Licensor, Engineering Cooperation

It is to the long-term interest of all if both parties bring their best knowledge

By J. M. DELEUZE* and C. W. WEIL**

A description of the ties established during two decades between *PRAYON* (process owner) and *COPPEE-RUST* (an engineering company) might serve a double objective:

1. Describe a mode of cooperation between a process owner and an engineering company. We use the word licensor for process owner, the word licensee for the engineering company, who is empowered to sub-license a client.

2. Indicate how that cooperation could change under the influence of the new environment which is unfolding for transfer of technology to countries other than the industrialized or free — enterprise countries.

We include among these countries following current nomenclature: countries in process of industrialization or development, countries which are less advanced, and countries with state-owned enterprises, for example East-European countries.

We do not have enough space to examine all the ways in which cooperation between companies like ours changes depending on the quality of the client or on the scope of the project which the client envisages, which may range from consulting engineering, or project management, or providing turn-key plant, up to operating a producing plant and selling product from it. We will however indicate some general trends with regard to new needs of the market.

Fig. 1 shows the results of the cooperation between my company and *PRAYON*. It shows two phosphoric acid units constructed in Spain following Prayon technology, each producing 350 tons/day P_2O_5. As you see it occupies a ground area of about 60 meters by 30 meters. Investment is about $10 million. As an engineering company we have handled 10 similar projects; some larger, some smaller, while *PRAYON* has licensed its technology world-wide for nearly 120 projects.

DESCRIPTION OF A MODE OF COOPERATION

A. Preamble

1. **Limits according to quality of process**. We are assuming that the process is valuable in the economic sense. We exclude therefore experimental processes or processes in developmental stages which in all honesty a process owner and engineering firm should exclude from their activity in many countries.

The above comment lets us highlight the considerable damage that a one-shot licensor or opportunistic seller can create to the free-business system. Their irresponsible practices make the task easier for certain authors who set out to disparage the system of technology exchange between countries of differing economic levels. These authors instead of helping establish a progressive but realistic spirit between these countries seem bent on destroying any improvement in new economic relations.

From LES International Conference, Paris

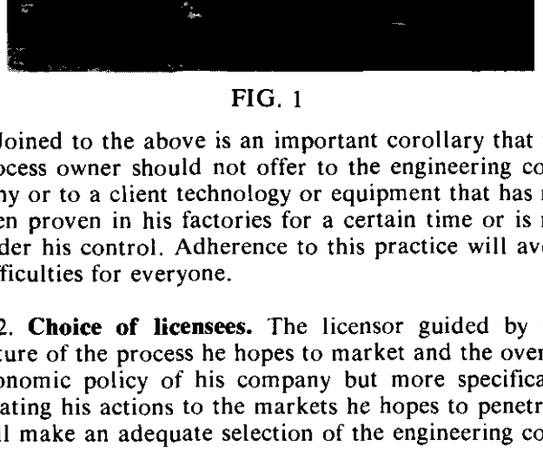

FIG. 1

Joined to the above is an important corollary that the process owner should not offer to the engineering company or to a client technology or equipment that has not been proven in his factories for a certain time or is not under his control. Adherence to this practice will avoid difficulties for everyone.

2. **Choice of licensees.** The licensor guided by the nature of the process he hopes to market and the overall economic policy of his company but more specifically relating his actions to the markets he hopes to penetrate will make an adequate selection of the engineering company.

His choice is made not only taking into account the size of the engineering company but also its position internationally, its references and its reputation in the domain envisaged.

3. **Policy of licensor.** This leads us immediately to consider an aspect of prime importance between the parties: Should the licensor follow the system: complete exclusivity or partial exclusivity, or should he leave his process open to any engineering company.

The philosophy of process licensors is very different in

**Director, Advisor, Societe' de Prayon, Brussels, Belgium.*
***Licensing Officer, Coppee-Rust, Brussels, Belgium.*

this respect. In effect, it can depend on the kind of process, of its intrinsic character, and the probability of repeat business. This decision sometimes reflects an initial situation which is never re-examined: licensing is sometimes considered as providing only incremental income, a marginal activity which upsets the routine of production and not deserving of top-level planning.

