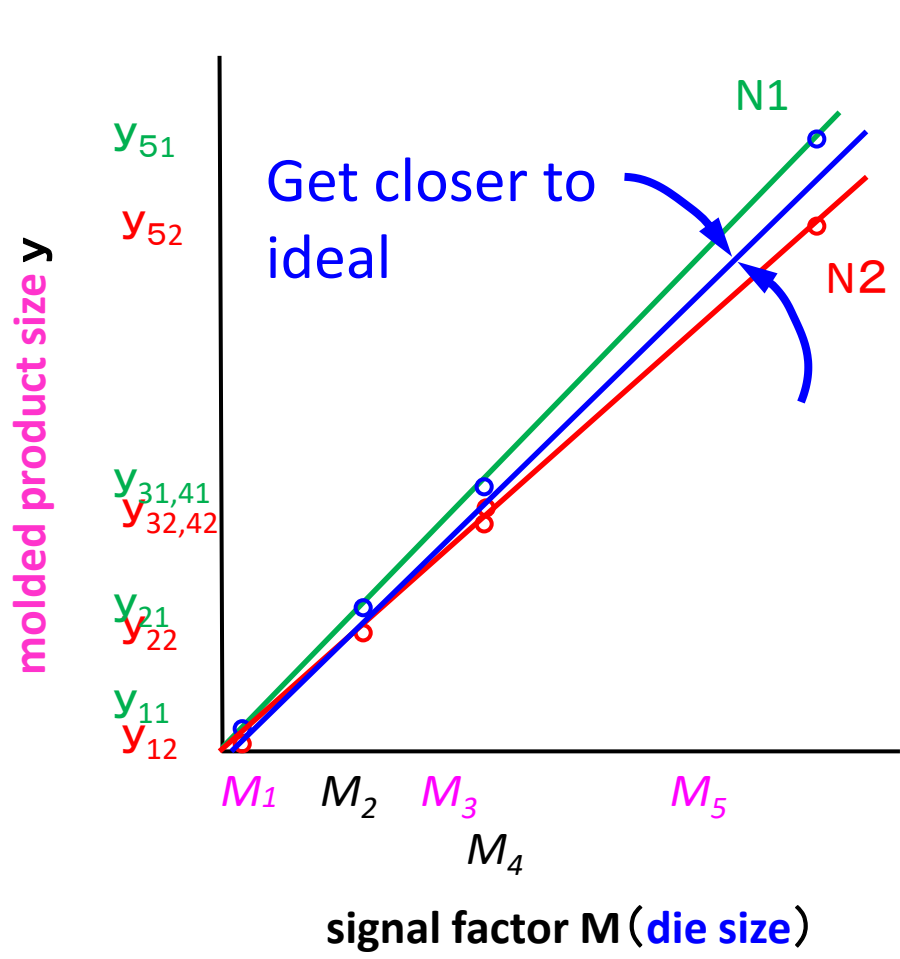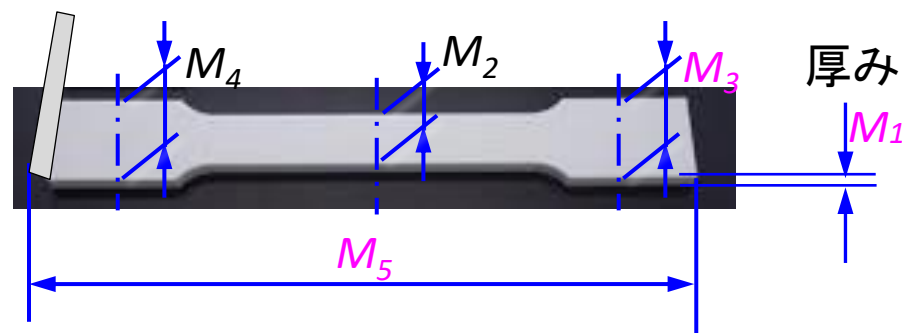In the case of molding,

We evaluate conditions with high transfer SN ratio

we set the signal factor M to the ideal mold size.

die size = molded product size

molded product size **y**

y_{51}

y_{52}

Get closer to ideal

N1

N2

$y_{31,41}$
$y_{32,42}$

y_{21}
y_{22}

y_{11}
y_{12}

M_1 M_2 M_3 M_5
M_4

signal factor M（die size）

M_4 M_2 M_3 厚み
M_1
M_5

Mold for condition of error factors N1 and N2 and then measure some molding size of sample

例   **Measure sizes of M$_1$、 M$_3$and M$_5$**