Based on our experience, we opt for the second solution, namely an exclusivity for the country or homogenous territory in which the engineering company has its principal office. This exclusivity must however be modified in the exceptional case (a possibility which has to be headed off by the licensor) when the final client refuses to work with the engineering company.

4. **Limitation of number of licensees.** The above practice combines with the principle of choosing for an extended period a limited number of engineering companies and allowing them to compete outside their exclusive territory more or less freely in other world areas.

The exclusivity for a limited geographical area allows the engineering company to mount a promotional effort which becomes more rewarding the better the company makes itself known. The engineering company will have to justify to the licensor its quasi-monopolistic position by offering the best possible services. Its technical reputation — and above all a reputation for honesty — provides the best chance for its survival and allows it to form a base for diffusion of processes.

Limitation of the number of licencees is also a condition which appears to us essential for various other reasons and in the interest of both parties.

a) *On the commercial plan for the licensor.* He sees his licensees operate with more or less a continuous workload permitting the engineer to maintain trained cadres used to the process and to effect optimization and improvements to the process. There will result immediately and certainly for the licensor an economy in aiding the advancement of the persons of the engineering company's team. Everyone knows what it costs to thoroughly train new teams, not to mention the interruption caused in normal factory production. We observe that the licensor who avoids long-term association with engineering companies lacks aggressiveness, complete geographical prospectus, and continuity in his process promotion efforts.

b) *Legal plan.* One recognizes that, while legal means of safeguarding widespread dissemination of technology are necessary, they become relatively ineffective when more licensees are involved.

B. Example of Cooperation Between a Licensor and an Engineering Company

With the aim of permitting the licensee to offer, then to sell and supply the installation, the licensor assures the licensee of the following services:

1) Supply of documents and information of "Basic Process Engineering" according to the list shown on Table I.

2) Aid in defending the process in front of the client.

3) Aid in theoretical and practical instruction of accredited client personnel in the plants of the licensor, according to the special conditions of each case.

4) Aid in the examination of the completed plant, its start-up and verification of guarantees of performance.

5) At the same time, aid in training of client's personnel in client's plant.

6) Depending on the client's needs, aid in the acceptance tests.

7) During a few years from the acceptance of the plant, the licensor will study production reports in order to identify for the client and licensee irregularities in the operation of the plant.

The licensor should think to provide pilot-plant services to test client raw materials, and to permit improvements or suggestions of the engineer to be tried in his factory.

C. Realization of Cooperation

1. **Objective.** The common long-term interest of both parties is the fame of the process, its reliability, maintaining or enhancing its economic value and its up-to-dateness. Each of the partners have a role to play bringing to each other the best of their knowledge. Coming from the theory that the know-how of the process technology is ongoing, being constantly modified and from this fact constantly improved, it is evident that observations and new results of each partner will have an osmotic effect over a period of time.

2. **Method.** Integrated collaboration between the personnel of licensor and licensee is of prime importance not only for process technology subjects but including production methods, maintenance, research and development, and marketing.

A "team" spirit must be maintained. This is strengthened during the course of work not only at the home offices but also during trips abroad involving negotiations with the potential client. When the plant is being built or during testing, start-up, or commissioning periods, many opportunities for good camaraderie occur. A common spirit to work together and pride in a job well done emerge particularly when difficulties arise.

The engineering company will bring to the licensor different concepts coming from its multi-discipline approach giving the licensor a new challenge to solve new problems (think for a minute about plants to be located in extreme altitude, or with different quality of water).

As a base, it is essential to train the team selected by the engineering company in the plants of the licensor in the process, its difficulties, its technology. We think that it is necessary not only to provide for training of technicians, and project managers, but also the commercial people from the engineering company. It is not without interest that the draftsmen of the engineering company visit the plant of the licensor to make contact with their counterparts in the licensor's organization. It is essential that the people learn about each other.

With regard to the training of a start-up team, a crucial element for the success of the process, we should like to mention a point of difference which arises many times: Start-up and demonstration of guarantees of the process — are they within the province of the licensor or of the specialized personnel of the engineering company.

Personally, we prefer a mixed system. That is, start-up and tests should be the responsibility of engineers and technicians of the engineering firm, with the object in mind that they are totally involved. The engineers of the licensor should intervene only in case of difficulty or in support of the engineer.

STEPS	Pre-project	Project	Execution
1. DEFINITION OF PROJECT INDICATING BATTERY LIMITS	•	•	Revised
2. SELECTION OF DATA USED FOR STUDY			
– reply of questionnaire	•	•	Revised
– selection of special process data e.g. emission controlr equirements raw material characteristics etc.	•	•	Revised
– data for computer program	•	•	Revised
3. PROCESS FLOW SHEETS			
– block diagram of equipment (numbered and listed)	•		
– equipment, lines with material of construction, instruments		•	Revised
– as above but including line dimensions, and main control valves			Revised
4. MASS BALANCE SHOWING UNIT FLOWS	•	•	Revised
5. TABLE IN WHICH THE UNIT FLOWS ARE TRANSFORMED INTO HOURLY FLOWS CORRESPONDING TO NOMINAL CAPACITY, THEN SCALED-UP FLOWS	•	•	Revised
6. CALCULATION OF PARAMETERS TO ESTABLISH EQUIPMENT SPECIFICATIONS			
a) to show process water flow and cooling water, electric power, and steam	•		
b) final		•	Revised
7. WATER BALANCE (but not equipment wash-out)		•	Revised
8. ELECTRICAL MOTOR LIST TO GET ESTIMATE OF ENERGY CONSUMPTION		•	Revised
9. LIST OF MAJOR EQUIPMENT SHOWING MAIN FEATURES AND MATERIALS OF CONSTRUCTION	•		
10. EQUIPMENT SPECIFICATIONS (see 6b above)		•	Revised
11. PREPARATION OF SIMPLIFIED LAYOUT AT REDUCED SCALE PLUS STUDY OF FLOOR SPACING		•	Revised
12. TEXT OF PRESENTATION OF PROJECT		•	Revised

STEPS	Pre-project	Project	Execution
13. SUPPLY TO LICENSEE OF ELEMENTS NECESSARY FOR QUOTATION		•	Revised
1. Definition of project			
2. Process description			
3. Flow sheet – general and special			
4. Equipment list and specifications			
5. Simplified general lay-out and équipment arrangement			
6. Mass balance – consumption and effluents			
7. Licensor-licensee agreement for project			
14. MAKE REVIEW OF PRECEDING INFORMATION Freeze the flow sheet with agreement of licensee and client		•	
15. COMPLETE WATER BALANCE INCLUDING WASH-OUT		•	
16. OPERATIONAL DRAWINGS OF SPECIFIC EQUIPMENT		•	
17. FINAL LAY-OUT			Revised
18. INSTRUMENTATION			Revised
– Summary list (Y-axis the control sequences, abcissa the specific measure or control instrument)			
– Control loops – types			
– Instrument specifications			
– Control valve specifications			
19. INFORMATION ON PRODUCTION BY THE PROCESS AS REGARDS :			Revised
– Sequence of interlocking (block diagram with descriptive text)			
– Local or remote control of certain motors			
– Location and arrangement of certain apparatus of measurement and control			
20. LIST OF SPARE PARTS (only for special equipment)			Revised
21. VERIFICATION FROM PROCESS VIEWPOINT			Revised
– of equipment offers collected by engineering company			
– of documents prepared by engineering company			
22. PREPARATION OF OPERATING AND MAINTENANCE MANUALS			Revised
23. COMMISSIONING REPORT			Revised
– Mass balances with physical and chemical analyses			
– Functioning of equipment			

NB : At the pre-project stage the information furnished will be limited to the principal items of equipment and will vary according to the quantity and precision of the data collected with the client.
At the project stage the piping is not sized, likewise, instrumentation is not specified in detail. The engineering company needs to carry this out based on previous projects.

DATA OF BASIC ENGINEERING AND COROLLARY SERVICES
SUPPLIED BY LICENSOR TO ENGINEERING COMPANY

TABLE I

Without any doubt the cooperation between the engineering company and the licensor has been found to bring new enthusiasm to licensor's personnel, an effect which is not always realized.

The engineering company means to the licensor an open door to an external commercial-technical world to which a licensor-producer does not have access most of the time, except by commercial services for which the motivation is quite different.

D. *Ethics*

Before opening the second part of our exposé, we should like to mention some ethical relations between the parties which need to be observed if one wishes to maintain a lasting cooperation — which we repeat is essential.

1. Suppose that the licensor has opted for the solution to have some general licensees qualified to compete in a certain number of geographical areas.

A first rule in this case, to which the licensor must be particularly attentive, is to treat his licensees with perfect equality!

— Access to information
— Access to his assistance
— In payments to be made
— In guarantees agreed to by the licensor

If maintaining this equality seems theoretically easy, in practice it's not so.

2. The problem of guarantees to be given by the licensor is delicate. Its important for him to avoid in any way misleading the licensee or the client. He cannot promise anything except what is realistically obtainable under normal conditions of operation of the process.

3. Here another delicate problem arises. The engineering company to carry-off a project in competition with its competitors is tempted to extend guarantees fixed by the licensor. It is, however, a current practice against which the licensor must protest because it can have the effect of damaging the fundamental relationship of the partners. We think, however, that a formula can be envisaged which consists on the licensor's part to fix guarantees which are certain and in addition objectively determine upper limit expected performance.

The engineering company, in some cases, in a better position than the licensor to appreciate the final operation of the process, can, within the limits of the predictions supplied by the licensor, bring its own guarantee within the differential margin. In any case, the engineer cannot guarantee anything additional, without referring the question, with sufficient advance notice, to the licensor. This way of acting is easy to regulate when the relations are continuing and quasi-exclusive between the parties. We note again that this mode of behavior is quite different from the opportunistic seller who does anything to get the job, not caring about the value of the process or the client's long-term interest.

4. The problem of guarantees between parties leads us to the wish to settle responsibilities between the parties as far in advance as possible.

Each one must know what position to hold in case of dispute between the parties. But it is not possible always to settle everything in advance; for the cases which remain, permanent partners will almost always find an equitable resolution which minimizes and shares the damage.

5. It is certain that numerous other aspects between partners come up. We only want to mention one because here again the licensor must be particularly attentive to it by strict control and special rigour. It is the problem of use of the plans of the licensee. Normally, the licensor will receive detailed drawings from his different licensees. For the same project they can be different because each engineering company can have its own ideas about the installation and its own know-how.

Certain licensees will also, at the time of a given project, have elaborated plans which another licensee can only study at another time. In all these cases, it is forbidden to communicate by any means the plans of one licensee to another. There also will be technical information or commercial advantages which the licensor may know because of his negotiations with one of his licensees which he cannot make known to his other licensees working on the same project.

You may feel we propose an idealistic solution. But again, if one hopes that a feeling of confidence permeates between the partners, the licensor of the technology has to instill in his personnel the respect for a very strict ethic.

INFLUENCE OF TODAY'S ENVIRONMENT ON THE RELATION BETWEEN LICENSOR AND ENGINEERING COMPANY

References

For several years we have been confronted with new situations. We limit ourselves to several quotes which circumscribe the subject:

Mr. de Passemar: "It is absolutely certain that Mexico in particular has taken a kind of leadership to deprive industries of capitalist countries of all their rights, above all in the area of know-how ... it is necessary to follow very closely the aftermath of the Mexican action; it will be followed by all the countries of Latin America, it will end up rapidly with the impossibility of transfer of know-how in these countries because one can not repatriate money or earn it".[1]

L. Amon Tanoh: "Since then, it is well to underline, in preamble, that aid in development if not a debt, is at least a moral obligation and an obligation of justice". The author counsels "trade-aid" that is commercialization".[2]

"New requirements coming from certain countries requiring the supply of product-in-hand or commercialized product factories are nothing but the translation of the opinion expressed before by the delegate from the Ivory Coast. The work of UNICED on the international code of conduct of transfer of technology in which we note many extravagances, signal also a change of environment which we must face up to."[3]

L. Costet: "The specifications of new tenders (in Eastern Europe) are similar in all points to those of developing countries."[4]

Modification in the cooperation

These few references let us indicate which modifications can be visualized between the interested parties. More now than before the selection and limitation in number of licensees is justified.

1) **Commercial considerations.** The cooperation exist-

(Continued on Page 174)